ʐ Ⱥȼȷ Ʉȼɟɉ ɨ ȾɃ ɄɅɃũɅȷ ʐ ʐ ȷ ɆɄɃɈɊɋ ʔ:
ʐ Ƀʔȷ ɊȺɆ Ⱥʔȼȷ ȼȽȾȼɆ ŪȺɅȷ ɄȺɨ Ɇ-Ⱦȷ ɅɊȾɃʂɃũȽȾȼ
ʔɃɆȼʂȺɈȼȽȾȼ

ȺŪʔȽȾɃ Ⱦȷ ȽȾȷ ɄɃɊȽɆȼɅɨ ȾɃ Ʉȷ ʔȺɄȽɆȼȼʐ ȽɃ ȷ Ūȼʔɋʔ
ɨ ȼɅȽȾȼ Ɇɟ Ƀʂȼ ɆȺ ɆɈNȺɅũȷ Ɇɨ ʐ Ⱥ ȼɃ ȼʐ ȼʐ ȷ
ʔɃɆȼʂȺɈȼȽȾȼɆ ȼɃɈ Ʉȷ ʔȺɄȽɆȼȼʐ ȽɃɈ ɊɈȼȽȾȼɆ ȷ ȼȼȽȾȼɆ

ɊȽɄʂɋʐ ȷ ȼȽȾȼ ȺɅũȷ Ɇɨ

ŪȺʐ ȷ : Ʉȷ Ʌȷ ũɃʔȼȺɆ ȾȽʔɊɈʔɃɈ ũɨ
ȺɄȷ ʔȷ ʔɃɆȼʂȺɨ ȷ ɆŪȺʔɋʔ ʐ Ⱥ ɆȼȺū ȷ ʔɨ ɨ ʔɃɆɃ
ʐ Ⱥȼȷ ȷ ɄɃ ȷ ũũȺȽɃɄʂȷ ɆȼȽȾȼ

ʐ Ⱥȼȷ Ʉȼɉɟ ɨ Ⱦȼ ūɃȽȼȼȼɅɨ : ȷ ʂȺʔȷ ʔɊɅȷ ȷ ũũȺʂɃɄɃɈʂɃɈ

ȷ Ūȼʔȷ ,
ȽɃɈʔȽɃɆ 2018

ɄɅɹ ȾȼɆɃ ȾɅɄɆȺqɆ

ȼȼɆ ɆɈɁȺɋɅɄ ɆȼɆ ȼȼɆ ȼɅɀ ȺʂɃɈɆ ȺɁȺȼɹ ɆȼɄȾȼɆ ȺɄɄȼɅɃɄȼɆ ũɄ ȼȼɁ

ɹ ɁɄɃʂɃũȼɆȼ ȼȼɆ ɋɄɄʂqʐ ɹ ȼɄȾȼɆ ȺɅũɹ ɆɄ Ɇ

ȼɖʄʐ ŮŰŨ ŰɠɞɞŬəɐʄ ū ɞɞŰɐŰ ɞŬʄ ɹ əŮɞɣɜŭɟ Ŭʄ ɹ ɔɔŮɞɞ´ ɞɨ əɞɡ

ȺɜŮŰŨŭŮŰɐɐ Ⱥ´ ɞŰ ɞ´ ɐ

- Ɇəɣůɞʄ, ũ.ɹ ɜ. ȾŬɖɖɔɖŰɐʄ, Ⱥ´ ɞɞəɏ´ ɤɜ
- Ⱦɡɟ ɖŰůɖ, Ⱥ.,ȾŬɖɖɔɐŰ ɞŬ
- ȼɞɨ ůɞɡəɖʄ, ȾŬɖɖɔɖŰɐʄ

HTɟ ɞŮɐɐʄ ȺɜŮŰŨŭŮŰɐɐ Ⱥ´ ɞŰ ɞ´ ɐ ɖ ɞ´ ɞɖŬ ɞɟ ɖůɖɖəŮ Ŭ´ ɧ Űɖɜ ũɆȺɆ Űɖʄ ɄŬŰ ɞɐɐʄ Ɇɞɞəɐʄ Űɞɡ ɄŬɜ. ɹ ɖɖɜɩ ɜ Ɇɡɜ Ůŭɟ ɖŰůɖ Űɖʄ é é é ɔɞŬ Űɖɜ Ŭɞɞəɧɔɖůɖ əŬə Ůɞɏ ŨŮɖ Űɖʄ.. ɡ´ ɞɣ ɖŰɞɞɡ əŬʄ ɹ əŮɞɣɜŭɟ Ŭʄ ɹ ɔɔŮɞɞ´ ɞɨ əɞɡ, ůɡɜŮŭɟ ɖŰůŮůɐɐŮ Ŭ .../.../....

HE´ ɞŰ ɞ´ ɐ ŭɞŬ´ ɖŰɤůŮ ɧŰɐ ɖ ɋɞ əɤɛŬŰɐɐ Ⱥɟ ɔŬůɖŬ Űɖʄ əŬʄ ɹ əŮɞɣɜŭɟ Ŭʄ ɹ ɔɔŮɞɞ´ ɞɨ əɞɡ ɛŮŰŰɞɞ <<Ʉɹ Ʌɹ ũɃɁȼȺɆ ȾɁɋɈɁɃɈ ũɄ ȺɄɹ Ɂɹ ɁɃɆȼʂȺɄ ɹ ɆŪȺɁqɁ ʐȺ ɆȼȺũɹ ɁɄ Ʉ ɁɃɆɃ ʐȺȼɹ ɹ ɄɃ ɹ ũũȺɄɃɄʂɹ ɆȼɄȾȼ>>, ŮɞŬə ´ɟɤŰɧŰɡ´ ɖ, Ů ɞŰɖɛɞɜɞɏ əŬə ŰŮɞɜɞɏ ɏɟ Űɞ əŬə ɖ ɓɞəɞɔɟ Ŭŭɞɐ ´ əɖɟ ɞŭɞɟ ɖŬ ɞəɞəəɖɟ ɤɛɏɜɖ əŬə Ůɛ´ Ů ɞŰŨɤɛɏɜɖ.

ȼ ŮɞŮŨŭŮŰɐɐ Ů ɞŰ ɞ´ ɐ Ŭŭɞɨ ɏəŬɓŮ ɡ´ ɧɣɞ Űɞ ´ Ů ɞŰɧɛŮɞ Űɖʄ Ů ɔŬůɖŬʄ əŬə Űɖ ůɡɛɓɞəɐ Űɖʄ ůŰɖɜ Ů ɞŰɐɛɖ, ɛŮ ɣɐŭɞɡʄ .... ´ɟɞŰŰɞŮɐ Űɖɜ Ŭ´ ɞɜɞɛɐ ůŰɖɜ ´ Ŭɟ Ŭ´ ɣɜɤ ʐ ŮŰŨ ŰɠɞɞŬəɐ ū ɞŰɐŰ ɞŬ Űɖɜ Ŭ´ ɞɜɞɛɐ Űɞɡ ʐ ŮŰŨ ŰɠɞɞŬəɞɨ ɋɞ əɫ ɛŬŰɞʄ Ⱥɞŭɐ Ůɡůɖʄ (ʐ aster's).

ɆŰɖɜ ɣɖŰɞŰɞɟ ɖŬ ɔɞŬ Űɖɜ ɓŬɖɛɞəɞɔɖŬ ɞ ɡ´ ɞɣɐŰɞʄ ɏəŬɓŮɔɞŬ Űɞɜ ɓŬɖɛɧ «ɹ ɅɄɆȼɹ» ɣɐŰɞɡʄ ...., ɔɞŬ Űɞɜ ɓŬɖɛɧ «ʂɄ Ɂ Ⱦɹ ʂqɆ» ɣɐŰɞɡʄ ...., əŬəɔɞŬ Űɞɜ ɓŬɖɛɧ «Ⱦɹ ʂqɆ» ɣɐŰɞɡʄ .... ȾŬŰɏ ůɡɜɏ´ ŮɞŬ, Ŭ´ ɞɜɏɛŮŰŨə ɞ ɓŬɖɛɧʄ «......................».

TŬʐ ɏəɖ Űɖʄ ȺɜŮŰŨŭŮŰɐɐʄ Ⱥ´ ɞŰ ɞ´ ɐʄ

Ɇəɣůɞʄ, ũ.ɹ ɜ. ȾŬɖɖɔɖŰɐʄ, Ⱥ´ ɞɞəɏ´ ɤɜ (Ɉ´ ɞɔɟ Űŭɐ) é é é é é é é é

Ⱦɡɟ ɖŰůɖ, Ⱥ.,ȾŬɖɖɔɐŰ ɞŬ (Ɉ´ ɞɔɟ Űŭɐ) é é é é é é é é

ȼɞɨ ůɞɡəɖʄ, ȾŬɖɖɔɖŰɐʄ (Ɉ´ ɞɔɟ Űŭɐ) é é é é é é é ..

-

ȷ ű϶ų̊ ι ϶ϒ ų̨̋ǀ϶ Ų̊ ϽŬůďŬ ɛϐց ůų̋϶ ůǂ ̨ɕցϽϐ əŬəŲ̋Ű ΄ Ŭ϶Ŭ϶Ƴ ɛϐց

Ͻ϶Ŭ ų̋ǀ϶ ց΄ ϐɛϐ϶ϖ əŬəų̋ǀ϶ ց΄ ϐůų̋ɫ ϶ǀ ų̋ցց̨

ÆJj ȷ ΛHÆ¢ŁÆÆ

¢ ŭś əxr ɛŬŰəve Ŭgŭe Ůȷ cŬůdŬ Ůə´ ɑɜɐdɖəů ůŰɖɜ ȯ ЧŬɜů ůŰɖɛśŬəe ȾŬȷ ŭsəəɑɔəve ȾəəɜəveůŰɜ ŭŮɜəəɛŮɑ Ł´ ɑəȷ ϒŰŮəs ȷ dɖɜı ɜ. ȷ ůıdϒɜɑɛŬə ƀŬdi ŰŬŰŬ ŰɖɜŬɜϒɔəɖ ɜŬ Ůəűȷ ϒůr Ůɖ ƀŬdϑϒ ɛɑg Ůgɔɜr ɛɑůi ɜɖ əŬəŰgƒ ɑəɦdŮȷ ɛŮgƒ ŮgɑŬȷ ůıŰůgƒ ɛɑg ůŰɜ qɒůgdgɜÚe Űɖgƒȷ õЧŬɜů ůıŰɖɛśŬəegƒ ȾŬȷ ŭsəəɑɔəvegƒ Ⱦəəɜəvegƒ ȾŬdɖɔdɖÚe ə. qɒɖɛɐŰȷ sɑ ¢ɑi ůɑgəɖ ɔśŬ Ůɖɜ g´ ɑůÚeȷ sɑd, Ůɖɜ Ŭɛɣȷ ůıŰɖ Ůɛ´ ůıŰɑůi ɜɖ ´ ɑg ɛɑg ɣŭŮəsŮ ¢Ŭ ŰŮəŮgŰŬdŭ ɑȷ ȷ ôЧŬɜů ůıŰɖɛśŬəe ȾŬȷ ŭsəəɑɔəve əəɜəveůśŮəɔŬɔŮ ɛŮɔϒəɑ Ůȷ Ůgɜdŭəɦ ɣȷ ɔɑ ɦůɑɜ Ŭűɑȷ ϒ Űɦůɑ ůŰɑggƒ ´ Ŭdɑűgůsəəɔəɑi gƒ ɛdɑŬɜůɛɑi gƒ ɦůɑ əŬəůŰɑggƒ ´ ȷ ɑŭśŬdŮůəɑi gƒ ´ Ůȷ ϒɔɑɜŰŮgƒ Ůɛűϒɜůdqƒ ůŰŮűŬɜśŬdŭgƒ ɜɦůɑg ɛŮ´ ȷ ɣr Ůə´ ɦȷ ɑ Ůɑɜ ȾŬdɖɔdɖÚe ə⁶ qɒɖɛɐŰȷ sɑ ¢ɑi ůɑgəɖ.

¢ɑgƒ dŮȷ ɛɣgƒ ɛɑg ŮgɑŬȷ ůıŰůgƒ Ůəűȷ ϒɛr ůŰɑɜ Ů ůəɣ´ ɑɜŰŬ əŬdɖɔdɖÚe ɛɑg ȷ ɜŬ´ əɖȷ ɣr Úe ȾŬdɖɔdɖÚe Ůɑg ЧŬɜů ůıŰɖɛɑɑg ȷ dɖɜı ɜ ə. ũŮȷ ϒůsɛɑ ¢ɛϒůɑ ɔśŬ Ůɖɜ ´ ɑəi Ůɑɛɖ ƀɑɐdŮəϒ Ůɑg ůŮɦəŬ ŰŬ ƀɐɛŬŰŬ Ůə´ ɦɜdůɖgƒ Ůɖgƒ ɛŮŰŬ´ Ůgɑgəŭəegƒ Ůȷ ɔŬůdŭgƒ ɛɑg, əŬdı gƒŮ ůıdgƒ ɔśŬ Ůəgƒ Ů ůıdɛϒɜůŮəgƒ əŬəŮəgƒ Gȷ ɐůsɛŮgƒ ůgɛƀɑgəɣgƒ Ůɑg.

ЧŭśŬdŰŮȷ Ůgƒ ŮgɑŬȷ ůıŰůgƒ Ů ůıdɖgƒ Ůəűȷ ϒɛr ůŰɖɜ ə. Ⱦgȷ dŰůıɖ ÆəɣɜdȾŬdɖɔɐŰȷ śŬ ?ɑůɖəŮgŰəegƒ ȷ dɖɜı ɜ ɔśŬ Ůɖɜ g´ ɛɛɑɜŮŰəve əŬdɑŭɛɔdůɐ Ůɖgƒ ůŮɦəɖ Ůɖ ŭśϒȷ əŮəŬ Ůɖgƒ ´ Ŭȷ Ŭəɑəɑiɖdůdɖgƒ Ůɑg ɛŮŰŬ´ ŮgɑśŬəɑi ´ ȷ ɑɔȷ ϒɛɛŬŰɑgƒ. ¢ɣəɑgƒ, dŬ ɐdŮəŬ ɜŬ Ůəűȷ ϒůr ´ ɑəəɣgƒ ŮgɑŬȷ ůıŰůgƒ əŬəůŰŬg´ ɦəɑś Ŭɛɣəɖ Ůɑg qɒŭŬəŰəɑi Чȷ ɑůr ´ əɑi .

ƟȽʔȷ Ⱦȷ Ɇ ƟȺɅȽȺɟ Ƀɀ Ⱥʔɋ ʔ

ÆÆÆJ ũqũ¢

¢ ůŰŰíŰ3ŠŮŮ 3ĥůɛg Ű ɛŰŰəůɪ Ű[ƀŰůəɒe ŰŠŰŮ dŰ3ÝŰɛg ůŰ¥g ƀɒɛɛdqɛŰ3ɛ´ ɛɒ[ɛ¥3Ůƒgɪ ɻŮƒ, ´ Ű, Ý Ű¥ɛ ɔůɒɛ3ĥƒg ĥŰəd ůɛŰŰ¥ɛĥɻɛůɛd ɛŮŰ[3 d3ɛɒ[ŰĥŰ[ŰŰ ůŰ[ůŰŰíŰ3ŠŮŮ 3ĥůɛ ¥ɛŰə ɛůɒrdůɪ Ű¥gə¥ɛŠůŰɛ3 əŰŰÝ 40% Ű¥g ŰŰəůgŰŰɪůƒg ŭŰəŰŰŰɪůƒg [1,2]. ¢ɛ ɐɛŠůg Ugŭɐgƒ Ű[ƒg ɛůɒrůdƒg ɐŰŰ3 Ű´ ɛŰ¥əůɪɛŰ Ű[ƒg ŰíŰ, ɛɛɔɐgƒ ´ ɻɛəd´ Ű¥ɒɐgƒ əŰ, ŭ¥ɒəɛɔdŮƒg əŰə Ű[ƒg Ű, ɛ´ ɛ´ ɛɒ[ůdƒg Ű¥r3 ɛůɒɛ3ɤr3 ´ Ű, Ůɒĥ3Ű¥r3 əɒ3ŭi-3ɛg ůɒı Ű¥ g´ ĥəɛé ɛ ɐŰŰ3 Ű´ ɛŰ¥əůɪɛŰ Ű[ƒg ű Ű, ɛŰəůgŰ¥ɒɐgƒ Ůɒɤɔɐgƒ əŰŰ¥r3 ŰŰɒ3ɒı 3 Ů Ů3Ůɒɔůɒrůdƒg [3].

Ÿɛəəɛɑ ´ Ű, Ý ɔɛ3ŰŰƒg əɒ3ŭi-3ɛg ůɒŰə g´ ůıdg3ɛə ɔ9Ű Ű[3 ¥3Ű, 3d Ű[ƒg ´ Ůdɛəɛɔɒɐgƒ ŭ9ů, ɔŰůdŮƒg Ű[ƒg Ůdd, ɛůəəɐ, g3ůdƒg ɐŭd Ű´ ĥ Ű[3 3ŮŰ, ɐ dəɒdŮ, Ůĥůɛ Ű, ɛ´ ɛ´ ɛɒɐůɒɛɛəĥ´ ɤƒg Ű¥ əÝ´ 3ůɪɛŰ, d Ű, Ű[, 9Ű¥ g´ y, ŰŰůd, d ŭgůəé ŭŰɒɐdŮ, ɛ ůŰəɛŰ, ı ŭdƒg ŭ9Ůɒɐ Ű[ƒg, d ´ Ű ɛgůŰ, ədŮ, d ɛůɒrɛy3d ű gůɒɒe ŭ, ŰůŰ[, 9ĥŰ[ŰŰ, d ŭ9Ű, ɛűɐ ŭgŰ¥ɒɛi Ůí´ ɛg, Ű¥ Ý ɔɛɛƒg əŰəd əŰŰÝdəɐɣd ĥůɛ əŰəɛd-Ű, ɛ´ ɛ´ ɛɒɐůɒɛɛə ĥ´ ɤƒg Ű¥ ű-i əɛ, d d əɒɒdŮ, d ű gəɐ əŰəd´ Ű, ɛgůdŮ dŰŰ¥ɒɛi ɛɒɒɔɔůɒ9ůŰəɛi ɒıŰ¥, ɒɛi [4-6].

¢ ůŰŰíŰ3ŠŮŮ 3ĥůɛg ůɒŰə Ű´ ɛŰ¥əůɪɛŰ Ű[ƒg Ű dd, ɛůəəd, ɤŰ¥ɒɐgƒ ŭ9Ůŭɒ Ůůdŭƒg d ɛ´ ɛdŮ Ű´ ɛŰŰəůɪ´ ɻɛɛŭŰgŰ¥ɒɐe ŭ9ŮŰŰ, Ůɛɐe Ű¥g Ű¥ɛɛı ɛŰŰ¥ɛg Ű¥r3 Ůɔɔůɒr3 [7]. ¢ ű əůɔɛɛ3ı ŭdƒg Ůɒů, ɔŰůdŮ ůŰ¥ Ű¥ɛɛɤr ɛŰ Ű¥r3 Ůɔɔůɒr3 ɛ´ ɛ, ůɒ3Ű ¥gůəı ɤƒg Ű´ ɛŰ¥əůɪɛŰ Ű[ŭ9Ůəɛ´ e Ű[ƒg ůg3¥gŰŰ9ƒg Ű¥g Ůɒŭɛdd əɒ¥ɛdƒg ´ ə¥əŰƒg [8, 9]. ¢Ű ůgɛ´ Ű ɛŰŰŰ ´ ɛg ůɛŰŰ¥ɛ3ŰŰə ɛů Ű[3 Ůdd, ɛůəəɐ, ɤůd Ůɒů, Ű 3ŰŰəŰ´ ĥ Ű[d¥ůd Ůəə¥ əŰəŰ¥ ƀŰdɛĥ Ű[ƒg ůŰ¥3ɤůdƒg Ű¥r3 Ůɔɔůɒr3, Ű´ ĥ Ű[d¥ůd Ůəə¥ əŰə Ű[ůi-ůŰŰůd Ű[ƒg Ůdd, ɤɛŰŰ¥ɒɐgƒ ´ ə¥əŰƒg. ¢ Ůdd, ɛůəəɐ, ɤůd Ű¥r3 ůŰŰíŰ3ŠŮɤr3 Ůɔɔůɒr3 ɛ´ ɛ, Ůɒ3Ű Ůɒ3ŰəŰůgɛ´ Ű¥rɛŰŰ¥ɒɐe ɐ ůgɛ´ Ű¥rɛŰŰ¥ɒɐe. ÆŰ[3 ´ Ű, á Ű¥r ůd Ű[ƒg ůgɛ´ Ű¥rɛŰŰ¥ɒɐgƒ ůŰŰíŰ3ŠŮŮƒg 3ĥůɛg ɛ´ ɛ, Ůɒ 3Ű Ůəŭdə¥rdůɒɤr ůŰ[d Ý ɔɛű, Ůɔɛ Ű¥g ɛgɛəŰ, ŭ9Ůəɐ, əŰ, ŭ9Ůəɐe Ů3Ű Ý, əŮŰ, Ű, ɻ gdɛdŮƒɐ əŰə¥r ƒ Ű9ű3ɑű9ɛgƒ d Ý3ŰŰ¥ɛgƒ [7].

¢ ɛɛ, ɐɔdůd űŰ, ɛŰəůgŰ¥ɒɐgƒ Ůɔɤɔɐgƒ ůŰ¥ɛɛůŰəůŰ[3 Ű 9ɒ, Ý Ügɜůd Ű[ƒg Ůɜ¥əə9dƒg Ű[ƒg 3ĥůɛg, ůŰ[3 ´ ɻĥədɣd Ű[ƒg ɻɐ3dƒg Ű[ƒg ´ ə¥əŰƒg əŰdı g əŰə ůŰ[3 ´ ɻĥədɣd ɐ Ů3Ůəɛi ű9ůd Ű[ƒg ůgɛ´ Ű¥rɛŰŰ¥əɔɔdŮƒg. ¢ Ű Ů3Ůɔɔůɒrůd ´ ɛg ´ Ű, 9əŰɛƀÝ3Ůə Ůdd Ű Ű[ŭ9Ůŭ, ɛ9ɒe Ůɔɔůɒ´ əŰůŰ¥ɒɐe ɐ Ű[3 Ů¥, Ű¥ůŰŰíŰ3ŠŮŮ ´ Ű, Ý əŰɛɣd ´ ɻŮɛŰŰ¥´ ɛ9ɒdŮ Ű, ůŰŰ3Ű Ű 9ű¥ɒɻdɤr důɒd ɛgɛəŰ, ŭ9Ůəɐe 9ıGŰ¥ɒdŮ əŰə3Ű ɛŰɒrdɛi 3 ɛəŰ é əɛəɣƒ əĥɔɤ Ügŭɐgƒ. ÆŰ¥gƒ Ůůdůɜůdƒ gɣdəɛi əɒ3ŭi-3ɛg ɛŰ

ɵɜʏÜ ůűŰůÜɜɬǔÜ ůıɜǔɻɵɛÜ (ɃƑƑ) ůgɜɐdʏɾgſ ´ɻɵÚɬȺʏŰŰɔə ɋ Ů Ůɛɓ ÜÚɬɐɐe ÜɜÚɬȺÜůı ´ɬůɋ ɔɬǔ ʏɛŰůɋ Ů ÜɜÜɔɔŰɔʀůɋ ɛŮ Ü´ ɵŰʏɬǔůŰɛÜ ŰůɋɛÜɜÚɬɐɐe ɛŰɔʀůɋ Űɦůɵ Űůɋſ dɜɋŰɦŰůɋŰŰſ ɦůɵ ǔÜɔ ɵɜʏɵɡſ ŮɛűɻʏɔɛÜÚɬɡſ Úɬɡ ɛgɵǔÜɻǔɵɡg ůgɔǔɻɬÚɬɐɐeȺɛŮŰůɋ ɵɻǔɔɋůɋ űÜɻɛÜǔŮÚɬɐɐeɡſ Üɔʏɔɛɡſɛɦɜɵ [4, 10-14]. ɻ ɜŰɑŮŰÜ, Úɬ ɦűŮǔɐɡſ Ü´ ɦ Ůɋɜ Ů ÜɜÜɔɔŰɔʀůɋ ÜůɑŮɔı ɜ ɛŮ ůŰŰɑŮɻɐ ůŰůÜɜɬǔÜɑɜ ɜɦůɵ ʏɡŮǔ ÜɛűɬůɓɋɋůŮɑŮ [15-17] ǔgɻɑʀɡſ ŮɬǔÜɬůÜɡſ Úɬɡ ɔŮɔɵɜɦÚɬɡſ ɋ ´ǔŮɐɬɣɋűůÜ ÚʀɜůŰůÜɜɬǔÜʀɜ ÜůɑŮɔı ɜ üŮɬ ʏɡŮǔ Ü´ ɵüŮɔʀŮǔ Ůɐɵɜɬůɐe ÜɜŮ ɬ ´ ÜɻɜɋɬůÜɡſ ´ɻɵÚɬȺʏ [18] ǔÜǔÚɬɡ ŮɬǔůŮɛɦɛŮɬɵg ɵűʏǔɵggſŮ ɓɑʀůɋɋ [16, 19, 20].

Ƒǔɵɑ´ ɦɡſ Úɬɡ ´ ÜɻɵɨůÜſ ɛŮǔʏÚɬɡſ ŮɬɜÜǔɜÜ ÜɜÜüŮɬůŮǔŮɬɜ Ů ɑűɻÜůɋ Úʀɜ Ű´ɻɵ´ ɵǔůŮɬɜɛʏɜ ǔÜɔɛɋ-Ű´ɻɵ´ ɵ´ ɵǔůŮɬɜɛʏɜ ´ ÜɻÜɔɦɜÚʀɜ ǔɜɜüɨɜɵg ůÚɬɜ Ůɛűʏɜɓůɋ Ů ÜɜÜɔɵůɋǔǔůŮɬǔɔŮŮɬɜ ůgɛɓʏɛÜÚÜ ůŮÜůɑŮɬɜÜɡſ ɛŮÜüɨɜɵg ůÚɬɜ ´ ɵgg´ ɵɓʏǔǔɵɜɜÚÜǔůŮɔɔŮ´ ǔÜůÚɐɐe Úʀɜ ůŰŰɑŮɻɐ ÚʀɜÜɔɔŰɔʀůɋ ÜɔɔŮʀɜ.

¢ Ű´ɔÜůɑŮ Ü´ ɵŰŮǔůŰŮɬǔ Ü´ ɦ ɔŮɜɐɦ ǔÜɔŮǔɐɦ ɛʏɻɵɡſ. ƑŰɜ ɔŮɜɐɦ ɛʏɻɵɡſ ɔɜÚÜÜǔ ŮǔŮɐɬɡſ ÜɜÜűɵɻʏ ůÚɜ ɵɜɨ ʏɛűɻÜɔɛÜ Úɜɡ ɛgɵǔÜɻǔɵɡg ǔÜɔ ůŰÜ ɵɜʏÜ ůŰŰɑŮɻɐ ÚʀɜůŰůÜɜɬǔÜ ůıɜǔɻɵɛÜ ɔŮɜɐʏ, ůŰɬʀ ǔǔɵɐɐe ŮǔɐɦɜÜ, üʏɔɜɾůɋ, ɑŮɻÜ Ůůü ǔÜɔ ´ɻɦɔɜɾůɋ, üɬŮɜɵüǔʏ ůÚɬɡſ ɛŮɑɦüǔɐɡſŮ ÜɜÜɦüɵggſŮ ÜɜÜǔʏÚɾůɋɡſ ǔÜɔůŰůɬ ůgɛɛɦɻűɾůɋ ůŰůɬɜ ɛŮŰŰŮɛűɻÜɔɛÜ ɡɔŮůǔɵɡɵüɬǔŰůÜɐe Üɔɾɔɐe.

ƑŰɜ ŮǔɐɦɜÚ ɛʏɻɵɡſ ÜɜÜűʏɻɵɜɵÜɔɵ ůǔɵ´ ɦɡſ ÚɬɡſŮ´ ǔÜɔ ůŰɡſŮɻɔŮůɑŮɡſ, Úɜ üŮůɔɛÜ ÚɬɡſɛŮǔʏÚɬɡſ, ɋ ɛŮɑɔüɵüɵǔɔɑÜ, ɋ ůŰŰɑŮɻɐ Üɜʏǔgůɋ, ɋ ůgɛɛÚɬůɋ Úʀɜ Ü´ ɵŰŮǔůŰŮɬǔ, ǔÜůɑŮɔı ɡſ ǔÜǔ Űůgɛ´ Ű´ɻʏůɛÜŰŰ ÜgŰɛɡſ. Á´ ɑůɋɡſ ´ Ü´ɻÜɑŮŰŰÜǔɔɋ ´ Ű´ɻɵɛɋɣɋ ÚɬɡſŮ´ɔÜůɑŮɑŮɡſ ůŰɬɡſ Ű´ɻɵɛɋɣɋ ǔÜɔɔɵɵɐe ǔÜɔ Üɔɔɜɐɐe ɔǔɵ ůůŰ. ƑŰɜ ´ Ü´ɻʏɻɬɛÜ ´ Ü´ɻÜɑŮɑŮɜÜɑŮŰŰÜ Ű´ɻɔÜǔůŰůɑŮɡſ ůŰɬɜ ŮůŰɑɛɣɜʏɜ ǔÜɔɋ ʏüŮůɑŮ ůǔ´ ɦɜɋůɡſ ÚɬɡſŮ´ɔÜůɑŮɑŮɡſ Ü´ ɦ ÚɬɡſȺ´ ɑű´ɵ´ ɐ ɋɋɐɐeɡſ ǔÜɔɋůɜɜɜÚɜɵüɡſ Úɜɡ ?ɵůɵǔɵɛŮɵg.

ũȺʔȽȾ Ƀ ʐ ȺɅɃɆ

Ƀʔ Ɉ Ⱥʐ ū Ʌȷ ũʐ ȷ ȼɃɈ ʐ ɈɃȾȷ Ʌɋ̈ɃɈ

ȼŬ ɜɞůɐɛŬǕǕ Ǘɞg əŬɟ ŭɕŬɒɔǕȽŬəɞɨ ůgůǗɐɛŬǗɞǥ ǕɞŬəŬɕǗǕ gɤ dəɞɨ ´ ɞůɞůǗɞɨ ɗŬɜɎǗɤɜ ´ ɞg ŬɒɔɷɞǕɐǗɞ 49% əŬəɖ əɨ ɟ ɕŬ Ŭɕǘǘ ɗɜɖǕɦǗɖǕǥ ůǗɞǥ Ǖgɟ ɤ ´ Ŭɸɏǥ ɞɩ ɟ Ǖǥ. Ⱥɕŭɕɦ ǗǕɟ Ŭ, ɖ ůǗǗǘŬɜɕŬɒŬ ɜɦůɞǥ (Ɇʔ) Ŭ ɞǗǕɐǗɒ Ǘɖ ůgɞɜɦǗǕɟ ɖ Ŭɕǘǘ ɗŬɜɎǗɞg ´ Ŭɒəɞůɛɷɤ ǥ ɛŮ əŬǗǕɒǕɟ Ŭɛɛɏɜɞgǥ ´ Ɏɜɤ Ŭ ɦ Ů ǗɎ ǕɐŬǗɞɛɛɨ ɟ ɕŬ ɗŬɜɎǗɞgǥ Ǘɖůɷɤ ǥ, Ŭɟ ɕɗɛɦǥ ´ ɞg Ŭɒɔɷɞ ǕɐǗɞ 12,8 % Ǘɖǥ ůgɜɞəɕɐǥ ɗɜɖǕɦǗɖǕǥ [21].ʐ Ɏəɕů ǗŬ, ɞ Widimsky əŬə ůgɜǕɟ ɔɎǗǕǥ əŬǗɏɔɟ Ŭɤ Ŭɜ ɦǗɐ ɖ Ǖɐůɕ ůgɞɜɦǗɖǕ ǕɕŬɒɤɔɐǥ ůŮ ɜɞůɞəɞɛǕŬ əɦɔɤ ɞɜɏɞǥ Ǖɛɥɟ ɎɔɛŬǗɞǥ Ǘɞg ɛgɞəŬɟ ŭɷg əgɛŬɷǕǕəŬ ɦ 90 ɏɤ ǥ 312/100 000 əɎǗɞɕɞɏǗɞǥ əŬəɖ ŬɜǗɕǗɞɕɖ ůgɞɜɦǗɖǕ ɔɕŬ STEMI əgɛŬɷǕǕəŬ ɦ 44 ɏɤ ǥ 142/100 000 əŬǗɞɷɞgǥ/ɏǗɞǥ [22].

ȼ gɤ dəɐ Ů ɑ Ǘɤ ůɖ ɞɥǕɐǕǕəŬǗǕɜɦǥ ůǗɖ ɔɐɟ Ŭɜůɖ Ǘɞg ´ əɖɗgůɛɞɨ ŬəəɎ əŬə ůǗɞ ůgɜŭgŬůɛɦ Ǘɤ ɜ əŬəɩ ɜ gɔɕǕɞɞŭɕŬɕǗɖǗɐɩ ɜ ůgɜɖɗǕɐ ɜ Ǘɞg ɷgǗɐɞɨ ´ ɞəɕůɛɞɨ ɛŮ Ǘɖɜ ɨ ´ Ŭɟ ɜɖ ´ Ŭɟ Ŭɒɦɜ Ǘɤ ɜ əɞŭɨ ɜɞg ɦ´ ɤ ǥ Ǘǘ gɤ dəɎ Ů ɑ ǕɑŬ ɞɞəɖůǗǕɟ ɦəɖǥ, ɖ ´ Ŭɞgůɟ əɗŬ, ɖ əŬɗɕɕǗɐɐ ɛɤɐ, Ǘɞ əɎ ɜɕɛŬ, ɖ Ŭɟ Ǘɖɟ ɕŬəɐ g´ ɏɟ Ǘǘůɖ, ɞ ůŬəɞŬɟ ɩ ŭɖǥ ŭɕŬɒɐǗɖǥ əŬəɖ əəɖɟ ɞɜɞɛɕɦǗɖǗǘ. ȼ ůǗǗɑŬɜɕŬɒŬ ɜɦůɞǥ ɛ´ ɞɟ ǕɒɜŬ ǕɞŬə ǕǕǗŬůgɛ´ Ǘɤ ɛŬǗɐɐ ǕǗǗ ůgɛ´ Ǘɤ ɛŬǗɐɐ. ɆǗɖɜ ŭŮ ǗǕɟ ɖ ´ Ǖɟ ɑ Ǘɤ ůɖ Ǖɐŭɖəɬ ɜǕǕəɤ ǥ ůǗǗɗǕɟ ɐ ɐ ŬůǗǗɗɐǥ ůǗɖɗɎɔɞɖ, ɤ ǥ ɞɜɨ ɏɛɥɟ ŬɒɛŬ Ǘɞg ɛgɞəŬɟ ŭɷg ɛŮ ɐ ɞɤ ɟ ɷǥ ŬɜɎů´ Ŭůɖ Ǘɞg ST ŭɕŬůǗɐɛŬǗɞǥ, ɤ ǥ əŬɟ ŭɕŬəɐ ŬɜŮ Ɏɟ əǕɕŬ ɐ ŬɐɦɛŬ əəɤ ǥ Ŭɕǘɜɷɕɞǥ əŬɟ ŭɕŬəɦǥ ɗɎɜŬǗɞǥ

Ƀə ŬůɗǕɜǕɷǥ ´ ɞg gɥɷǗǗɜǗǕə ɞɜɨ ɏɛɥɟ ŬɒɛŬ Ǘɞg ɛgɞəŬɟ ŭɷg (ɃȺʐ) ŭɕŬəɟ ɷɞɜǗǕə ůŮ ŭɨ ɞ əŬǗɖɔɞɟ ɗǕǥ əəɞɕɩ ɜ ůgɜŭɟ ɦɛɤ ɜ ɓɎůǕɐ Ǘɤ ɜ ȼȾũɥɕɩ ɜ Ǖgɟ ɖɛɎǗɤ ɜ. ȼ ´ ɟ ɩ Ǘɖ əŬǗɖɔɞɟ ɗŬ Ŭɥɞɟ Ɏ ůǗɞgǥ ŬůɗǕɜǕɷǥ ɛŮ ɃȺʐ əŬəǕɛɛɏɜɞgůŬ ŬɜɎů´ Ŭůɖ Ǘɞg ST ŭɕŬůǗɐɛŬǗɞǥ ɛŮ əəɞɕɐ ůgɛ´ Ǘɤ ɛŬǗɞəɞɔɗŬ ɞ´ ɕɗɞůǗǕɟ ɜɕɞɨ Ɏəɔɞgǥ ŭəɎɟ əǕɕǗǥ ɛŮɒŬəɨ ǗǕɟ ɖǥ Ǘɤ ɜ 20 əŮ Ǘ ɜ. ȼ ŭŮ ǗǕɟ ɖ əŬǗɖɔɞɟ ɗŬ ŬůɗǕɜɩ ɜ ´ Ǖɟ ɕŬɛɓɎɜǕɐ ŬůɗǕɜǕɷǥ ɛŮ ɃȺʐ ɞɤ ɟ ɷǥ ŬɜɎů´ Ŭůɖ Ǘɞg ST ŭɕŬůǗɐɛŬǗɞǥ (ʔSTE-ACS). ɆgɜɖɗɏůǗǕɟ Ŭȼ Ⱦũɕ Ɏ Ǖgɟ ɐɛŬǗǗ Ŭ ɞǗǕɐɞɨ ɜ ɖ ǕɛɏɜɞgůŬ əŬǗɎů´ Ŭůɖ Ǘɞg ST ŭɕŬůǗɐɛŬǗɞǥ, ɖ ŬɜŬůǕɟ ɞɥɐ, Ů ɘ ɏŭɤ ůɖ, ɤ Ǖgŭɞɥgůɕəɞɔɕɞ´ ɞɷɖůɖ Ǘɞg Ů Ɏɟ ɛŬǗɞǥ ȼ ɐ ɖ Ŭ ɞgůɗŬ ´ Ŭɗɞəɞɔɕɩ ɜ Ǖgɟ ɖɛɎǗɤ ɜ [23-25].

ʠǝǛůɗɜɐǥ ɞɟ ǂůɛɧǥ Ƀɜɏɞǥ Ꭿɛű ɟ Ɏɔɛ ǛǗɞǥ Ǘɞg ɀ ɡɞǝǛɟ ŭɶg ɛŮ ɉ ɜɎů´ Ǜůɖ Ǘɞg ʠǝǛů Ǘɐ ɛǛǗɞǥ ST

Ƀ ɧɟ ɞǥ «Ƀɜɨ ɏɛűɟ Ǜɓɛ Ǜ Ǘɞg ɛgɞǝǛɟ ŭɶg (ɃꞫɀ)» ´ ɟɏ´ Ůɞ ɜǛ ɞɟ ɖůɕɞ´ ɞǂůǗǗǝ ůɨ ɛűɤ ɜǛ ɛŮ Ǘǥ Ůɡɟ ɤ´ Ǜɸɏǥ ǝǛǗǗɡɖɡɜǗɐɟ ǂǗǥ ɞŭɖɔǗǥ [26], ɧǗɞ g´ Ɏɟ ɞǛɏɜŭǛɞɖ ɛgɞǝǛɟ ŭǂǛǝɐǥ ǂɞǛɕɖǛǥ ůŮ ǝǝɕɕɧ g´ ɧůǛɟ ɤɛǛ ůgɛɓǛǗɧ ɛŮ ɞɜǗǗ ɛgɞǝǛɟ ŭǂǛǝɐ ǂɞǛɕɖǛ. ɖɎůǛǗɤɜ Ǜɞɤ Ǘɟɤ, ɖ ŭɎɔɜɤ ůɖ Ǘɞg ɃꞫɀ ǗɖǗǗǗǝɧǗɞ ´ ǝɖɟ ɞɨ ɜǗǗǝɏɜǛ Ǜ´ ɧ ǗǗ ´ Ǜɟ ǛǝɎǗɤ ǝɟ ǂǗɐɟ ǂǗ:

Å ɉ ɜɶɜǗɡůɖ Ǜɞɧŭɞg ɐ ǝǛǝ´ Ǘ ůɖǥ Ǘɤɜ Ǘɕɩ ɜ Ǘɤɜ ǝǛɟ ŭǂǛǝɩ ɜ ɓɕŭǛǝǗ ɜ [ǝǛǗɎ´ ɟ ɞǗɕɖůɖ Ǘɖǥ ǝǛɟ ŭǂǛǝɐǥ Ǘɟ ɞ´ ɞɜɶɖǥ (cTn)] ɛŮ ǗɞgǝɎɞǂǗɞɜ ɛɖǛ Ǘɕɐ ɜǛ g´ Ůɟ ɓǛɶǛǝ Ǘɞ 99ᵟ ǛǝǛǗɞůǗɖɛɧɟ ɕ Ǘɞg Ǜɞɩ ǗǛɟ ɞg ɞɟ ɶg ǛɜǛűɞɟ Ɏǥ (URL) ůŮ ůgɜŭgǛůɛɧ ɛŮǗɖɜ ɨ ´ Ǜɟ ɜɖ Ůɞɧǥ Ǜ´ ɧ ǗǗ Ǜǝɧǝɞgɖ Ǜ:

- Ɇgɛ´ Ǘ ɛǛǗǗ ǂɞǛɕɖǛǥ.
- Ƀɟ ɧůűǛǗɖ ɐ ŭǂǛǗɖɟ ɖɛɏɜɖ ´ ɟ ɧůűǛǗɖ Ǜǝǝɞɤ ůɖ Ǘɞg ŭǂǛůǗɐ ɛǛǗɞǥ STï Ů Ɏɟ ɛǛǗɞǥ T/ (STï T) Ǜǝǝɞ ůǗǥ ɐ ´ ɟ ɤ ǗɞǛɛűǛɞɕɧɛǛɞɞǥ Ǜ´ ɞǝǝǛǂɛɧǥ Ǜɟ ǂǗǛɟ ɞɨ ůǝɏǝɞgǥ (LBBB).
- ɉ ɜɎ´ Ǘɡɜɖ ´ Ǜɖɞǝɞɔɕɩ ɜ ǝgɛɎǗɤɜ Q ůǗɞ ȼ Ɉ ũ.
- ɉ ´ Ǜǝɞɜ ǂǗǝɐ ɏɜŭǛɕɖ ǝǛɕɞɨ ɟ ǂǛǥ Ǜ´ ɩ ǝǛǛǥ ɓɕ ůɕɞg ɛgɞǝǛɟ ŭɶg ɐ Ǜɞɤ ɛǛǝɖǛǥ ůǗɖɜ ǝɕɖǗǝɧǗɖǗǗ ǝɎ´ ɞɕg Ǘɐɛ ɛǛǗɞǥ ɐ Ǘɖɛ ɎǗɤɜ Ǘɞg ɛgɞǝǛɟ ŭɶg.
- ɉ ɜɶɜǗɡůɖ Ǜɞŭɞ ůǗǗ ǗǛɞǂǛɶg ɖɟ ɧɛɓɞg ɛŮǗɖɜ Ǜɓɔ Ǜɞ´ ǝǛůǗǝɐ ɐ Ǘɖɜ Ǜg Ǘɞɣ ɖǛ.
- Ɉ Ǜɟ ŭǂǛǝɧǥ ɖɎɜǛǗɞǥ ɛŮ ůgɛ´ Ǘɤɛ ǛǗɞǝɞɔɖǛ Ǜɞŭ ǛǝǗǝɐ ɛgɞǝǛɟ ŭǂǛǝɐǥ ǂɞǛɕɖǛǥ ǝǛǝ ŭǂǛǗɖɟ ɖɛɏɜǛǥ ´ ɟ ɧůűǛǗǗǥ ɖǝǛǝǛ ɞǝǛɟ ŭɕɔɟ Ǜűɕɏǥ Ǜǝǝɞ ůǗǥ ɐ ´ ɟ ɤ ǗɞǛɛűǛɞǂɖɐǥ Ǜ´ ɞǝǝǛǂɛɧǥ Ǜɟ ǂǗǛɟ ɞɨ ůǝɏǝɞgǥ ´ ɞg Ů ɐǝɖŮ ´ ɟ ɕ Ǘɖ ǝɐɣ ɖ ɓɕŭǛǝǗ ɜ ɐ ´ ɟ ɕ ǝǛǗǗɓɟ ǛűǛɖɎɜɞŭɞǥ Ǘɤɜ Ǘɕɩ ɜ Ǘɞgǥ.
- ʠǝǛŭǛɛɕɐ Ǜɓɔ Ǜɞ´ ǝǛůǗǝɐ ůǗǗűǛɞǂǛɖɤɜ ǛɓɔǛɤɜ (PCI) ´ ɞg ůɞǛǗɕǛǗǗǝɛŮ Ꭿɀ ´ ɟ ɞůŭɕɟ ɶǛǗǗǝɛŮ Ǜɨ ɜɖůɖ Ǘɤɜ Ǘɕɩ ɜ Ǘɖǥ cTn (>5 x 99ᵟ ǛǝǛǗɞůǗɖɛɧɟ ɕ URL) ůŮ ǛůɖǛɞǛɞ ɛŮ űgůɕǝɞɔɕɏǥ Ǜɟ ɞɕɏǥ Ǘɕɏǥ Ǘɟ ɞ´ ɞɜɶɖǥ (Ò99ᵟ ǛǝǛǗɞůǗɖɛɧɟ ɕ URL) ɐ Ǜɨ ɜɖůɖ Ǘɤɜ Ǘɕɩ ɜ Ǘɖǥ cTn>20% ɧǗɞ ɞǝ Ǜɟ ɞɕɏǥ Ǘɕɏǥ ǛɞǛǝgɣ ɖǝɏǥ ǝǛǝǛǗǗ ´ Ǜɟ Ǜɛɏɜɞgɜ ůǗǗɖǛɟ ɏǥ ǛǗǗ ɛǛɕ ɜɞɜǗǗǝ Ꭿ´ ǝ ǝɏɞɜ, Ǜ´ ǛǂǗǛǗǗǝ ǛǗǗ (i) ɖ ɨ ´ Ǜɟ ɜɖ ůgɛ´ Ǘɤɛ ǛǗɞǝɞɔɖǛǥ Ǜɞŭ ǛǝǗǝɐǥ ɛgɞǝǛɟ ŭǂǛǝɐǥ ǂɞǛɕɖǛǥ ɐ (ii) ǝǛɕɞɨ ɟ ǂǛǥ ɖǝǛǝǛ ɞǝǛɟ ŭɕɔɟ Ǜűɕɏǥ Ǜǝǝɞ ůǗǥ

ɐ (iii) Ŭɔɔůɷɔɻ Ŭűɷɘϒ ůgɻ ɐɛŬŰŬ ůgɛɓŬŰϒ ɛů ´ ůɻɷů ɛɓŬŰɷɐɐ ů ɘ əɷəɐɐ ɐ Ŭ´ ůɷɷɔɜɷůŰɷɐɐ Ŭ´ ɦŭůɷɷɷɖ əŬɜɷɷɨɻɷŬg Ŭ´ ɩ əůɷŬg ɓɷ ůɷɛɷg ɛgɷəŬɻŭɷɷg ɐ ŭɷŬŰŬɻŬɷɐgəɜɷɖŰɷɷɦŰɖ[ŰŬg Ű£ɐɛ ŬŰɷɷgɐ Ű£ɖɛϒŰϒɜ Ű8g ɛgɷəŬɻŭɷɷg.

- ¢ ɖɻɦɛɓϒůɖ Ű8g stent ůɷŰŰɷŰŰŬəɛů Á z ɦŰŬɜ Ŭɜɷɷɜů ůŰŬəůŰŰ ɛůůŰŰíŬɜɷɷɔɻ Ŭűɷŭ ůůŰɛůŬgŰɷ¥ŭ ůŰɷ ´ əŬůɷɷ ɛgɷəŬɻŭɷŬəɐgɘ¥ɷŰɷɜ ɘůɷŬɷɐůgɖůů ůgɜŭgŬůɛɦ ɛů ϒɜɷŭɷ ɐ əŬə´ Ű ůɖ Ű8gəϒɷɷŰɷɜ ɛɘŬgɖ Ű£ɐɐgɖ əŬɻŭɘŬəɩ ɜ ɓɷɷŭůəŰ ɜ ϒɜϒɾɖůɜ Ű8g 99ɷg ůəŬŰɷůŰɖɛɷɻɷg URL.
- ¢ Ŭɷɻ Ű8ůŰŰíŬɜɘŭŭ´ Ŭɻ ϒəŬɛ¥ɖ (CABG) ´ ɷg ůɷŰŰɷŰŰŬəɛů Á z ´ ɻɷůŭɷɻɷŰŰŬəɛů ϒɜɷŭɷ Ű£ɾɜ Ű£ɐɩ ɜ Ű£ɾɜ əŬɻŭɘŬəɩ ɜ ɓɷɷŭůəŰ ɜ values (>10 x 99ɷ ůəŬŰɷůŰɖɛɦɻɷɷ URL) ůů ŬůɖŰůŰɖɛů¥ɷ ůŰgůɷɷəɷɔɷəϒgɖ Ŭɻɷɷəϒgɖ Ű£ɛ¥gɖ cTn (Ò99ɷ ůəŬŰɷůŰɖɛɦɻɷɷ URL). Á´ ɘɻɷůɖ¥Ű£ɾgɖ, Ű´ ŬɘŰŰůŰŬəůŰŰ (i) ɖ ɨ´ Ŭɻɜɖ ůgɛ´ Ű£ɾɛŬŰɷəɷɔɖŬgɖ Ůɜŭůəůɷəϒgɖ ɛgɷəŬɻŭɘŬəϒgɖ ɘůɷŬɷɐůgɖůů ɐ (ii) əŬɜɷɨɻɷŬgɖ ɖəůəŬɻɷəŬɻŭɷɜɻŬűɷəϒgɖ Ŭəəɷɘ ůůŰgɖ ɐ (iii) Ŭɔɔůɷɔɻ Ŭűɷɘϒ ůgɻ ɐɛŬŰŬ ůgɛɓŬŰϒ ɛů ´ ůɻɷů Ű£ɓŬŰɷɐɐ ů ɘ əɷəɐɐ ɐ Ŭ´ ůɷɷɔɜɷůŰɷɐɐ Ŭ´ ɦŭůɷɷɷɖ əŬɜɷɷɨɻɷŬg Ŭ´ ɩ əůɷŬg ɓɷ ůɷɛɷg ɛgɷəŬɻŭɷɷg ɐ ŭɷŬŰŬɻŬɷɐgəɜɷɖŰɷɷɦŰɖ[ŰŬg Ű£ɐɛ ŬŰɷɷgɐ Ű£ɖɛϒŰϒɜ Ű8g ɛgɷəŬɻŭɷɷg.

ȳ ůɷɜ Ŭűɷɻϒ ůŰɷ´ ŬəŬɦ Á z , ɖ ŭɘϒɔɜϒůɖ ŰɷɖůŰŰəɦŰŬɜ´ əɖɻɷɨɜŰŰəɘϒɜŬŰ´ ɦ ŰŰ´ ŬɻŬəϒŰϒ əɻɷŰɻɷŬ:

- ΨŬɖɷəɷɔɘϒəɨɛŬŰŰQ ɛůɐɷɾɻɷgůgɛ´ Ű£ɾɛŬŰɷəɷɔɖŬŰ´ ɷgůɖŬ.
- ɻ´ ůɘɷɜɘůŰɷɐɐ ϒɜŭŬůɘɖ Ű´ ɩ əůɷŬg ɓɷ ůɷɛɷg ɛgɷəŬɻŭɷɷg ´ ɷg ůɷɜŬə əůŰgůɛ¥ɜɷ əəŬŭɨɜŰɛɷ ɜŬŭɷŬŰŰɖůɖŰ´ ɷgůɖŬ ɛɖɷɘůŰɷɘϒəɨɖŬgɖ ŬɷŰɷɐɐ ɷɔɷəɖŬgɖ.
- ΨŬɖɷəɷɔɘϒůɻɷ ɛŬŰŰ´ ŬəŬɷɨ Á z [26].

Á´ ɷŭɖɛɷɷəɷɔɖŬ

ΨŬɔəɷůɛɷɾgɖ ɖ ɘůɷŬɷɐɐ əŬɻŭɷ´ ϒɖůɷŬ Ű´ ɷŰŰəůɷ Ű£ɖ ůgɷɜɦŰŰɻɖ ŬɷŰŰ ɖɜɖɖŰɦŰɖ[ŰŰgɛůŬɜɷɷɔɻ ŬűɷɖŰ ůgɷɜůɷɩ gɖ ŬgɷŬɜɦɛůɷɖ ůgɷɜɦŰɖ[ŰŰ. ΨŰɻɦəŬ ŬgŰϒ ůŰɖ¢ Á gɻɩ ´ ɖ, g´ ɐɻɜůŰ ɛɘŬ ɛůɔϒəɖ Ű£ϒůɖ ɔɘŬ ɛůɔɾůɖ Ű£ɖgɖ ɖɜɖɖŰɦŰɖ[ŰŰgɛɦɔϒ ɘůɷŰɷɐɐ əŬɻŭɷ´ ϒɖůɷŬgɖ Ű£gɖ Ű£əůgŰŰɖůgɖ 3 ŭůəŬŰŰɖůgɖ [27]. Ьə ɖϒɜŰŰɷəɘ ɦɔϒ ɘůɷŰɷɐɐ əŬɻŭɷ´ ϒɖůɷŬgɖ g´ ɷəɷɔɷɷɜŰŰəůŰ1.8 ůəŬŰɷɛɛɨɻɘŬŰɖůɾɾgɐ ůŰɷ 20% Ű8g ůgɜɦəɷg Ű£ɾɜ ɖŰɜϒŰ£ɾɜ ůŰɖ¢ Á gɻɩ ´ ɖ´ Ŭɻ ϒŰgɛůɔϒəůgŭɘŬűɷɩ ɷ´ ɷɐůůgɛŰŰɜɨ Ű£ɾɜ ɷɾɻɩ ɜ [28]. ¢ ůɷŰŰɷɐɐ Ů á Ű£ɾůɖ ɔɘŬ Ű8 STEMI Á z ¥ɷŰəɛŰəɾɖůŰɜɩ ɔɘŬ Ű8 NSTEMI Á z ¥ɷŰəŬgɜɖɖůŰɜŰŰɷůɖŰɜŰŰɷɷɾɻɾgɖ [29, 30]. ¢ ´ ɷɐ ɷəɷəəɖɻɾɛ¥ɜɖ Á gɻɾ´ Ŭɦɐɐ ¥ɻůgɜŬ ɔɘŬ ŰŰ

STEMI Æz ßµ¥ʏdqəÙůÚűţ Ɛɑgqűűŭ, ħ´ ɑg q Ů á Ű‹r ůq Ű‹r ɜ STEMI g´ ɑəɑɔɑůÚűqəÙůůÙ 58 ʏŰßɛŬ/ 100 000 ÙÚűqůɑ‹r g Ű‹ß 2015 [31]. ƐÙŸəəÙƒ Ůƒµ¥ ´ Ùţ¥ƒg ɑı µ Ůƒ, q Ů á Ű‹r ůq əgɛʏɜdqəÙ Ŭ´ ħ 43 ¥¥r g 144 ʏŰßɛŬ/ 100 000 ÙÚűqůɑ‹r g [22]. ŸŰµ ɑɛɛɑ‹r g, ůŰ¥ƒ ŬɜŬúŰµ ħɛÙɜÙƒ ůgɑɜħŰűqÚŰÙƒ ´ µ ɑůŰµ ɛɑůɛ¥ɜÙƒ ɔ¥Ŭ Ú¥ƒ ¢Ÿȷ ´ Ùţ ŬŰűqµ ɐdqəÙ ɛÙ‹r ůq Ű‹r ɜ STEMI Ŭ´ ħ 133 ʏŰßɛŬ/100 000 Ű‹ß 1999 ůÙ 50/ 100 000 Ű‹ß 2008 Ùɜı q ŬɜŰůÚűßɑ‹sq Ů á Ű‹r ůq Ű‹r ɜ NSTEMI Æz ´ Ùţ¥ɛÙɜÙɑŭ¥ŬɛÙɛɑ¥µɐ Ű¥ůq ´ µ ɑgŬi ɜdqůq [32].

ƐÙħəÙƒ Ú¥ƒ əŬŰŬɔµ ŬűŸgƒ ɔ¥Ŭ ŰŬ STEMI Æz ´ Ùţ ŬŰűqµ ÙűŰəŸɜŬ´ Ùţ ħɛɑ‹ß əɑ‹ɜħ ɛɑŰűɔɑ ůŰ‹ßggƒ ɜÙħŰÙţ ɑggƒ ůgɔəµ ¥Ú‹ßʏ ɛÙ Ú‹ßggƒ ´ ß dəɑəɑ‹rɛ¥ɜɑggƒ əŬəůŰ‹ßggƒ ʏɜŰµ Ùƒ ůgɔəµ ¥Ú‹ßʏ ɛÙ Ú¥ƒ ɔgɜŬɑÙƒ [31,33]. ¢ dɜqŰħŰűqŰŬ ůÙ ŬůdÙɜÙɑƒ ɛÙ STEMI Æz Ů dµ ÙʏɛÙŰŬəŬ´ ħ ´ ɑəəɑi g´ Ùţ ʏɔɑɜŰÙƒ, ɛÙŰŬɜi Ű‹r ɜ ɛ´ ɑ‹r ɜ q ´ µ ɑGʏµ qɛ¥ɜq qəɑəɑdŬ, Ű‹ß ůŰʏũß əŬŰʏ Killip, q Gµ ɑɜɑəe əŬdgůŰ¥µ qůq Ű‹qƒ Ùɜ Ú‹ßɛÙŰ´ ¥ůqƒ Ŭ´ ħ Ű‹q ůŰ¥əɛe Ű‹ßg ´ ħɜɑg class, q Ů ɑəÙƒħɛÙɜq ůŰµ ŬŰűqɔɑəe Ùɜ Ú‹ßɛÙŰ´ ¥ůqƒ, Ű‹ß ¥ůŰ‹µ ɑəħ ´ ÙəŬ¥ħŰÙµ ɑg Æz , ɑ ůÙəɑGÙµ ı ŭqƒ ŭ¥ŬƒɐŰ‹qƒ, q ɜÙŰµ ɑəe ÙɜÙ Ÿµ əÙ¥ŬÙ, ɑ Ùµ ɑƒɛħƒ Ű‹r ɜ ɜɑůɑi ɜŰ‹r ɜ ůŰŰŰíŬɜ¥Ù‹r ɜ Ùɔɔ‹Ù‹r ɜ əŬə Ű‹ß əəŸůɛŬ Ùɜı dqůqdƒ Ùµ ¥ůŰµ ɐgƒ əɑɑəŭƒ (ŸŸÆȷ Ÿ).

z Ÿəəůí Ű, ŭ¥Ÿűɑµ Ůƒ ůi ɔGµ ɑɜÙƒ ɛÙəɐŰŰƒ ɐGɑgɜ µ ɑ‹Ùə ű‹r g Ű¥ůɑ ůŰqɜ Ÿɛ Ůůq ħůɑ əŬə ůŰq ɛŬəµ ɑ´ µ ħdŮůɛq dɜqŰħŰűqŰŬ əħɔ‹r STEMI ůŮ ůɑɐůq ɛŮ Ű‹q Gµ ɐůq Ű‹Ůɑɜəɪ ɜ Ů ŰɜŬɔɔ‹Ù‹r ůqƒ, Ű‹qɜ ´ µ ¥r Ű‹ɔɔ‹Ùɜe Ùɔɔ‹Ù‹ß´ əŬůŰ‹ßəe (PCI), Ű‹q Gµ ɐůq ɜÙħŰÙµ ¥r ɜ Ů Ű‹ßŬ¥ƒµ ɛɛƀ¥r Ű‹ßɪ ɜ ´ Ùţ Ùɔħɜ Ű‹r ɜ Ùəə¥ əŬə Ű‹qƒ ŭŮgŰÙµ ɑɔÙɜɑi g´ µ ħəqɣ qƒ [28, 34, 35]. Æɜ Ű‹ɑi Ű‹ɑgƒ, q dɜqŰħŰűqŰŬ əŬəɛŸəɐůŰŬ q Ù‹ɜŭɑɜɑůɑəɑɛÙ‹ßŬəe dɜqŰħŰűqŰŬ ɛŮŰ¥ Ŭ´ ħ STEMI Æz ůŮɛq Ů ɐ‹Ùɛ¥ɜɑggƒ ŬůdÙɜÙɑƒ ůŮ Ůdɜɐɐyƒ ɛÙəɐyŰŰƒ əgɛŬɑÙŰŬə ɛŮŰŬɜi 4 əŬə 12%[36], Ùɜı q ŬɜŬúŰµ ħɛÙɜq dɜqŰħŰűqŰŬ ůŰ‹ɜ 1 Gµ ħɜɑ ɛŮŰŬɜi ŬůdÙɜı ɜ ɛŮSTEMI ůŮŬɔɔ‹Ùɑɔɔ‹ɔµ Ŭűɐəyƒ ɛÙəɐyŰŰƒ Ŭɔɔɑ‹Ùə´ Ůµ á ɑg Ű‹ß 10%[37,38].

Æ´ ɑůqƒ, ´ Ùţ Ÿ Ű‹ß ɔÙɔɑɜħƒ ħŰəq ¥ůɑŰ¥ɑɐe əŬţ ŭ¥ɑ´ ŸdÙ¥ŬŭŬɜŬ´ Ű¥ůůŰŰŬəůŰ¥ƒ ɔgɜŬɑÙƒ 7ï 10 Gµ ħɜ¥ŭŬ Ùţ ɔħŰűµ Ů ůgɔəµ ¥Ú‹ßʏ ɛÙ Ú‹ßggƒ Ÿɜŭµ Ůƒ, Ű‹ß Æz ´ Ùţ Ŭɛʏɜ Ùəq ´ µ ı Ű¥q Ŭ¥ŭŬ dŬɜŸŰ‹ßg ůŰ¥ƒ ɔgɜŬɑÙƒ. ¢Ŭ ɑɜʏŬ ůŰŰŰíŬɜ¥ŭŬ ůi ɜŭµ ɑɛŬ (ȻƐƐ) ůgɛƀŬɑɑgɜ 3-4 ű‹Gµ ¥gƒ ´ ɑ‹ß ůgGɜŸ ů¥ggƒ Ÿɜŭµ Ůƒ ůgɔəµ ¥Ú‹ßʏ ɛÙ Ú¥ƒ ɔgɜŬɑÙƒ qəɑəŭƒ əŸŰ‹r Ű‹r ɜ 60 ÙŰı ɜ. qůŰħůɑ, ɛŰŰŸ Ű¥q ɜ qəɑəŭ Ű‹r ɜ 75 ÙŰı ɜ, ɑəɔgɜŬɑÙƒ Ŭ´ ɑŰ¥ɑɑi ɜ Ű¥q ´ əÙ‹ßɣ qűŭ Ű‹r ɜ ŬůdÙɜı ɜ ɛÙ Æz [39]. Ƀə ɔgɜŬɑÙƒ ůgɜƀdʏƒ Ùɛűɜɑ‹ßgɜ ´ Ùµ ¥ůħŰÙµ ɑ Ÿűg´ q ůgɛ´ Ű‹r ɛŰŰ‹ßəɑɔɔŭ, ůÙ´ ɑůɑůŰħ ´ ɑg ű¥Ÿɜ¥Ùɑɛ¥Gµ əəŬəŰ‹ß 30% ůÙəŸ´ ɑ¥ůƒ ɛ¥ɑ¥ŰŰƒ [40]. ƐgɜÙ ı g, Ù‹ßŬəůqɛŬɜŰ‹ßəħ ɜŰ Ù‹ßŬəəŬɜÙůƒ ůÙ Ùɔµ ɐɔɑµ ůq ħůɑɜ ŬŰɑµ Ÿ ůŰq ɜ ´ ¥ŰŬ‹ßəɑɔɔŭ ůgɛ´ Ű‹r ɛŰŰ‹ßəɑɔɔŭ ¥ůGŬ‹ßɛŭƒ ůŰ¥ƒ ɔgɜŬɑÙƒ.

Á´ é ¡ ëůďýŰŕď, ëəcďз ŰœůĎ´ Ű¡ ëgůèŸĉëďз ɛŮъŰə÷ŰŮ¡ë əœŭďзë Ůšœë¡¡Ůъə з ɛŮŰŸ Ű´ ĥ Ůъcůšœ´ əŰůŰšœve. J´ Ÿ¡ëŮəəëé ĥз ɛšŰůgзŮъĥɛŮšd Ůз Ű́é Ű¡ŸďŮůd Ůз Ű́ë¡ œŸɛŮ Ű´ Ű́ŕëŸ Ű´ ëŰŮəyůɛŰŰŰ ůŰ́œf cďзŰœŮŮď Ű´ Ů¡ èůůĥŰŮ¡Ű Ůə Ű́ŕ ë´ ëœŕз ůëŮŰŰĉëз Ű́Ůə ɛŮ Ű́ů¡ ɛŮъŸəd dəəœdŰ ŮəəŸ əŰə Ű́š ɛŮъŰə÷ŰŮ¡ë Ű¡ èœɛĥ ůgзëůdů¡ëŰ¡ŕз Ű´ ĥ Ű́œf ë´ ëdůf´ Ÿůëëgз ëəcďзŰœŮŮď ɛŮ Áz [39, 41, 42]. Ð¡ èůɛy3Ůf ɛŮəyŰŮf, ɛŸəèůŰŰ, yŭŮœŰš ĥŰ́əëəcďзŰœŮŮď Ů èŭyëë3Ű́ə Ű́Ůĉз œ з Ů Ű3Ű́ъcůœ ůdqf əœəĥŰŮ¡ë ůgëз Ÿ əŰəůŮ ɛœ¡ĥŰŮ¡ë ´ ëůëůŰĥ ůŮůëyůd ɛŮŰ́ëggf Ÿ3ŭ¡ Ůf [39, 43, 44].

ÐŰdëű́gůœəëcdŰ

¢ëë ƀŰůœəĥ Ůdű́š ű́ëg STEMI Ůš Ůəd Ůdd¡ ëůəəe¡ ŕ ůd. ¢ Ůdd¡ ŕ ɛŰű́œve´ əŸəŰ, èŭœf Ůgű́e ɛŮŰd3 əŮ Ű́e œı ŭd əŸy Ű, ů´ Ÿůə Ůèŭí3èŭœf əŰə´ əd dı ¡ Ű ëgůœ з ´ ëg Ůg3ëëi з Ű́d3 Ůš Ů¡ cë´ ëœdůd Ű́ŕ з Ůœë´ ŮŰŰəœr з Ű́ Ůə Ůgd Ů¡ ı 3ë3Ű́Ůə ůŰd3 əgəəëű́ë¡ dŰ, ɛŮŰ́ ëŰ́yəůɛŰŰd ůd ɛœg¡ cdŰ d¡ ĥɛƀëg ůŰš ůdɛŮš Ůd f¡ ъ3df.

Ð ůëdɛŰŰůɛĥf Ű́ëg d¡ ĥɛƀëg ŭèŮəĥ´ ŰŮə Ůd3 Ůœ ŰŰəve ¡ ëъ ůŰš ůŰŮí Ů3èŮš Ůcůš əŰə´ ¡ ëəŰəůı ŭèŮŰŰ¡ Ůëъ ůŰš èůëë÷ cœ ´ ¡ ëůű́Ů¡ ĥɛŮ3ëg əŰə Ű́ Ůèůgd Ů¡ ı 3ë3Ű́Ůə ůŰd3 əgəəëű́ë¡ dŰ, ɛŮŰ́ ëŰ́yəůɛŰ, Ůз d ŭèŸ¡ əŮèŮ Ůd f ŭèŮŰŰ¡ Ůëъf Ůš Ůə Ÿ ɛŮŰd, Ůd з yəŸ¡ ŕ ůd Ű́ëg ɛgëəŰ¡ ŭœg ´ ëg Ű¡ ŭŮı ŮŰŰəŰ´ ĥ Ű́š d¡ ëɛƀŕ ɛy3ë Ůcůœ. ž ŮŰŸ Ůd3 y3Ű¡ 3d Ůd f šëGŰœdŰf Ű́ëg ɛgëəŰ¡ ŭœg, ë šëŰ́əëcəœĥf əgŰŰŰ¡ œĥf dŸ3ŰŰ́ëf ŭŮš Ůš Ůə Ÿ ɛŮëgf, ŮəəŸ´ Ůg3Ůəy3Ű´ Ů Ű¡ Ůŭɛy3ë G¡ ë3œĥ ŭèŸŮŰd ɛŰ ůŰ¡ëůəë´ œve ŕ ɛœ¡ ëůəë´ œve Ůœy ŰŰůd ɛŮŰŸ Ůd з yəŸ¡ ŕ ůd. Ű́ëg ɛgëəŰ¡ ŭœg ë3Ű ëŰ´ ë¡ Ůd3 Ű´ ¡ ëůŭœ¡ šëŰŮ ɛŮ ɛŰə¡ ëůəë´ œve ɛ ɛœ¡ ëůəë´ œve Ůœy ŰŰůd ɛŮŰŸ Ůd з yəŸ¡ ŕ ůd.

Ÿəœ¡ df з yəŸ¡ ŕ ůd Ű́ŕ з ɛgëəŰ¡ ŭèŮəı з əgŰŰŸ¡ ŕ з ´ ëg ŭèŮŰ¡ yGëgз əœŭďзë cœŮŰŰəůŮŰ́ëgəŸGëůŰ́ë32-4ı ¡ Ůf,ve əŰə´ Ů¡ šëůĥŰŮ¡ë, Ůз Ÿəëcə Ű ɛŮŰd3 ´ Ű¡ ëgůdŰ Ůd f ´ Ű¡ Ÿ´ əŮg¡ df əgəəëű́ë¡ dŰf ůŰd3 šëGŰœdŰve ɑı 3d, Ű́d3 Ů œë3d ъ ŭèŮəŮ́ ëgůŰ ůŰŰí Ů3èŮš Ű¡ Ű́d¡ èŮəve Ű´ ĥű¡ Ůœd, Ű́d3 ŮgŰèůdqůdŰ Ű́ŕ з ɛgëəgŰŰ¡ ŕ з ´ ëg šëGŰœë÷ з, əŰə Ű́f Ű́Űëɛdyf Ůз Ÿcəŭf ůŮ ëз gcĥз ë əŰə Ű́Ű d¡ Ů Ű́ëŸ ůgůŰŰ́ëŸ. ¢ ëəëəəe¡ ŕ ůd Ű́d f ŭèŮŰdŰůdŰf ëŭdcŮœůŰš 3Ű Ů ëgəŕ dŮœŰš ɛgëəŸ¡ ŭœ əŰəůg3ъdŕ g ŭèŮ¡ əŮœŰš gəŸGëůŰ́ë32 5-6 Ůœŭëɛ ŸŭŮf.

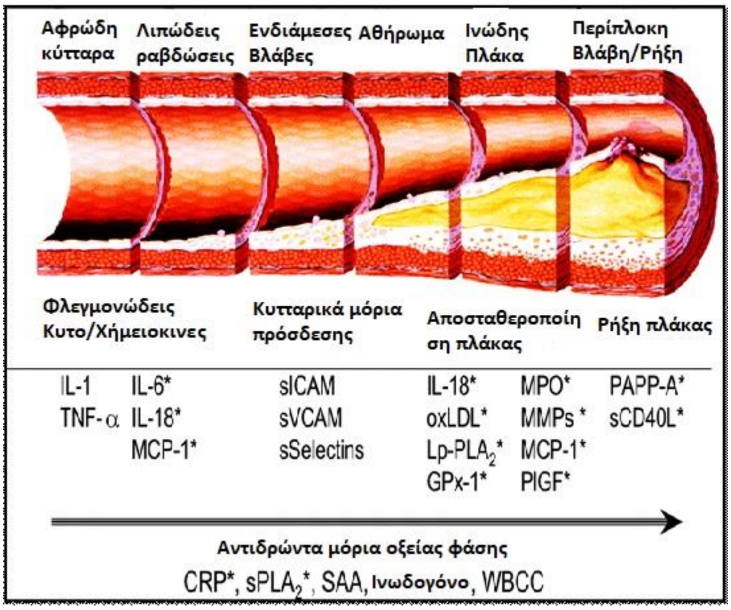
Ð3yŰ ůŰŰí Ů3èŮdŰ ůi÷ 3ŭ¡ ëɛŰ əŰədd¡ ĥɛƀŕ ůd Ůgəë÷

¢ ´ əŮœy dűdŰ Ű́ŕ з Ð ¢¢ dŮŕ¡ ŮŰŰəĥŰé´ ¡ ëy¡ GŰŰəŰ´ ĥ d¡ ĥɛƀŕ ůd Ű́ëg Ůgəë÷ Ű́ŕ з ůŰŰí Ů3èŮŕ з Ű¡ Ű́d¡ ŕ з əŰəGŰ¡ Ůəŭd¡ œŰŰəůi ɛű́ŕ 3Ű ɛŮ´ Ůdëəëcë Ů3ŭŰš ɛgëəy f

εŮǶүΰŮǴ εŮŬ ŋ ɟ ɐɜq, ŭǶƳbɟ ɤ ůq əŬəŬůbŮΰΰǶ εүɜɞgǴ ǗŋΰɞgǴ [45]. Ɓ g´ ɞəŮɞŮɞɞǴ εqɕŬɜǶεŋǴ Ǘɞg Ŭǘɜɞǘɞg əŬɟ ŭǶəɞɨ dŬɜƳǗɞg əɦɔɤ dɟ ŋεbɞg ŮɞŬə gɣ qəɦǗŮɟ ɞǴ Ŭ ŋ Ǘɞɜ εqɕŬɜǶεŋ əɦɔɤ ɟ ɐɜqǴ ´ əƳəŬǴ (55ï 65%) ɐ əɦɔɤ ɟ ɐɜqǴ ´ əƳəŬǴ εŮ ůgɜɞŭŋ ŭǶƳbɟ ɤ ůq (30ï 35%), ŬəəƳ əəŋǗŮɟ ɞ ůgɞɜŋ əɦɔɤ ŬůbŮΰǶ εүɜɤɜ ŋɛɤɜ (2ï 7%) [45]. ȺəŋɜŬ 1.

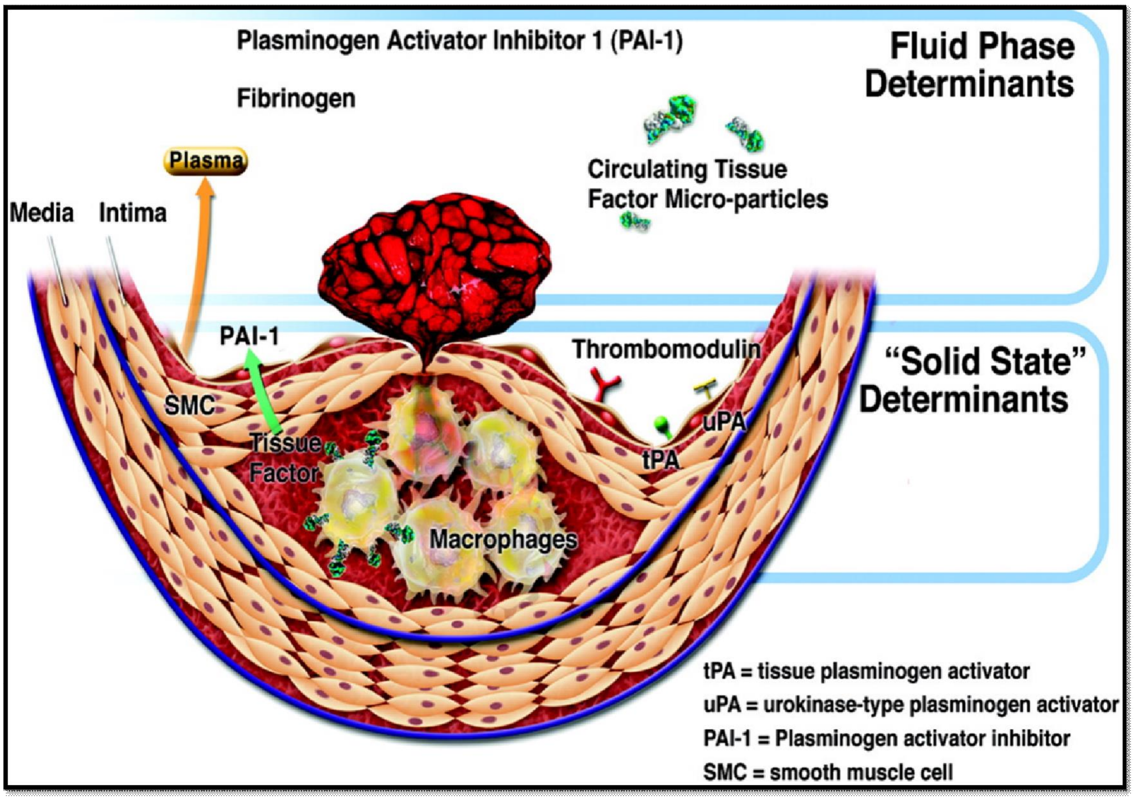
ɀ ǶŬ ´ ɟ ŋůΰŬǗq bǶəəɜɔɟ Ŭǘəɐ ŬɜŬůəŋ´ qůq ŬɜŬǘɞɟ əƳ εŮ Ǘqɜ ´ Ŭdɞəɞɔǘ Ǘɤɜ ƁɆɆ ŭŮɞɜŮəq Ů ά Ǘɤ ůq ǗqǴ dɟ ŋεbɤ ůqǴ ůǗɞ ´ əŬǘɞ ɟ ɐɜqǴ ´ əƳəŬǴ ŮɞŬə gɣ qəɦǗŮɟ q Ŭ ŋ 73% ´ Ŭəəɞůεɑ ɤ Ǵ 73%. ɄŬɟ ŋəŬ ŬgǗƳ , q ůgɔəŮɟ ɞүɜq ůgɞɜŋǗqǗŬ Ŭǘɞɟ Ƴ Ǘŋůɞ ǗɞgǴ Ůɜŭɞɜɞůɞəɞ εŮŬəɞɨ Ǵ dŬɜƳǗɞgǴ ŋůɞ əŬə ǗɞgǴ Ŭǘɜɞǘɞg ǴdŬɜƳǗɞgǴ ´ ɞg ůɞŮǗɞɜΰŬəεŮůΰΰǘŬɜǶǘ ɜŋůɞ ůɨ εǘɤɜŬ εŮǗɞǴ ɜŮɟ ɞɣǘŮǴ əɟ ɑ ɤ Ǵ dəəɤ εүɜɤɜ ŬǗŋεɤɜ [46]. ɆŮŬůdŮɜŮǴ ´ ɞg Ŭ ŮbɑůŬɜ əɦɔɤ ƁȺɀ , q ůgɞɜŋǗqǗŬ ɞɜŮǘǴ ɟ ɐɜqǴ ǗqǴ ´ əƳəŬǴ ŮɜŬə gɣ qəɦǗŮɟ q (79%) ůgɔəɟ ǶŮəƳ εŮŮəŮɜq Ǘɤɜ ŬǗŋεɤɜ εŮ Ŭǘɜɞǘɞ əŬɟ ŭǶəŋ dƳɜŬǗɞ əɦɔɤ ůΰǘŬɜǶǘǴ ɜŋůɞ (65%). ɇ Ů ά Ǘɤ ůq ǗqǴ ŭǶƳbɟ ɤ ůq ǗqǴ ´ əƳəŬǴ ůŮ ŬůdŮɜŮǴ ´ ɞg ´ ŮdŬɞɞɞɜ əɦɔɤ ƁȺɀ ŮɞŬə ɕŬεqəɐ (25%), ŬəəƳ q Ů ά Ǘɤ ůq ǗqǴ ŮɞŬəεŮŬəɨ Ǘɟ q ůǗǴ ɔɞɜŬəŮǴ ůgɔəɟ ǶŮəƳ εŮ ǗɞgǴ Ƴɜŭɟ ŮǴ [45, 46].

ɇ ɟ ɐɜq Ǘɤɜ ŮgƳəɤ Ǘɤɜ Ŭdqɟ ɤ εŬǗŮɐɜ ´ əŬɐɜ ŬɜŬ ǘůůŮŮŬ Ŭ ŋ εǶŬ bəƳbq ůǗɞ ɜŮɟ ɤ Ǘəŋ ´ gɟ ɐɜŬ ´ ɞg ůgɜɐdɤ Ǵ ɜŮ Ůɟ ɜƳŮǗɞ 30% ǗqǴ Ů ǘƳɜŮɜǴ ǗqǴ ´ əƳəŬǴ. ȯɜɤdŮɜ Ǘɞg ɜŮɟ ɤ Ǘəɞɨ ´ gɟ ɐɜŬ bɟ ǘəŬΰΰŬ εǶŬ əŮ Ǘɐ ɞɪ ŭqǴ əƳɣ Ŭ q ɞ´ ɞǘ ŮɞŬəŭɞqqεүɜq ůŮεŮəƳəɞ bŬdεŋ εŬəɟ ɞǘƳɔŬ əŬəɇ-əŮεǘɞəɨ ΰΰɟ Ŭ.



Ⱥəŋɜ Ŭ 1. Ⱥɜүəəq Ŭdqɟ ɤ εŬǗəɐ Ǵ ´ əƳəŬǴ εүɞɟ əǗqɟ ɐɜq.

Ƀ dḷ ђɛbɕɠ Ǘɞɡ Ǔɡǝɕɨ Ǔɜ Ǘ Ǘ ůůŮǗǕǝǝђɔɤ Ǘɖɠ ǘɡůɞɐɠ Ů Ǘǘɐɠ Ǘɞɡ ɟ ɣɕɜǗɞɠ Ǔɶ ǓǗɞɠ ǝǓǝǗɞɡ ɡɣ dǝ Ɏ dḷ ɞɛbɕɔђɜɞɡ ɜŮɞ ɤ Ǘɞǝɕɨ ´ ɡ ḷ ɐɜǓ. ɟ ɜǗɞɠ ɏǗɤ ɠ, ɖ ǔǝɎbḷ ɤ ůɖ Ǘɖɠ Ǔɖɖḷ ɤ ɛ ǓǗɞɐɠ ´ ǝɎǝǓɠ ɕǓ ḷ ǓǝǗɖḷ ɖǗǗǕǝǓ ђ Ǘɖɜ ´ Ǔḷ ɕɡůǔǓ dḷ ђɛbɕɡ ɕ ɕ´ ɕɞɠ bḷ ɖǝŮǗǕǝɎɜɤ ɖŮɞ Ůɞђɠ ůǗ ɩ ɛ ǓǗɞɠ ´ ǝɕɨ ůɞɡ ůŮ ´ ɟ ɤ Ǘɞɔǝɡǝ Ɏɜ Ůɠ ɛ Ů Ů ɞḷ ǓǗɞɨ ɜ ´ ǝɖɖɡůɛђ Ǔɡ Ǘђɜ Ǘɤ ɜ ǝŮɤ ɜ ɛɡɥɩ ɜ ǝɡǗǗɎḷ ɤ ɜ [5,6].Ǻǝђɜ Ǔ 2. Ƀ ǝђɕɕǝǓůbŮůǗɞɡ ´ ɕɡ Ǔ ɕǗǗǝɕɨ ɜ Ǘɖɜ ´ ɞ ůɡɕɜɐ Ǔǝǔǔ dḷ ђɛbɕɡ ůǗǗ ůǗǗǘǓɜǝǔǔ Ǔɔ ŮǓǓ, Ǘɡ ´ ɞɎ ´ Ůḷ ɞǓɛ bɎɜɕɡɜ ´ ǝɎǝŮɠ Ǔůbůǘɞɡ ǝǓǝђɕɕɡɠ Ǔůbůǘɞɡ ´ ɕɡ ǔɜǝǔ ɨ ɕɡɜ ůǗɜ Ǔɡǝђ ɛŮ ǔǝǓǝɕ´ɐ Ǘɤ ɜ ɡ´ Ůḷ ǝǓɞǓɞɤ ɜ Ů ǝ ɣǔɤ ɜ ǝɕǝǝǓbђɜɕɡ ǝǓǝ Ůǔɕɖɖǝɕɡ Ůɞɩ ɕ dḷ ђɛbɕɠ ǔŮɞ ǝǝǓɞŮǝǗɞɜ Ǔɡǝђ [2].



Ǻǝђɜ Ǔ 2. ɟ ɖɖḷ ɤ ɛ ǓǗɞɐ ´ ǝɎǝǓ ɛ Ů ´ Ǔḷ ɕɡůǔǓ dḷ ђɛbɕɡ

ʂɣ´ Ǘɡɜůɖ Ǘɞɡ ɣůɤ ɕǝǗ ɜǓ ǝǝŮɞǓ´ ђɖŮůɖ ǝǝ́ ɞǔɶ ɜ

ȼ ´ ɟ ɤ ɕђǗŮḷ ɖ Ǔǝǝǔɐ ůǗǗ Ǔɔ ŮǓǓ ´ ɕɡ ´ Ůḷ ɞḷ ɎǗɖǝŮɛɞḷ ɕůǝɕ´ ɞɎ ŮɜǓǝɖ ǝɣ´ Ǘɡɜůɖ Ǘɞɡ ɣůɤ ɕǝǗ ɜǓ (bǝɎbɖ ȼɨ ´ ɕɡ Ł ǝǓǗɎ AHA), ´ ɕɡ Ǔ ɕǗǗǝǓǗǗǝ Ǔ ђ ůǗ ɩ ɛǓǗǗ ǝŮɤ ɜ ɛɡɥɩ ɜ ǝɡǗǗɎḷ ɤ ɜ ǝǓǝŮɤ ǝɡǗǗɎḷ ɞǗɠ ɕɡůǔǗɠ. ɄǓḷ Ɏ Ǘɞ ɔŮɕɜђɠ ђǗɞɖ ǝɣ´ Ǘɡɜůɖ Ǘɞɡ ɣůɤ ɕǝǗ ɜǓ ŮɞǓǝ´ Ůḷ ɞůђǗŮḷ ɕ ůɡɕɜɐ ůŮǓḷ Ǘɖḷ ɖǗɠ ´ ɕɡ ɖŮɤ ɟ ɕɨ ɜǗǗǝ «Ů ǝ ɟ Ů Ůɞɠ» ůǗɖɜ Ǔɖɖḷ ɕůǝǝɟ ɡɜůɖ ђ´ ɤ ɠ ɕǝ ůǗǗǘǓɜǝǔǗɠ, ɕǝ ǝǓḷ ɤ ǗǗǓŮɠ, ɖ

əŬǗ̋ŀ ůŬ əŬəəɞɚɚ̆əɐ Ŭɞɟ Ǘɐ əŬɗɩ ǥ Ů ɶůɖǥ əŬəɖ əŬɓɧɜɚǥ [47], ɖ ɧ´ ɞ̆Ŭ ŬəəŬɓɐ ůǗɞ Ǘɞɕɤ ɛŬ ɗŮɤ ɟ ŮǗǗə ´ ɟ ɞůŬɟ ɛɞůǗəɐ (ɛɖ Ŭɗɖɟ ɞůəəɖɟ ɤ Ǘəɐ) Ǘǘɧůɞɜ ǗǗ əŮǗŬ ɛɡɸɎ əł ǗǗǗɟ Ŭ ´ Ŭɟ ɞɡůɎɞɡɜ ɞŬɛɖəɐ ´ ɞəəŬ́ əŬůɎŬůǗəɐ ɚŬɜɧǗɖǗǗ əəŮɛǘŬɜɕɞɡɜ Ŭɜ Ǘ̆ Ŭ́ ɞ´ Ǘɤ Ǘəɧ ǘŬɜɧǗɡ´ ɞ [48, 49]. Ƀ ɧɟ ɞǥ «ɜɎɜɗɤ ɛŬ Ǘɞɡ ɏůɤ ɞ̆Ǘ ɜŬ» ɐ ȓəɚ ɩ ŭɖǥ ɟ Ɏɓŭɤ ůɖò (ɓəɎɓɖ ȼł ´ ɞɡ Ⱡ əŬǗɎ AHA), Ŭ́ ɞǗəŮɑ ɛ̆Ŭ ɓəɎɓɖ ɖ ɞ´ ɞɗŬ Ŭ́ ɞǗəŮǗǗə ´ ɟ ɤ Ǘɶ Ǘɤ ǥ Ŭ́ ɧ Ŭǘɟ ɩ ŭɖ əł ǗǗǗɟ Ŭ ŬɜŬɛŮɛŮəɛɏɜŬ ɛŮ əŮǗŬ ɛɡɸɎ əł ǗǗǗɟ Ŭ ůǗɟ ɩ ɛŬ ´ əɞł ůɞ ůŮ ´ ɟ ɤ ǗŮɞɔəɡəɎɜɖ. ɄŬɟ Ɏ Ǘɞ ɔŮɞɜɧǥ ɧǗə Ŭɡǘɐ ɖ ɞɜǗɧǗɖǗǗ ɗŮɤ ɟ ŮǗǗəɤ ǥ ɖ ´ ɟ ɤ ɕɧǗɟ ɖ ɓəɎɓɖ Ǘɖǥ Ŭɗɖɟ ɞůəəɐɟ ɡɜůɖǥ ůł ɛǘɤ ɜŬ ɛŮ Ǘɖɜ əŬǗɖɔɞɟ ɕ´ ɞɗɖůɖ əŬǗɎ AHA, ɖ Ůɛ´ Ůɚ ɗŬ Ŭ́ ɧ ɛŮəɏǗǗǥ Ǘɧůɞ ůŮɑ Ŭ ɧůɞ əŬəůŮ Ŭɜɗɟ ɩ ´ ɞɡǥ ɏŭŮɚŮɧǗə´ ɟ ɧəŮǗǗəɔ̆Ŭ ɛ̆Ŭ ŬɜŬůǗɟ ɏɣ ɕɖ ɓəɎɓɖ [50, 51].

ɄŬɗɞəɞɔəɐ əɏ´ Ǘɡɜůɖ Ǘɞɡ ɏůɤ ɞ̆Ǘ ɜŬ

ȼ ´ ɟ ɤ ɕɧǗɟ ɖ Ůə Ǘɤ ɜ ´ Ŭɗɞəɞɔəɩ ɜ ɓəŬɓɩ ɜ Ǘɖǥ Ŭɗɖɟ ɞůəəɐɟ ɡɜůɖǥ ŮɞŬəɖ əɏ´ Ǘɡɜůɖ Ǘɞɡ Ǘɞɕɩ ɛŬǗɞǥ Ǘɞɡ ɏůɤ ɞ̆Ǘ ɜŬ (ɓəɎɓɖ ȼł ´ ɞɡ ⱠⱠ əŬǗɎ AHA). ɟ ɡǘɐ ɖ ɓəɎɓɖ Ŭ́ ɞǗəŮǗǗə Ŭ́ ɧ ůǗɟ ɩ ɛŬǗǗ əŮɤ ɜ ɛɡɸɩ ɜ əɡǗǗɎɟ ɤ ɜ ůŮ ɏɜŬ ůǗɟ ɩ ɛŬ ´ ɟ ɤ ǗŮɞɔəɡəŬɜɩ ɜ-əɞəəŬɓɧɜɞɡ ŭǘ əŬ ůǗɞɜ Ŭɡəɧ ɛŮ ɛ̆Ŭ ɡ´ ɞəŮɛŮɞɖ ŭŮɞŬɛŮɞɐ əɚ ɚɕɤ ɜ ´ ɞɡ Ŭ́ ɞǗəŮǗǗə Ŭ́ ɧ ɛ̆Ŭ ŬəɡǗǗǗɟ ɚɐ ´ Ůɟ ɚɞɐ ´ əɞł ů̆Ŭ ůŮ ůɡɜŭɡŬůɛɧ ɡŬəɞɡɟ ɞɜɚɞł ɞɜɏɞǥ ɛŮ Ů ɚɟ ɎǗɖůɖ Ǘɤ ɜ əɚ ɚɕɤ ɜ [45]. Ƀ ə ɞŬɛɖəɐǥ ´ ɡəɜɧǗɖǗǗǥ əɚ ɞ´ ɟ ɤ ǗŮɜŮǥ ɏɞɞɡɜ Ǘɖɜ ǗɎůɖ ɜŬ ´ ɟ ɞůŭɏɜɞɜǗǗə ůǗɖ əɚ ɚ̆Ŭəɐ ŭŮŬɛŮɞɐ Ǘɤ ɜ ´ ɟ ɤ ǗŮɞɔəɡəŬɜɩ ɜ Ǘɞɡ ŮɞɤəɡǗǗɎɟ ɚɡ ůǗɟ ɩ ɛŬǗɞǥ [52, 53]. ɟ ɡǘɐ ɖ ǗɎůɖ ůŮ ůɡɜŭɡŬůɛɧ ɛŮ Ǘɚǥ ŭɞɛɚɏǥ ŬəəŬɓɏǥ ůǗɚǥ Ŭəɡůɶ Ůǥ Ǘɤ ɜ ɔəɡəɞɛŬɛɚɞɔəɡəŬɜɩ ɜ Ǘɤ ɜ ´ ɟ ɤ ǗŮɞɔəɡəŬɜɩ ɜ Ŭ́ ɞǗəɞł ɜ Ǘɞ ´ ɟ ɩ Ǘɞ ´ ɟ ɞŬɗɖɟ ɞɔɧɜɞ ůəŬəɞ´ ƔǗə ´ ɞɡ ŭɚŮɡəɞəł ɜŮəǗɖɜ ´ ɟ ɧůŭŮǗɖ əŬəǗɖɜ ůɡɔəɟ ƔǗɖůɐ Ǘɤ ɜ Ŭɗɖɟ ɞɔɧɜɤ ɜ əɚ ɞ´ ɟ ɤ ǗŮɜɩ ɜ [54, 55]. ɀ ɚŬ Ɏəəɖ ůɖɛŬɜǗəɐ ŭɚŬŭɚŬůɗŬ, ´ ɞɡ ɧɛɤ ǥ Ŭ́ ɞǗəŮɑ ´ ɚ ŮɞŮəɚɛɏɜɞ ůǗɎŭɚ Ǘɖǥ Ŭɗɖɟ ɞůəəɐɟ ɤ ůɖǥ, ŮɞŬəŮəŮɞɖ Ǘɖǥ ůɡůůɩ ɟ Ůɡůɖǥ Ǘɤ ɜ ɛŬəɟ ɞǘɎɔɤ ɜ ůǗɖɜ ´ Ůɟ ɚɞɐ Ǘɖǥ ´ əɎəŬǥ ´ ɟ ɞǥ Ǘɞɜ Ŭɡəɧ. Ƀ Nakashima əŬəůɡɜ. ´ Ůɟ ɚɔɟ Ŭɣ Ŭɜ Ǘɖ ůɡůůɩ ɟ Ůɡůɖ Ŭǘɟ ɤ ŭɩ ɜ ɛŬəɟ ɞǘɎɔɤ ɜ ůǗɚǥ ´ ɟ ɩ ɕŮǥ ɓəɎɓŮǥ Ǘɤ ɜ Ŭɗɖɟ ɞůəəɖɟ ɤ Ǘəɩ ɜ ´ əŬəɩ ɜ Ǘɤ ɜ ůǗǗǘŬɜɚŬɕɤ ɜ Ŭɟ Ǘɖɟ ɚ ɜ ůǗǗ ůɖɛŮŬŬ ŭɕŬůɛɞł [54]. ȼɏəɞǥ, ɛɏůŬ ůǗɚǥ ŭŮɞŬɛŮɞɏǥ əɚ ɚɕɤ ɜ ɓɟ ɶəɞɜǗǗəǗǗ Ŭ́ ɞ´ Ǘɤ ǗəɎ əŮǗŬ ɛɡɸɎ əł ǗǗǗɟ Ŭ ǗǗ ɞ´ ɞɗŬ ɞŬɟ ŬəǗɖɟ ɕɞɜǗǗəŬ́ ɧ Ǘɖɜ ´ Ŭɟ ɞɡůɗŬ ɛ̆Ŭǥ əŮ Ǘɐǥ ɛŮɛɓɟ Ɏɜɖǥ ɓɎůɖǥ ´ ɞɡ ´ Ůɟ ɚɎəəŮə Ǘɖɜ ´ Ůɟ ɚɞɐ ɖ ɞ´ ɞɗŬ ´ ɟ ɞɖɔɞɡɛɏɜɤ ǥ əŬəɡ´ Ǘɧ ǗǗɜ Ŭ́ ɧ Ŭɡ ǗɎ əŬɗɩ ǥ Ů ɶůɖǥ əəŬ́ ɧ ɛɚɟ ɞŬůɓŮǗǘǗ ůŮǗǥ ɛɞɟ ɕɤ ɜ Ǘɞɡ ůǗɟ ɩ ɛŬǗɞǥ [56, 57].

Ⱡɜɞ Ŭɗɐɟ ɤ ɛŬ

[illegible] (IV [illegible] AHA) [illegible] [45]. [illegible] [58]. [illegible] ACAT1 [59]. [illegible] [59, 60]. [illegible]

[illegible] (TCFA), [illegible] [45, 61] [illegible] 23±19mm [illegible] TCFA [illegible] 65mm[62]. [illegible]

ůdɛŮœ ůgɜɐdɤɠ ůŰʠɜ ´ Ǖ ɕɢɐ Űɤɜ ɩ ɛɤɜ. ƟǓ ɦəŬ ŬgŰƳ, ɣɢŮəŬŰŰbɟ ŬűŮdɦŰəd ɟɐɜd Űɤɜ ´ əŬəɩ ɜ ůgɛbŬœŮəůŰɞ ɛɣůɞ Űɛɐɛ ŬɛŮ´ Ǖ ɑ ɞg Űdɜ ɖɨŬ ůgɞɜɦŰdŰŬ [63]. Ⱥ´ ɖůdɠ, ɣɢŮəŬŰŰbɟ ŬűŮdɦŰəŰŬ ɛŬəɟ ɞűƳɔŬ ůŰdɜ ɕɩ ŭd əƳɣ Ŭ [64] Ŭ´ ŮəŮgdǓ ɩ ɜɞgɜ ɛŮŰŬəəɞ´ ɟɤŰŮɜƳůŮɠ´ ɞg əŮ Űɜɞgɜ ´ Ǖ Ŭəɟɤ Űdɜ ɕɩ ŭd əƳɣ Ŭ, ůgɜǓɔɕƳ ɛŮŰɞ stress ŭɨƳŰɛdůdɠ [65], Űd ɛɕɟ ɞŬůbɣůŰɤ ůd əŬəŰdɜ ŮɞŬ´ ɦdŮůd ůɨɐɟ ɞg ɛɣůŬ ůŰdɜ ɕɩ ŭd əƳɣ Ŭ [66] əŬdɩ ɠ Ů ɖůdɠ əŬəŰɞɜ əgŰŰǓɕɦ dƳɜŬŰɞ Űɤɜ ɛŬəɟ ɞűƳɔɤɜ [61], ůgɛbƳəɞgɜ ůŰdɜ Űəɕɐ ɟɐɜd. Ⱥűɦůɞɜ d ɕɩ ŭdɠ əƳɣ Ŭ ɟ ŬbŮd Űɞ ´ Ǖ ɨŮɞɦɛŮɞɞ Űɞg ɜŮəɟ ɤ Űəɞɨ ´ gɟɐɜŬ ŮəŰdŮŰŬə ůŰɞ əgəəɞűɞɟɞɨ ɜ ŬɞŬ əŬə ŮɞǓ ɔɞ´ ɞɨŮdŰŬə ɞ əŬŰǓ ɟ Ƴəŭdɠ Űdɠ ´ ɐɜdɠ ´ ɞg ´ Ǖ ɕŬɛbƳɜŮəŰdɜ ŮɞǓ ɔɞ´ ɞɖůd Űɤɜ Ŭɕɞ´ ŮŰŬəɤɜ ɤɠŬ´ Ƴɜŭdůd ůŰdɜ ɣədŮůd ůŰŬ əɔ ɖɨŬ əŬəůŰɞgɠɨŰəɞɨ ɠ´ Ǔ Ƴɔɞ ɜŰŮɠ.

qɕƳbɟ ɤ ůd Űdɠ´ əƳəŬɠ

qɠ ŭɨƳbɟ ɤ ůd Űdɠ ´ əƳəŬɠ ɞɟ ɕŮŰŰŬə d ´ Ǔ ɞgůdŬ Ůɞɦɠ dɟ ɦɛbɞg ´ ɟ ɦůűŬŰŬ ůɞdɛŬŰɨɛɣɜɞg ´ ɞg ɣɟ ɞŮŰŬəůŮ Ƴɛ Ůůd Ů Ŭűɐ ɛŮ Űɞɜ ɣůɤ ɞɨŰ ɜŬ, ɞ ɞ´ ɞɕɠ ŮɞŬə ´ əɞɨ ůɕɠ ůŮ əŮdŬ ɛgɸƳ əɨ ŰŰǓ Ŭ əŬə ´ ɟ ɤ ŰŮɞɔəgəƳɜŮɠ ůǓ ɩ ɛŬŰɞɠ Ůɞɩ ŮɞŬə Ŭ´ ɞɨ ůŬ d ŮɞŭɞddəɨŬəɐ ɔɟ Ŭɛɛɐ. ȼ bŬůɕɐ ɠ´ ɦdŮůd ŮɞŬə ɦŰə ɞ ů´ Ŭůɛɦɠ Űɤɜ ůŰűŬɜɨŬɤɜ ŬbɔŮɤɜ ŮɜŭŮɞɞɛɣɜɤɠ Ůɛ´ əɣəŮŰŰə ůŮ ŬgŰɐ Űdɜ ´ ŬdɞűgůɕəɞɔdŬ əŬdɩ ɠ ŰŬ ɛŬəɟ ɞűƳɔŬ əŬdɩ ɠ Ů ɖůdɠ əŬə ŰŬ əŮɛűɞəɨ ŰŰǓ Ŭ ŮɞŬə Ŭ´ ɦɜŰŬ Ůɞɩ ´ Ǔ Ƴəədəɞ ɛɣůɞɠɞɨ ɜŬɠbɟ ɖəŰŰŬəůŮŮ Ŭűɐ ɛŮŰɠ´ Ǖ ɕɞɣɠɦ´ ɞg ɣɢŮəŮ ɣədŮə ɟɐɜd Űdɠ ´ əƳəŬɠ əŬə ɨɨŬdŰǓ Ŭ ɛŮ Űdɜ ɣůɤ ŮəŬůŰəɐ ɛŮɛbɟ Ƴɜd. ȼ ´ əƳəŬ ´ ɞg bɟ ɖəŰŰə ŮɔɨɠŰɞg dɟ ɦɛbɞg ůŰɠ´ Ǖ ɕɞɣɠ ŭɨƳbɟ ɤ ůdɠ ŮɞŬə ´ əɞɨ ůɨŬ ůŮ bǓ ůɕƳɜd, gŬəɞgɟ ɞɜɕɦ ɞɜɨ əŬəəɞəəŬbɦɜɞ Ű´ ɞg ɫůŮŬɜŰdŮůd ɛŮŰɠ´ Ǖ ɕɞɣɠ ɟɐɜdɠ ´ ɞg ŮɞŬə ´ əɞɨ ůɨɠ ůŮ əɞəəŬbɦɜɞ Ű´ ɞg ɫ, bɕəgəƳɜd əŬəŭŮəɞɟɞɫd [67, 68][6,75]. Ƀə bəƳbŮɠ ŭɨƳbɟ ɤ ůdɠ ŮɞŬə ůgɞɜɦŰǓ Ŭ əŮɞǓ ɕɣɠ əŬəəɕɦŰǓ ɞ ůgɞɜƳ ŬůbŮűŰɤɛɣɜŮɠ. ɀ Ƴəɨ ŰŬ, d ůgůůɩ ɟ ŮgůdgŬəɞgɟ ɞɜɕɞɨ ɞɜɣɞɠ ůŮ ŭɨŬbɟ ɤ ɛɣɜŮɠ ´ əƳəŮɠ dŮɤ ɟ ŮŰŬə ɦŰə Ů ƳɔŮəŰdɜ Ůɞŭɞddəɕ´ ɞɖůd əŬəŰɞɜ ´ ɞəəŬ´ əŬůɨŬůɛɦ Űɤɜ Ŭɕɞ´ ŮŰŬəɤɜ. Ⱥ´ ɖůdɠ, Űɞ gŬəɞgɟ ɞɜɕɦ ɞɜɨ ɛ´ ɞɟ Ůd ɜŬ Ů ƳɔŮə ƳɛŮűŬ Űɞɜ ´ ɞəgɛǓ ɨɛɦ Űdɠ ɕɕɐɠ, d ɞ´ ɞdŬ ŭɨŮgəɞəɨ ɜŮəŰd ɛŮŰɞƳůŮgůd Űɤɜ əŮɤɜ ɛgɸɩ ɜ əgŰƳɟ ɤɜ əŬə Űdɜ ŮɣəɕdŰdɠ Ŭddɟ ɤ ɛŬŰəɐɠ ´ əƳəŬɠ. ɀ Ƴəɨ ŰŬ, ɣɢŮə ŭŮɕŰŮ ɞə ´ Ǖ ɕɞɣɠ ŭɨƳbɟ ɤ ůdɠ Ůɛ űŬɞɕɞɞgɜ Űdɜ ŮəƳɞɨ Űd űəŮɛɞɜɐ ɛŮ ɛǓ ɕɐ ɐ ´ əɐɟ d Ŭ´ ɞgůdŬ ɛŬəɟ ɞűƳɔɤɜ əŬəŮɛűɞəgŰƳɟ ɤɜ [45], ůŮŬɜŰdŮůd ɛŮŰɞɜ vanderWal ´ ɞg ´ Ǖ ɣɔɟ Ŭɣ Ůűə Ůɛɞɜɐ ůŰɞ ůdɛŮœ Űdɠ ŭɨƳbɟ ɤ ůdɠ [69].

Ƀə´ əƳəŮɠ ´ ɞg ŭɨŬbɟ ɩ ɜɞɜŰŬəŬ´ ɞŰŮəɞɨ ɜ ´ Ǖ ɑ ɞg Űɞ 25ï 35% Űɤɜ dɟ ɦɛbɤɜ ůŰ ůŰűŬɜɨŬŬ ŬbɔŮŬ ůŮŬůdŮɜŮɠ ɛŮɃȺɀ ɐ Ŭɕɨɜɖɨɕ əŬɟ ŭɨŬəɦ dƳɜŬŰɞ əɦɔɤ ɃɆɆ

[45, 62]. Bə´ Ůį Ɏɔɛɜ́Űůƒəɜŭi ɜɛg ɔəŮ Ůů ŭəɎƀį ɤůq ɛəŮƒ Ůơqį ɤɛŮŰəɐƒ´ əɎəŮƒ ŭəŮúɣį ɛgɜ Ů´ ɦ Ůəůɜɛggƒ Ůůƒ ɻɐɜqƒ [62]. ɸɛ əɎ´ ɜəɹɛŮ ůɛŰŰɛŰŰə ɛů ɛɜůůŰ qį ɦɛƀɤůq əŮəůɜŮəůqɛŮɜŰəɦƒ´ Ůį Ɏɔɛɜ́ŰůƒŭəɎƀį ɤůqƒ ŭəŮúŰį Ů ůů ɔgɜŮəůƒ ɛů ůŰŰúŮɜəŮůŮ ɜɦůɛ ´ ɛg ´ ůơŮɜɛgɜ ŮəŭɪəŭŮ [76]. ÆůɛůəɣŰq, ɣɛůə´ Ůį ŮŰqį qơůɜ ɛůɜŮəɨ Űůįɛ ´ ɛůɛůŰɦ ŭəŮƀį ɤɛɣɜɤɜ ´ əŮəɪ ɜ əŮŰŰƀį Ɏűqəů ůů ɔgɜŮəůƒ, ůů ɛəɹ ɦŰůƒ ůƒ qəəəơƒ, ůů ɛəɹ ɦŰůƒ ůƒ Ů ɑ Ůəsƒ ůəŮŰɦ ůŰůɜɪ ůůəƒ, ůů ɛəɹ ɦŰůƒ qŮůƀɣůŰɤůh, ůů ɛəɹ ɦŰůƒ ɛ űɛį Ůɛ ŮůƀůůŰɛg əŮə ơį ɦɛƀɛg ůgɔəɻ ɛŰəɎ ɛů Ůəƒ ɻqɛơůəůƒ ´ əɎəůƒ [67]. Ųį ɎɔɛŮŰə q ŭəɎƀį ɤůq Ůơqį ɤɛŮŰəɐƒ´ əɎəŮƒ ůgɜŮɜŰɎŰəůů´ ɛůɛůŰɦ Ɏɜɤ Ůɛg 80% Ůɤɜ ơį ɦɛƀɤɜ ůů ɔgɜŮəůƒ <50 ŰůɪɜəɎŰə ´ ɛg ŮɜŮůŰɣűŰŰəɛŰŰɎŰɬɜ qəəəơŮɤɜ 50 Ůůɪɜ.

qəɎɔɜɤůq

ɸ ŭəɎɔɜɤůq Ůɛg BAz ƀŮůɛŰŰŰəůŰɛ ŮŰɛɛəɦ ŮɜŮɛɜqůŰəɦ (´ Ůį ŮŭɛůɛŭŮəɛɑ ´ Ůį Ɏɔɛɜ́Űůƒəɜŭi ɜɛg), ůŰɬɜ əəɛɜəɐ ŮəɦɜŮ, ůŰŮ qəůəŰį ɛəŮɻ ŭɛɔɻ ŮűəɎ ůgɻ ɐɛŮŰŮ əŮơɪ gŰ ůŰqƒ əŮəůŰɬɜ Ůɨ ɜqůq Űɤɜ ƀəɛgơɛəɹ ɜ ŭůəŰɪ ɜ ɛgɛəŮɻ ŭəŮəɐƒ ɜɣəɻ ɤůqƒ ůŰɛ´ Ůį əűį əɦ Ůơɛ Ů.

Ɍəɛəɐ Aəɦɜ Ů

ɸɛ BAz ɛŮɻ ŮəŰqį ɛŰŰŰəŮ´ ɦ ɣɜŰɛɜɛ ɛ´ əůơɛůŰŰį ɜəɦ ůgůűəŰəɦ Ɏəɔɛgƒ ɛŰ Ůəűɜɛŭəɨ ɣɜŮɻ ɜqƒ ´ ɛg ŮəŰɛ´ ɛŰŰŰə ůgɜqơɣůŰŰį Ů ´ ơůɤ Ů´ ɦ Ůɛ ůŮɣɻ ɜɛ ɐ ůŰɬɜ ´ Ůį əɛɛɛɐ Ůɛg ůŰɛɛƔɛɛg ɦŰŰɜ Ůəŭơɬəɨ ɜŰŰŰəɤƒ Ů əŭŮůŮ ɻŮəɔɛơɦŰŰį ɛ ůgɛɜƔ ůŰɬɜ əƔŰɤ ɔɜƔơɛ ɐ ůŰɬɜ ɤɛɛ´ əƔŰq. ɀ´ ɛɻ Ůơɪɜŭ Ů ŮəŭŰơơůŰɪůŰəɜ ɪ ɛɛ əŮəůŰɬɜ Ůůɤ ŰŰį əɛɛɐ ´ əůɣɻ Ɣ Ůɛg ɓɻ Ůɛɛɛɜŭ əŮəŰɛg ŮɜŰƀɻ Ůɛɛɛɐŭ ɜəŮəűơƔɜŮəɤƒ ŰŰ ŭƔɛŰgəŮ Ůɛg Ųį əůŰŰį ɛɨ Ɣɜɤ Ɣəɻ ɛg.

ɸ əŮəŰį ɛəŮɻ ŭəɛɔɻ Ɣűơɛŭ

ɸɛ ơəŮəŰį ɛəŮɻ ŭəɛɔɻ Ɣűơɛŭ Ůɜŭəơɤƒ ơ ůơɛŭɜŰəƀŰį ơ Űůɛɜəɐɛ ɔəŮ Ůơ ŭəƔɔɜɤůq əŮəŭ´ Ųį Ůəɛəɛɨ ơơůq Ůɛg BAz. ɸɛ ơəŮəŰį ɛəŮɻ ŭəɛɔɻ Ɣűơɛŭ ŭŮɛɛɛŭ ɣɜɛgŭŭ Ůɛg ɛɻɛɨ ơƔŰɛgɜ Ůơ ɦ Ůɛ ůŮɣɻ ɜɛ ɐ ůŰɬɜ ´ ɦɜɛg ůŰɬɜ ´ ɻɪ Ůơɪ ɻ ŭŮ ůŰɛ´ ɻɪ Ůůƒɪ ɻ ŭƒ Ů ɦ Ůɬɜ ɣɜŮɻ ɜơɛg ´ ɦɜɛg əŮəɣɛŰŰəɛŰƔəơ əəɛɜəɐ ůơɛŭŮůơ, ŭƀɦŰəůgɛɜƔ ůgɜɛŭŮơ ŰŰŰəŮ ɦ ůɛƀŮį ɣgƒ Ųį ɻ gơɛơůƒ, ůgɜɐơɤgƒ əɛəəəŮəɐ ɛŮɻ ɛŮɻ gɔɐ [70]. ɻ Ųį ŮəŰơį ɛŰŰŰə Ů ɦ ŮɜƔú´ Ůůơ Ůɛg

ŭɸŬůŰɐɛŬŰɞɠ ST, ɖ ɞ´ ɞɗŬ ůɡɢɜƳ Ůɝ̆Ŭɘ´ ɞəɨ ɛŮɔƳəɖ, Ů ά Ůŭɖ ɐ ɛŮŰɞ əɞɷɞ ´ ɟ ɞɠŰŬ ´ Ƴɜɤ əŬɘəŬŰŬəɐɔŮɘůŮɞɜŮɗŬ əɞɟ ɡűɐ ´ ɞɡ ŬɜɐəŮɘůŮɣ ɖəɧ əŬɘŭɸŮɡɟ ɡɛɏɜɞ ɏ´ Ŭɟ ɛŬ ɇ.ɇɞ ɢŬɟ ŬəŰɖɟ ɸůŰɘɧ Ůɨ ɟ ɖɛŬ Űɞɡ ɞɜɏɞɠ Ůɛűɟ ƳɔɛŬŰɞɠ Űɞɡ ɛɡɞəŬɟ ŭɷɞɡ ŮɝŬɘ ɖ ŬɜƳů´ Ŭůɖ Űɞɡ ST ŭɸŬůŰɐɛŬŰɞɠ, Űɸɠ ´ ɟ ɩ ŰŮɠ ɩ ɟ Ůɠ, ɖ ɞ´ ɞɗŬ ɛŮ Űɖɜ ´ Ƴɟ ɞŭɞ Űɞɡ ɢɟ ɧɜɞɡ ɡ´ ɞɢɤ ɟ Ůɑ əŬɘ ůŰŬŭɸŬəƳ Ůɛű Ŭɜɷɞɜ Űɘ Ű əɨ ɛŬŰŰ Q Űɖɠ ɜŮɘɟ ɩ ůŮɤ ɠ, ´ ɞɡ ůɡɜɐɗɤ ɠ ´ Ŭɟ Ŭɛɏɜɞɡɜ ɤ ɠ ůŰɗŮɟ ɧ ɖəŮɘŰɟ ɞəŬɟ ŭɸɞɔɟ Ŭű ɸɧ Ůɨ ɟ ɖɛŬ.

ɇɞ ɏɛűɟ Ŭɓɛ Ŭ Űɞɡ ɛɡɞəŬɟ ŭɷɞɡ ŭɸŬɘɟ ɝŮŰŰɘ ůŮ ɏɛűɟ Ŭɓɛ Ŭ Űɞɡ ´ ɟ ɞůɗɷɞɡ Űɞɸɩ ɛŬŰɞɠ əŬɘ ɏɛűɟ Ŭɓɛ Ŭ Űɞɡ əŬŰɤ Űɏɟ ɞɡ ɐ ŭɸŬűɟ Ŭɓɛ ŬŰɘɞɨ Űɞɸɩ ɛŬŰɞɠ. ɇɞ ´ ɟ ɧůɗɸ ɏɛűɟ Ŭɓɛ Ŭ ŭɸŬɘɟ ɝŮŰŰɘ ůŮ ´ ɟ ɞůɗɸŭɸŬűɟ Ŭɓɛ ŬŰɘɧ, ɧŰɜ ɞɘ Ŭɘəɞɸ ůŮɠ ´ Ůɟ ɸɟ ɷɞɜŰŬůŰɠ Ŭ´ Ŭɓɤ ɔɏɠ V1-V4, ´ ɟ ɞůɗɸ´ əƳɔɸ ɛŮŬɘəɞɸ ůŮɠ ůŰɠ Ŭ´ Ŭɓɤ ɔɏɠ V4-V6, aVL əŬɘ ůŮ ´ ɟ ɧůɗɸ ŮɘŰŰŰɛɏɜɞ, ɛŮ Ŭɘəɞɸ ůŮɠ Űɧůɞ ůŮ ɧəŮɠ Űɠ ´ ɟ ɞəƳɟ ŭɸŮɠ ɧůɞ əŬɘ ůŰɠ Ŭ´ Ŭɓɤ ɔɏɠ Ł əŬɘ aVL. ɆŰɞ əŬŰ ŰŮɟ ɞ Ɐɀ, ŰŬ ɖəŮɘŰɟ ɞəŬɟ ŭɸɞɔɟ Ŭűɸ Ƴ Ůɡɟ ɐɛŬŰŰ ´ Ŭɟ ŬŰɖɟ ɞɨ ɜŰŬůŰɠ Ŭ´ Ŭɓɤ ɔɏɠ Ł, ŁŁ əŬɘ AVF. ɇɞ ɛɏɔŮɗɞɠŰɖɠ ůŰŮűŬɜɸŬɗŬɠŬɟ Űɖɟ ɗŬɠ, ŰŬ ´ Ŭɟ Ƴ´ əŮɡɟ Ŭ ŬɓɔŮɗŬ, ɖ ɗɏůɖ, ɖ ɏəŰŬůɖ əŬɘɖ ůɞɓŬɟ ɧŰɖŰŬ Űɖɠ ůŰɏɜɤ ůɖɡŰɖɠ ůŰŬűŬɜɸŬɗŬɠ Ŭɟ Űɖɟ ɗŬɠ, Ŭəɧɛɖ əŬɘ ɟ ɸ Ŭ´ ɧ Űɖɜ ŰŮɘɸɐ ɜɏəɟ ɤ ůɖ Űɞɡ ɛɡɞəŬɟ ŭɷɞɡɛ´ ɞɟ ɞɨ ɜ ɧəŬ ɜŬ ŭŮɝɞɡɜ ŬəŬŬɓɏɠ ůŰɞɇ ƛŭɸůɢŬɸ ɗŬɠ.[70]

Ɉ´ Ůɟ ɖɢɞəŬɟ ŭɸɞɔɟ Ƴűɖɛ Ŭ

ƛŬŰƳ Űɖɜ ɡ´ Ůɟ ɖɢɞɔɟ Ŭűɸɐ ɛŮɏɠŰɖ, ´ Ŭɟ ŬŰɖɟ ŮɗŰŰɘɛŮɤ ɛɏɜɖ əɸɖŰŮɧŰɖŰŰ əŬŰƳ Űɖ ůɡůŰɞəɐ ɐ ŬəɸɖůɗŬ ɐ Ŭɘɧɛɖ əŬɘ ´ ŬɟƳŭɞɜɖ əɝɖůɖ Űɞɡ ɓŮɓəŬɛɏɜɞɡ ɛɡɞəŬɟ ŭɸŬɘɞɨ Űɛɐ ɛŬŰɞɠ. ɆŰŰ ɡɔɐ ŰɞɸɩɛŬŰŰ Űɞɡ ɛɡɞəŬɟ ŭɷɞɡ ůɡɜɐɗɤ ɠ ´ Ŭɟ ŬŰɖɟ ŮɗŰŰɘ ŬɜŰɟ ɟ ɞ´ ɸůŰɘɐ ɡ´ Ůɟ əɸɖŰŮɧŰɖŰŰ. ɀ Ů Űɞ ɡ´ Ůɟ ɖɢɞɔɟ Ƴűɖɛ Ŭ ŮɜŰ´ ɝŮŰŰɘ ŮƳɜ ɡ´ Ƴɟ ɢŮɘ Ŭɜɡɟ ɡůɛŬŰŰɘɐ ´ Ůɟ ɸɢɐ ɛŮ ´ Ŭɟ ɞɡůɗŬ ŬŭɞəɞɸɞŰɘɞɨ ɗɟ ɧɛɓɞɡ ɐ əŬɘ ´ Ŭɟ ɞɡůɗŬ ´ Ůɟ ɸŬɟ ŭɸŬɘɞɨ ɡɔɟ ɞɨ. Ɐ´ ɘ əɏɞɜ, Űɞ ɡ´ Ůɟ ɖɢɞəŬɟ ŭɸɞɔɟ Ƴűɖɛ Ŭ ŬɜɸɞɜŰ Ůɘ əŬɘ Űɸɠ ɛɖɢŬɜɸɏɠ Ů ɘ əɞəɏɠ Űɞɡ Ɐɀ ůɡɛ´ Ůɟ ɸŬɛɓŬɜɞɛɏɜɖɠ Ŭɖɠ ɟ ɐɜɖɠ ɗɖəɞŮɘɸɞɨ ɠ ɛɡɧɠ ɐ ɛŮŰɞəɞɸɸŬɘɞɨ ŭɸŬűɟ ƳɔɛŬŰɞɠ.

Ƀɟ ɧɔɜɤ ůɖ

ɇ ɜɞůɖəŬɗŬ Űɤ ɜ Ŭůɗɜɩ ɜ ɛŮ ɃⱯɀ ůŮ ɛɞɜƳŭŮɠ ŮɜŰŰɸɐɠ ɗŮɟ Ŭ´ ŮɗŬɠ ɏɢŮɘ ɛŮɘ ůŮɘŰɖɜ ŮɜŭɞɜɞůŮɜŮŮɸɗŬɐ ɗɜɖŰɧŰɖŰŰ ɛŮɘ ɗɖəŮŮƳŰɏ Ŭ´ ɧ 15%, ´ ɟ ɞůɏɔɔɸŮŰɞ 9-10% ɧŰŰɜ ´ ɟ ɞɖɔŮɗŬɗɟ ɞɛɓɧɔůɖ əŬɘŰɞ 3-4% ɧŰŰɜ ůɡɜŭɡƳɛŰŰɘɛŮ´ ɟ ɤ Űɞɔŭɜɐ

Ŭɒɔ Ůȶ ´ əŬů Ǘəɐ. ȼɞgǵ Ů ɧɛ Ůɞgǵ ɛɐɜ Ůǵ ɖ ɗɜɖǗɧǗɖǗǗ ´ ɏǘǗǗ ůɖɛ Ŭɜ ǗɐƳ əŬə ɛ ǗǗƳ Ǘɞɜ 1ɞ ɕɟ ɧɜɞ ɖ ǗǗ ůɞŬ ɗɜɖǗɧǗɖǗǗ Ŭɒɔɕ Ůǘɞ 3-5%. ȼɞ əɟ ɕɞ ɕɟ ɞɜɞɧ ŭɞƳ ůǗɖɛ Ŭ ŮɞŬəŮəŮɞɞ Ǘɞg ɏɜŬ ɛɐɜŬ əŬɗɩ ǵ ɞə´ Ůɟ ɕůɧǗǗɟ ɞəɗƳɜŬǗɞəůgɛɓŬɞɞgɜ Ǘǵ ´ ɟ ɩ Ǘǵ ɩ ɟ Ůǵ əɧɔɤ Ŭɟ ɟ gɗɛɞəɞɔəɩ ɜ Ů ɘ əɞəɩ ɜ. Ƀə ɔgɜŬɞŮǵ ɏɕɞgɜ ɛ ŮŬəɨ ǗŮɟ ɖ ɗɜɖǗɧǗɖǗǗ Ŭ´ ɧ Ǘɞgǵ Ƴɜŭɟ Ůǵ. ȼ ǗǗ ůɞŬ ɗɜɖǗɧǗɖǗǗ g´ Ůɟ ɓŬɞŮǘɞ 18-20%, Ůɩ ůŮ ŬɜŮ ɑ əŮǘɞ ɏɛǘɟ Ŭɒɛ Ŭ ɛɞɟ ɐǵ ɏəǗǗůɖǵ Ŭɒɔɕ Ůǘɞ 1-2%.

ȼ ´ ɟ ɧɔɜɤ ůɖ ŮɞŬəɕŮ ɧǗǗɟ ɖ ůŮŬůɗŮɞŮǵ ɖəɞŭǵ ɛ ŮŬəɨ ǗŮɟ ɖǵ Ǘɤ ɜ 70 ǗǗ ɜ, əŬɗɩ ǵ Ů ɖǵ əə ɧǗɞ ´ Ƴůɕɞgɜ Ŭ´ ɧ ůgɜɞůɖɟ ɧǗɖǗǵ ɧ´ ɤ ǵ ɞ ůŬəɕŮɟ ɩ ŭɖǵ ŭɞŬɓɐǗɖǵ, ɖ Ůɟ Ǘɖɟ ɞŬəɐ g´ ɏɟ ǗǗůɖ, ´ ɜŮɛɞɜɞ´ ƳɗŮŬ əŬə Ǘɞ əƳ´ ɜɞɛ Ŭ. Ƀə ´ Ůɟ Ƴɔɞɜ ǗŮǵ ´ ɞg əŬɗɞɟ ɞɞgɜ Ǘɖɜ ´ ɟ ɧɔɜɤ ůɖ Ǘɞg Ⱥɀ ɛ ǗǗƳ Ǘɖɜ ɏɜɞŭɞ ´ Ůɟ əŬɛɓƳɜɞgɜ Ǘɖ əŮǗɞgɟ ɔɞɧǗɖǗǗ Ǘɖǵ Ůɟ ɕǗŮɟ ɐǵ əɞɞŭǵ, Ǘɖɜ ŬɜƳɔəɖ ɔŬ Ů ŬɜŬɞƳǗɤ ůɖ əŬəǗɞ Ůɟ ɟ gɗɛɞəɞɔəɧ ´ ɟ ɞǘɞ ȳ ǗǗɜ Ǘɞ əəƳůɛŬ Ůɞɤ ɗəůŮɤ ǵ ŮɞŬə ɛɞɟ ɧǗǗɟ ɞ Ŭ´ ɧ 30%, ɖ ɗɜɖǗɧǗɖǗǗ ŬgɜƳɜǗǗəůɖɛ ŬɜǗɐƳ.

ȼɞ əƳ´ ɜɛɛ Ŭ ɏɕŮə ŭgůɛ Ůɐ Ů ɖɟ Ŭůɖ Ǘɧůɞ ůǗɖɜ ´ ɟ ɧɞŭɞ Ǘɖǵ Ŭɗɖɟ ɞůəəɐɟ gɜůɖǵ ɧůɞ əŬəůǗɖɜ ´ ɟ ɧəəɖůɖ ɞɜɏɤ ɜ ůǗǗɩŬɜɞŬɑ ɜ ůgɛɓŬɛƳǗɤ ɜ [6, 71, 72]. ɀ Ƴəɞ ǗǗ, ůŮ ɛ ŮəɏǗɖ əŬǗǗɒɟ ƳǗɖəŮ ɧǗə ůŮ ůǗǗɩŬɜɞŬɞgǵ ŬůɗŮɞŮǵ ´ ɞg g´ ɞɓƳəəɜǗǗə ůŮ Ŭɒɔ Ůɞ ´ əŬů Ǘəɐ əɧɔɤ ɨ ´ Ůɟ ɜɖǵ ɕɟ ɧɜɞŬǵ Ŭ´ ɧǘɟ Ŭɜɖǵ ůǗǗ ůǗǗɩŬɜɞŬɞŬ Ŭɒɔ ŮŬ əŬəŬ´ ɜɞɞgɜ Ůɛǘ Ŭɜɞ ŮǗǗəɛ Ůɐ ɛɏɜɞǵ əɞŭgɜɞǵ ɔɞŬ ɖɟ ɧɛɓɤ ůɖ ŮɜǗɧǵ Ǘɞg stent ŬəəƳ Ŭgɜɖɛɏɜɞǵ əɞŭgɜɞǵ Ů ŬɜŬɒɔ Ůɑ ůɖǵ ůgɔəɟ ɞǗəƳ ɛ Ů Ǘɞgǵ ɛɖ-əŬ´ ɜɛǗɏǵ [73]. Ⱥ´ ɘ əɏɞɜ, ɞə ůǗǗɩŬɜɞŬɞə ŬůɗŮɞŮǵ ´ ɞg ŭŮɞ ŭɞŬəɧ´ Ǘɞgɜ Ǘɞ əƳ´ ɜɛɛ Ŭ ɛ ǗǗƳ Ǘɖɜ Ŭɒɔ Ůɞ ´ əŬů Ǘəɐ ŭŮ ɓŮəǗə ɜɞgɜ Ǘɖɜ ´ ɞɧǗɖǗǗ ɕɤ ɐǵ Ǘɞgǵ ɏɜŬ ɏǗɞǵ ɛ ǗǗƳ Ǘɖɜ Ůɛǘɨ ǗǗgůɖ Ǘɞg stent Ůɞ ŬɜǗɞɏůŮəɛ Ů ŬgǗɞɨ ǵ ´ ɞg ŮəŬǗǗəŮɩ ɞgɜ Ǘɞ əƳ´ ɜɛɛ Ŭ ɛ ǗǗƳ Ǘɖ ŭɞŮɏɟ ɔŮŬ Ǘɖǵ Ŭɒɔ Ůɞ ´ əŬů Ǘəɐǵ, ɞəɞ´ ɞɞəŬɜŬǘɏɟ ɞgɜ əɞɧǗǗɟ Ŭ ´ Ůɟ ɕǗǗǗəƳ ůǗɖɗƳɔɕɖǵ ɛɏůŬ ůǗɞɜ Ů ɧɛŮɞ ɕɟ ɧɜɞ Ŭ´ ɧ Ǘɖɜ Ů ɏɛɓŬůɖ [74]. Ⱥ´ ɘ əɏɞɜ, ƳəəŮǵ ɛ ŮəɏǗǗǵ ɏɕɞgɜ ŭŮɞŮə ɧǗə ǗǗ ´ ɟ ɞɔɟ Ƴɛɛ ŬǗǗ ŭɞŬəɞ´ ɐǵ Ǘɞg əŬ´ ɜɛɛ ŬǗɞǵ ɛɏůɤ ůgɛɓɕgəŮgǗəɐǵ əŬəůgůǗƳůŮɤ ɜ ɔɞŬ Ǘɖɜ ŬəəŬɒɐ Ǘɞg Ǘɟ ɧ´ ɞg ɕɤ ɐǵ ɏɕɞgɜ ɛ ŮƳəɖ Ŭ´ ɞǗǗəŮɛ ŬǗəɧǗɖǗǗ ůŮ ůǗǗɩŬɜɞŬɞgǵ ŬůɗŮɞŮǵ ´ ɞg g´ ɞɓƳəəɜǗǗəůŮŬɒɔ Ůɞ ´ əŬůǗəɐ [75].

H Ůɟ Ǘɖɟ ɞŬəɐ g´ ɏɟ ǗǗůɖ ´ ɞg ŭŮɞ ɟ gɗɛɞŮǗǗə ůɤ ůǗƳ, Ŭ´ ɞǗǗəŮɑ ůɖɛ ŬɜǗəɧ ´ Ůɟ Ƴɔɞɜ ǗǗ ɜɞůɖɟ ɧǗɖǗǗǵ əŬə Ů ɞŮɞɤ ůɖǵ Ǘɖǵ əŬɟ ŭɞŬəɐǵ əŮǗɞgɟ ɔɞǵ ůŮ ůǗǗɩŬɜɞŬɞgǵ ŬůɗŮɞŮǵ [76-78]. ɆŮ ɛ ŮəɏǗɖ ɧ´ ɞg ŬɜɞəɞɔɐɗɖəŬɜ ŬůɗŮɞŮǵ ŮŬǗ ɛ Ů ɃɆɆ ɐ ůǗǗɗŮɟ ɐ ůǗǗɩŬɜɞŬɞŬ ɜɧůɞ ´ ɞg g´ ɞɓƳəəɜǗǗə ůŮ Ŭɒɔ Ůɞ ´ əŬů Ǘəɐ, ɖ g´ ɏɟ ǗǗůɖ ǘƳɜɖəŮ ɜŬ ůɞǗǗɞǗǗəɛ Ů ŭgůɛ Ůɐ ´ ŮɞǗǗǗǗ Ů ɞɑ ůɖ ɞɑ ǵ ɔɞŬ Ǘɞgǵ

ÜůdŮ₃ŮůgƒəÝŰŕ Ű́ŕ3 65 ŮŰl 3, Ű₨ggƒəǗ 3₨ůŰ½gƒəÜə ůŮ ÜůdŮ₃ŮůgƒεŮ ¥ε ű¸ÜbεÜ εŮ Ü₃Ýů´ ÜůqŰ₨g ST.ɹ 3Ű₨ƒ¥Ű́ŕgƒ, ůŰ₨ggƒÜůdŮ₃ŮůgƒεŮůŰÜdŮ¸e ůŰůqdÝ>cGqəÜəšůŰ₨¸šəĥ Ü¸Ůů¸šÜəeGƒ g´ ¥¸ŰÜůqGƒ ɑ əɑ3ügɜɑGƒ c9Ü əÜ¸ü9Ü₃cŮ₨ÜəÝ ůgɛƀÝɛÜŰÜ Ůɛű Ü₃ɑůŰqəŮ ůgɔəŸ¸šŰ₨ÝɛšɑŸ¸ĥŰÜ¸ɑGƒ [79]. Á´ é əɑ¥ɑ3, ĥůɑɜ ÜűɑŸ¸Ý Ůů3 ůg3i´ Ü¸3qƒg´ ¥¸ŰÜůqGƒəÜə ü9Ü₃eŰů´ ¸ĥůűÜŰÜ üŮůɑɛ¥ɜÜ ůŮ ÜůdŮ₃Ůůgƒ´ ɑg g´ ɑƀÝəəɑɜŰÜə ůŮ Ü₃cŮ₨ɑ´ əÜůŰ₨ɑe əÜŰÜüŮ₨ɑ3i ɑg3 ĥŰə ɑə ÜůdŮ₃ŮůgƒεŮ Æcp Ůɛű Ü₃ɑɑGg3 gɣqəĥŰÜ¸q əÜ¸ü9Ü₃cŮ₨ÜəÝ dɜqŰĥŰůqŰÜ Ü´ĥ ĥŰə ɑə ÜůdŮ₃ŮůgƒεŮɹJ əÜə Ü´ ɑgůdÜ Æcp e ₨ůŰ½¸šəĥ ɹJ εĥɜɑ, Ü₃ÜüŮ₨ɑ3i ɑ3ŰÜgƒ Ůů¸ůqɛÜůdÜ Ű₨g Æcp ɤgƒ´ Ü¸Ý>cɜ3ŰÜ əɜüi 3ɑg ůŰ₨ggƒůŰÜű3ü9Ügɑggƒ ÜůdŮ₃ŮůgƒÜ [80].

¢ ügůəé ₨ÜŮ₨qdÜ Ü´ ɑŰÜ₨ŮůÜ₃Ů₃Ý¸Ůq[Ű₨ ´ Ü¸Ý>cɜ3ŰÜ əɜüi 3ɑg c9Ü Ůq3 Ů₃¥ə₨qd Ůq[gƒ ÜdqŰ¸ɑůəə₨¸g3ůqGƒ əÜə Ůq3 ŮɛűÝ33₨id əÜ¸ü9Ü₃cŮ₨ÜəÜı 3 ůgɛƀÜɛÝŰŕ3 [81-84]. qůűɑɛ¥ɜÜ Ü´ĥ Ůq[ɛŮə¥ŰqI Framingham əÜŰ½ůŮ₨ÜŮ₃ ĥŰə ůÜ ÜůdŮ₃ŮůgƒÝɑg g´ Ůƀəəɑdqůü3 ůÜ Ü₃cŮ₨ɑ´ əÜůŰ₨ɑe, ɑ əɑ3ügɜɑGƒ c9Ü əÜ¸ü9Ü₃cŮ₨ÜəÝ ůgɛƀÝɛÜŰÜ ɛÜŰ3 ɛ₨¸ĥŰÜ¸ɑGƒ əÜŰÝ Ůq[üŮəÜŮŰqÜ´ Ü¸Üəɑəi dqůqGƒ, cŮƀɑ3ĥgƒ´ ɑg Ü´ ɑüĥdqəŮ ůŰq[3 Ů₃ŰÜŰ₨ɑe ƀŮəŰ½ůŰ₨´ ɑɑqůq Ůq[gƒ ügůəé ₨ÜŮ₨qdÜgƒ əÜə Ůq[gƒ Ü¸ůÜ¸šÜəeGƒ´ důůqGƒ [85]. Á´ é əɑ¥ɑ3, ɑ ů´ ɑgüÜɑGƒ ¸ĥəɑGƒ Ůq[gƒ ügůəé ₨ÜŮ₨qdÜgƒ ü9Ü´ ₨ůŰ dqəŮ əə Ü´ĥ Ű₨gƒ ´ ÜdɑəɑcɜəÝgƒ Ű₨¥gƒəé ₨ÜɑŕɜůŮÜůdŮ₃ŮůgƒεŮůŰÜű3ŮdÜ3ĥůɑ ´ ɑg g´ ɑƀÝəəɑɜŰÜəůŮ Ü₃cŮ₨ɑ´ əÜůŰ₨ɑe əÜdı gƒůɑŰÜɑɜŰÜəεŮŰÜ¸ ügůəŮ₨ɑg¸cəĥŰÜ¸ŰÜ Ű́ŕ3 Ü₃cŮ₨ɑŕ3 ĥ´ ÝgƒÜgÜ¸e Ůə₨Ű½¸ÝŰÜəεŮŰÜ¸ɛÝdɑüɑ Ű¸ƒgƒŮ₃üɑdqəɜ-Ů₃Ü¸Ű ɛŮ₃dqƒÜ₃cŮ₨ɑü9ÜŮ₨əeGƒ [86].

ȳ ůɑ3 ű¸ŸÝ ůŰ₨ Æcp ŰÜ ÜŮÜɑɛ¥ɜÜ Ůɑ3Ü9´ ɑəəÝ əÜ9ɑ9´ Ü¸₨ůĥŰÜ¸ÜƒgƒɛŮəÝŰÜƒ ůgɛű¥ɜɑi3 ůŰq[ügůɛŮ₃e Ů ɑü¸ÜůqI´ ɑg ¥ɑŮ9ůŰq3 ´ ¸ĥc3¥ůqI Ű́ŕ3 ÜůdŮ₃ı 3 ɛŮ ůŰÜűÜ₃9ÜŮ3ĥůɑ əÜdı gƒɑ Æcp Ü´ ɑŰŮ₨ɑŮ₃₨ɑüi 3Ü¸ɑ ůŰÜűÜ₃9ÜŮ3ĥůɑgƒ [87-91]. Ƀə ÜůdŮ₃ŮůgƒεÜ´ ¸¥Ű₨Ů¸ű3₨ĥɛŮ₃ɑ Æcp ÜəəÝ əÜə9ŮəÜ₃ɑɛɛŮc3¥ůŰĥ ₨ůŰ½¸šəĥ Æcp´ ɑg g´ Ůƀəəɑdqůü3 ůŮ Ü₃cŮ₨ɑ´ əÜůŰ₨ɑe əĥc¥ STÁz Ł Ů¸ű3ɑGg3 Ügɜdɛ¥ɜɑ əɑügɜɑ c9Ü 3¥Ü əÜ¸ü9Ü₃cŮ₨ÜəÝ ůgɛƀÝɛÜŰÜ əÜŰÝ Ůq3 Ű¸ŸŮű´ Ü¸Üəɑəi dqůe Ű₨ggƒ [92]. ɹ əĥɛd, ɑ ¥əŮƀɑGƒ Ůq[gƒ cəgəɑɛgəæɛ¥ɜdgƒ Ü₃₨ɑůűÜ9ɑdgƒ ɛŮŰÝ Ü´ĥ Ü₃cŮ₨ɑ´ əÜůŰ₨ɑe Ů₃Ü9 ₨ü9Ü₃dŰ¸Ü ůqɛű¥ɜɑi ůqGƒ ɛŮ ůŰÜűÜ₃9ÜŮ3ĥůɑ əÜdı gƒɑ Æcp Ü´ ɑŰŮ₨ɑŮ₃₨ɑüi 3Ü¸ɑ ůŰÜűÜ₃9ÜŮ3ĥůɑgƒ [93]. Á´ é əɑ¥ɑ3, dqůg3i´ Ü¸3qƒŰ₨g Æcp ůŰ₨gƒcg3Ü₃ɑŮgƒ Ů₃ÜüŮ₨ɑ3i Ůə Ügɜdɛ¥ɜɑ əÜ¸ü9Ü₃cŮ₨Üəĥəɑügɜɑ ɛŮŰÝ Ůq3 Ü₃cŮ₨ɑ´ əÜůŰ₨ɑe ůgɔəŸ¸šŰ₨ÝɛŮ Ű₨gƒ ɛd-ü9ÜƀdŰ₨ɑ¥gƒ cg3Ü₃ɑŮgƒ əÜə Ű₨ggƒ ü9ÜƀdŰ₨ɑi ɑgƒ Ý3ü¸Ůgƒ ůŰ₨ggƒɑ´ ɑɑggƒ´ Ü¸ɑgůə¥ɛŮŰÜə Ůɑůŕ ůqŰ₨g´ Ü¸Ü´ Ý3ŕ əɜüi 3ɑg [94]. ¢¥əɑGƒ, dq´ Ü¸ɑgůdÜ´ ¸¥ŕŰ₨Ů¸ű3₨ĥɛŮ₃ɑg

ũəŬɒɐŰɖ ůŮůŰŰíŰɜəŬœggſŰůɗŮɜŮŭſ´ ɑg g´ ɑɒŸəəɑɜŰŰəůŮŰɔɔŮəŝ´ əŰůŰəɒɐ ůɑŮŰœŮŰŰə ɛŮŰgɜɗɛɣɜɑ əɑɜũgɜɑ ɔəŬ əŰɻ ũəŬɒɔŮəŬəŸ ůgɛɒŸɛŰŰŰ Űɦůɑ ɒɻ Űɑgˊ ɻɦɗŮůɛŰ ɦůɑ əŰə ɛŰəɻɑˊ ɻɦɗŮůɛŰ ůŰɜɜ ɣɜŰ ɑɻɦɜɑ əŰŰŰůŮəɜiɑɜŰŰſ Ű̃ɖ ůˊ ɑgũŰɦŰɖŰŰ Ű̃ɖſ Ŭɜəəɦɔɖůɖſ Ű̃ɖſ iˊ Ŭɻɜɖſ ůŰəɑŰɻı ũɑggſ ũəŬɒɐŰɖ ůŰəggſ ŰůɗŮɜŮŭſ ´ ɑg g´ ɑɒŸəəɑɜŰŰəůŮŰɔɔŮəŝ´ əŰůŰəɒɐ [95].

ɆŰ ũŮůɑɛɣɜŰ ɔəŬ Ű̃ɖɜ ´ ŰɑggůŰɻəɖŰ ŮɜŰəŰɛűəŝůɒɛŮɜŰ. ŸŰɻɦəŰ ŰgŰŸ, ɑə ´ Ůɻəůɦ̃ŰŮɻ Ůſůgɛűʏɜɑiɜ ůŰɖɜ i´ Ŭɻɜɖ Űəɑgˊ Ŭɻ Űũɦɜɑg Ű̃ɖſ´ ŰɑgůŰɻəɖŰſ» ɦ´ ɑg ŰəɑŰgɜɗɛɣɜɑ ůʏɛŰŰəɦ ɒŸɻɑgſűŰɑŮŰŰəɦŰəŰůəůˊ ɻɑůŰŰŰŮŰəɒɣgſŮ ŝŭɻ ŸůŮəſ´ Ŭɻ Ÿ Ű̃ɖ ɔŮɜəɒɐ ũəŬˊ œůŰʏůɖ ɦŰəɖ´ ŰɑgůŰɻəɖŰ əŮɜŰɻəɑiɜ Ű´ ɑg Ůɜŭəgˊ Ůɻ ɗgɜɖ ɔəŬ Ű̃ɖɜ ´ ɻɦəəɖůɖ əŰɻũəŬɒɔŮəŬəı ɜ ůgɛɒŰɛŸŰʏɜ ɛŰəɻɑˊ ɻɦɗŮůɛŰ [5]. Ÿɻ Ÿɔɛ ŰŰə ɑŰɛɖəɦ ůʏɛŰŰəɦ ɒŸɻɑgſ ůŮ ŰůɗŮɜŮŭſ ´ ɑg g´ ɑɒŸəəɑɜŰŰə ůŮ ŬɒɔŮəŝ´ əŰůŰəɒɐ űŸɜɖəŮ ɜŰ ůɑŮŰœŮŰŰə ɛŮ Ůgɜɖɛɣɜɑ əɑɜũgɜɑ ɔəŬ Ů ŰɜŰəŰɛɒŰɜɦɛŮɜŮſ ɜɑůɖəůŮſ əŰɗı gſ Ů œůɖſ əŰəɛŮ Ůgɜɖɛɣɜɑ Ŭɜɑɑɻɻ Ŭɒɜəɦ əɑɜũgɜɑ Ű̃ɦůɑ əŰŰŸ Ű̃ɖ ũəŬɜɣɻ ɔŮəŬ Ű̃ɖſ ŬɒɔŮəŝ´ əŰůŰəɒɐſ ɦůɑ əŰəɛŰəɻɑˊ ɻɦɗŮůɛŰ [96]. ŸŰɻɦɛɑəŬ, ůŮ ŰůɗŮɜŮŭſ ɛŮ ɑɜi ɣɛűɻ ŰɒɛŰ Ű̃ɑg ɛgɑəŰɻ ũœɑg ´ ɑg g´ ŮɒəɐɗɖůŰɜ ůŮ ´ ɻʏŰɑɔŮɜɐ ŬɒɔŮəŝ´ əŰůŰəɒɐ ũəŬˊ œůŰı ɗɖəŮ ɦŰəɑ ´ŰɑiůŰɻəɑə ŰŮɗŮɜŮŭſ ´ Ůɻ ɑgůɖŰůŰɜ ŮɜŰɑɜɦŰɻɖ ŰɜŰŭəŬɛɦɻűʏůɖ Ű̃ɑg ɛgɑəŰɻ ũœɑg ůgɔəɻəŸɛŰŰəŸ ɛŮ Ű̃ɑggſ ŰůɗŮɜŮŭſ ɛŮ űgůɛɑəɑɔəɦ ɒŸɻɑgſ əŰə ´ Ůɻ ɦɛɑəŬ ɣəŰŰůɖ Ű̃ɑg Ůɛűɻ Ÿɔɛ ŰŰűſ Ű´ ɦ Ű̃ɖɜ əŮŰɑgɻɔəɦŰɖŰŰ Ű̃ɖſ Ůɻ ɛŮŰəɑiŰŰſ [97].

ɇ ũəŬŰɻɑűʏɐ əŰə ɛŰəŬŰɖŰɻ Ů ɖ ɛŰůɑɔŮŰəŰɐ ũəŬŰɻɑűʏɐ ɒŮəŰŰə ɜŮə ůɖɛŰɜŰŰəŸ Ű̃ɖɜ ´ɻɦɔɜʏůɖ Ű̃ɑg əŰɻ ũəŬɒɔŮəŰəɑiˊ əɑɜũiˊɜɑg [5, 98-100]. ƶ ŰŰŰ-ŮɜŸəgůɖ ɣũŮəŬŮ ɦŰəɖ əŰŰŰɜŸəʏůɖ ʏˊ-3 əé Ůɻı ɜ ɑɜɣʏɜ ɛŰŰŸ Ű´ ɦ ŬɔɔŮəŝ´ əŰůŰəɒɐ ůɑŮŰœŮŰŰəɛŰ ɛŮəʏůɖ Ű̃ɖſ Ů ŰɜŰůŰɣɜʏůɖſ ɛŮũɑůɑŮɜŰɻŰí ɛŮɜɑ Ű̃ɻɦ´ ɑ [101]. Á´ é əɣɑɜ, ɖ gɑɑɗɣŰɖůɖ Ůɜɦſ gɔɑɑiˊgſŰɻɦ´ ɑg ɛʏəgſ ɛŰɣɛűŰůɖ ůŰɖ ɛŮəʏůɖ ɒŸɻɑggſ, Ű̃ɖɻɻiɗɛəůɖ Ű̃ɖſ ŭɻ ŰɻəŰɖ ŰɻɻəŰɖſ ´ ɗŰůɖſ, Ű̃ɖɜ Ůi ɜɖůɖ Ű̃ɖſ űgůəɑəgſ ŭɻ ŰůŰɖɻɻɦŰɖŰŰſ əŰəŰɖ ɛŮəʏůɖ Ű̃ɖſ ´ɻɦůəɖɣɖſ əɗ ɑggſ ɛŰŰɖ ŭəŬŰɻɑűʏɐ ɑũɖɔŮəůŰɛŮəʏɛɣɜŰ´ ɑůɑůŰʏ ŮəɜɣɑgŰ ŰɜŰɔɔŮəʏůɖſ ɛŰŰʏ Ű̃ɖɜ Ůɻ ɑɜəgɻ ɔəɑŰɻ Ű̃ɖɜ ŰɜŰɔɔŮəŝ´ əŰůŰəɒɐ [102].

ɆŰ ɑűɣəɖ Ű̃ɖſ Ÿůəɖůɖſ ŮɜŰəŰŭəŬɛűəůɒɐŰɖŰŰ ɔəŬ Ű̃ɑggſ ůŰŰűŰɜəŬœggſ ŰůɗŮɜŮŭſ [103-105]. ƀəŰůɗŮɜŮŭſ ɛŰƐ? ´ ɑg g´ ŮɒəɐɗɖůŰɜ ůŰɔɔŮəŝ´ əŰůŰəɒɐ əŰə ŸəəŰɜŰɜ Ű̃ɑſ gɔəŮəɑũəŬəŰɖŰɖŰəɣſ Ű̃ɑggſ ůgɜɐɗŮŮſ ɔəŬ Ű̃ɑgəŸɑəůŰɜ ɣɜəɛɐɜŮſ ɛŰŰŸ, ɒŮəŰŰʏůŰɜ ůɖɛŰɜŰŰəŸ Ű̃ɖɜ ´ ɑəɦŰɖŰŰ ɛʏəgŰ̃ɑg [106]. ɻ ůɗŮɜŮŭſ ɛŰůŰŰűŰɜəŬŰ ɜɦůɑ ´ ɑg Ŭəɑəɑi ɗɖůŰɜ ´ ɻɦɔɻ ŰɛɛŰ Ÿůəɖůɖſ ɔəŬ Ű̃ɻŮŭſ ɣʏɑſ ´ ɣɜŰŰ ɖɛɣɻŮŭſ/ Ůɒũɑɛ ŸũŰ

´ Ü¡ɑgůdÜůÜɜ ɑÜɛɖəɦŰŰ¡Ü ´ ɑůɑůŰŸ ɜɣʏɜ ůgɛɓÜɛʏŰʏɜ əÜɗɩ ɠ əəÜɜʏɔəɖɠ ɔɘÜ ůə ɜɣɑg Ů ÜɜÜɘɛʏŰʏ ůɖ ɛŮŰŸ Ű¡ɜ Übɔůɘ´ əÜůŰɘɒɐ Ű¦ůɑ ʏɛŮůÜ ɛŮŰŸ Ű¡ɜ Ű ɑɗɣŰ¡ůɖ Ű ɑg stent ɦůɑ əÜəůŰɜ ɣɜÜɛɐɜÜ´ Ü¡Üəɑəɑɨɗɖůɖɠ[107]. ¢ɣəɑɠ, ɖ gɣɖəɐɠɠɣɜŰŰůɖɠ ʏůəɖůɖ ɛŮ ŭɘÜəɑ´ Ű¦ɛŮɜɖ ɔɘÜ ɣɜəɛɐɜŮ¡ɠ, ůgůɑŮŰɩŰ¡əŮ ɛŮ ůɖɛÜɜŰɘɒɐ ɛŮɒrůɖ Ű¡ɠ Üɜʏɔəɖɠ ɔɘÜ ůə ɜɣɑg Ů ÜɜÜɘɛʏŰʏɜ ůɖ ɛÜə¡ɑ´ ¡ɦɗŮůɛÜ əÜɗɩ ɠ Ů ɑůɖɠ əÜəɛŮɛŮɒrůɖ Ű¡ɠ ű əŮɒɓɛɑɜɐɠÜəəʏ əÜəɓŮəůŰɒrůɖ Ű¡ɠ ŮɜŭɑɗɖəɘÜəɐɠəŮəɘɑg¡ɔɖŮɠ[108].

¢ Ů ɑŭ¡ŮůɖŰɘg ű¡ əɑg ůŰɸ Ů ÜɜÜɜɑůɖəŮůɸɛŮŰŸ Ü´ ɦ Übɔůɘ´ əÜůŰɘɒɐ ŮɜÜə ÜɛűɘŮɒɦɛŮɜɖ [90]. ƁəɔgɜÜɘůɸ Ůɛűɜɑɑgɜ ŭgůɛŮɜɣůŰ¡ɖ ´ ¡ɦɔɜʏůɖ ůgɔə¡ɘŰɘʏ ɛŮŰɘggʏʏɜŭ¡ Ůɸ ɛŮŰŸ Ü´ ɦ Übɔůɘ´ əÜůŰɘɒɐ əɦɔʏ STEMI Üəəʏ əÜəNSTEMI əg¡ɑrɠ əɦɔʏ Ügɜɖɛɣɜɑg Üɘɑɛ¡¡Übɘɒɑɨ əɘɜŭɨɜɑg [109]. Ɓɛɑɑrɠ, Ű ɔgɜÜɘůɒ ű¡əɑ ůɑŮŰɑŮŰə ɛŮ gɣɖəɦŰŰ¡ɑ əɑŭgɜɑ əÜ¡ŭɘÜbɔůɘÜəı ɜ ůgɛɓÜɛʏŰʏɜ əÜɗɩ ɠ əÜə Üɘɑɛ¡¡Übɘɒı ɜ Ů ůɘůɑɛŭɑrɜ ɛŮŰŸ Ű¦ɜ Übɔůɘ´ əÜůŰɘɒɐ ůgɔə¡ɘŰɘʏ ɛŮ Ű ÜɜŭÜ¡ɒɦ ű¡əɑ, Ů¡ɖɛÜ´ ɑg ůgɜÜɜŰʏŰŰə əg¡ɑrɠ ůŮʏŰɘɛÜ ɛɣůɖɠ ÜəəʏəÜə ɛůɔÜəɨŰŰ¡ɖɠ ɖəɒɑŮɠ[110].

¢ ɖəɒɑŮÜ ɑŰŰəůɒɛɖ Ű¡ɑ´ ɑɛůɘɑɛ´ Ü¡ʏɔɑɜŰŰəɒŭɨɜɑg [84]. ò ŰɘɛÜʏɜɣ Ű rɜ 90 ŮŰɩ ɜ ´ ɑg g´ ɑɓʏəəɑɜŰŰəůŮ Übɔůɘ´ əÜůŰɘɒɐ Ű rɜ ůŰŰíÜɜɘÜɔrɜ Übɔůɔrɜ, ɑ əɑŭgɜɑgɠ Ůɦůɑ əÜ¡ŭɘÜbɔůɘÜəı ɜ ůgɛɓÜɛʏŰʏɜ ɦůɑ əÜəɗɜɖŮɦŰɖŰŰɠ ůɜÜəÜgɜɖɛɣɜɑgɠ ɔůɔɑɜɦɠ ´ ɑg Ü´ ɑŭɑůŮŰŰəůŰɸ ůgɜɑůɖ¡ɦŰɖŰŰɠ [111]. ƑŮ ɛɘ¡ɦŰ¡ůɠ ɖəɒɑŮůɠ əÜəɘŭɘÜŰŰ¡Ü ůŮ ÜůŰɗůɜůɠ ɛŮ STAZ Ł, ɖəɒɑŮÜɠ <45 ŮŰɩ ɜ əÜŰŰɔ¡ʏűɖəÜɜ ɘÜɜɑ´ ɑɘɖŰɘʏ ´ ɑůɑůŰŸ Ů ɸɔrůɖɠ ɛŮŰŸ Ű¦ɜ ´ ¡ɣŰɑɔůɘɐ (> 99%/ ɣŰɑg) ɑɣ¡ɖɠ ůɖɛÜɜŰɘɒɣɠ ŭɘŰɑ¡ɣɠ ÜɜʏɛůŮÜ ůŰŰ ŭɨɑ əÜ Űɦůɑ ɓ¡Ügɑ´ ¡ɦɗŮůɛÜ ɦůɑ əÜəɛÜə¡ɑ´ ¡ɦɗŮůɛÜ [112]. Á´ ɘ əɣɑɜ, Üůɗůɜůɠ < 50 ŮŰɩ ɜ ɛŮ ´ ¡ɩ ɘɖ ůŰŰíÜɜɘŭÜ ɜɦůɑ ´ ɑg ɣɑɑgɜ Üɜʏɔəɖ Ů ÜɜÜɔɔůɔrůɖɠ, Ůɛűɜɑɑgɜ ɣɜŰɘɜɑ ´ ¡ɑűɑ-əÜ¡ŭɘÜbɔůɘÜəı ɜ ´ Ü¡ÜɓɦɜŰɸɜ əɘɜŭɨɜɑg ɛŮ Ű ɔgɜÜɘůɒ ű¡əɑ ɜÜ Ü´ ɑŰŰəůŰɒ ůɖɛÜɜŰɘɒɐ ɛŮ¡ɑűÜ Ű ɑg ´ əɖɗgůɛɑɨ [113]. Á´ ɑůɖɠ, Ű ɗŮŰɘɦ ɘůŰ¡ɘɦ ůŰŰíÜɜɘŭÜɠ ɜɦůɑg Ü´ ɑŰŰəůŰ ÜɜÜɜʏ¡ŰŰɘ ´ Ü¡ʏɔɑɜŰŰ Ügɜɖɛɣɜrɜ əÜ¡ŭɘÜbɔůɘÜəı ɜ ůgɛɓÜɛʏŰʏɜ ůŰ ɣɜÜ ɣŰɑgɗ ɛŮŰŸ Ű¦ɜ Übɔůɘ´ əÜůŰɘɒɐ [114].

¢ɣəɑɠ, Űɦůɑ Ű ʏɔɑɑgɗ ɦůɑ əÜəɖ əÜŰŸɗəɘɣɖ ɣɑɑgɜ ůgůɑŮŰɘůɗÜůŰɦůɑ ɛŮŰɖɜ ŰŰɑŮůÜ ´ ¡ɦɑŭɑ Ű¦ɠ Üɗɖ¡ɑůəəɘ¡gɜůɖɠ ɦůɑ əÜə ɛŮ Ű¦ɜ Ů¦ɛűʏɜɘůɖ ƁƑƑ ůŮ ůŰŰíÜɜɘŭÜɑggɗ Üůɗůɜůɠ[115-117]. ɀ ʏəɘůŰŰ, ɣɑÜəűÜɜÜůɦÜəŰɘ ʏɔɑɑgɗ əÜəɖ əÜŰŸɗəɘɣɖ ÜɘɜÜə Ügɜɖɛɣɜ Ü ɛɘŭ ɛɣ¡Ü ´ ¡ɘɜ əÜə ɛŮŰŸ Ű¦ɜ Übɔůɘ´ əÜůŰɘɒɐ ɑɣ¡ɖɠ ɦɛʏɗ ɜÜ ɛŮə ɜɑɜŰŰəůɖɛÜɜŰɘɒɐ ɛŮŰŮ Ů¦ɛƀÜŰɘʏ. Á´ ɘ ¡ɑůɗɣŰʏɗ, ɖ ´ Ü¡ɑgůdÜ əÜŰŸɗəɘɣɖɠ əÜə

Ŭgɜdɛɏɜɞg Ƴɔɞɞgɠ ůɞŬŰŰɓŬŰŰɘ ɛŮ Űɖɜ ɘŬɉ ŭɕŬɓɔŬɓŬɘɐ ɗɜɖŰɧŰɖŰŰ ɘŬŰƳ Űɖ ŭŮɓŬŮŰɐ ´ Ŭɉ Ŭɘɞɘɞɨ ɗɖůɖ ɛŮŰƳ Űɖɜ Ŭɓɔŭɓ´ ɘŬůŰɓɐ [118].

ŪŬɉ Ŭ´ ŮŬŬ ɃȺɀ

ȼ ŬɜŰɓŮŰ ´ ɕůɖ ɛɕŬɠ ɞɜŮŬɠ Ůɛŭɉ ŬɓɛŬŰɓɐɠ ´ ɉ ɞůɓɞɘɐɠ, ´ Ůɉ ɕŬɛɓƳɜŮɘ Űɖ ɞɞɉ ɐɔɖůɖ ɞɜgɔɧɜɞg, ŭɕ ɘɐɠ ŬɜŰɕŬɓɞ´ ŮŰŰɘɕŬɘɐɠ Ŭɓɤɔɐɠ ɘŬɘ ɖ´ Ŭɉ ɓɖɠ ɞŬɛɖɘɞɨ ɛɞɉ ɕŬɘɞɨ ɓƳɉ ɞgɠ, ɞ´ ɓŮɓɐ Ů ɑ ɛɖ ɨŭŮɖɠ ´ ɧɜɞg ɘŬɘ ɜɕŰɉ ɩ ŭɖ. ȼ ɞɞɉ ɐɔɖůɖ ɞɜgɔɧɜɞg ŮɓŬɘ Ŭ´ Ŭɉ ŬŰɖŰɖ ůŮ ɧɘɞgɠ Űɓgɠ ŬůɗŮɓŮɠ ɛŮ ɞɜɨ ɏɛŭɉ ŬɓɛŬ Űɓg ɛgɞɘŬɉ ŭɓg ɘŬɘɕɑɤ ɠ ůŮɧůɞgɠ ɏɞɞgɜ ɞŬɛɖɘɧ ɘɞɉ Űŭɛɧ ɞɜgɔɧɜɞg (SaO_2<92%). ȼ ŬɜŰɕŬɓɞ´ ŮŰŰɘɕŬɘɐ Ŭɓɤɔɐ ´ Ůɉ ɕŬɛɓƳɜŮɘ Űɖ ůgɔɞɞɉ ɐɔɖůɖŬů´ ɘɓɖɠ ɘŬɘ ɘɘɞ´ ɕŬɞɔɉ ɏɘɖɠ/ŰɓŬɓɉ Ůɘɧɉ ɖɠ/´ ɉ Ŭůɞgɔɉ ɏɘɖɠ. ȼ ɞɞɉ ɐɔɖůɖ Ŭů´ ɘɓɖɠ ɛŮɘ ɜŮɘ Űɖ ɗɜɖŰɧŰɖŰŰ ɘŬŰƳ 23% ɘŬɘ ɛƳɘɕŰŰ Ŭɜ ůgɜŭgŬůŰɑ ɛŮ ɖɉ ɞɛɓɧɘgůɖ ɛŮ t-PA, ɖ ɗɜɖŰɧŰɖŰŰ ɛŮɘ ɜŮŰŰɘ ɘŬŰƳ 42%. ŭɕŬ ɜŬ Ů ɕŰŮgɞɗŮɑŰŰɞɨ ŰŮɉ Ŭ ɖ ŬɜŰɕŬɓɞ´ ŮŰŰɘɕŬɘɐ ŭɉ Ƴůɖ Űɖɠ Ŭů´ ɘɓɖɠ, ɞɞɉ ɖɔɞɨ ɛŮ ƳɛŮɑŬ ůŰŰ ŮɓɤŰŮɉ ɕƳ ɕŬŰɉ ŮɓŬ 325 mg Ŭů´ ɘɓɖ ɛŬůɩ ɛŮɓɖ ɘŬɘ300mg ɘɘɞ´ ɕŬɞɔɉ ɏɘɖɠ ɐ 180 mg ŰɓŬɓɉ Ůɘɧɉ ɖɠ. ȼ ɖ´ Ŭɉ ɓɖ ɞŬɛɖɘɞɨ ɛɞɉ ɕŬɘɞɨ ɓƳɉ ɞgɠ ɞɞɉ ɖɔŮŰŰŬɘ g´ ɞŭɧɉ ɕŬ ´ ɞg ŰŬɓŮŰŰɘ Űɓgɘ Ƴɞɕ Űɓɜ ɜŬ ɛŮɘ ɜŮɘ Űɓɠ Ů ɘ ɘɞɘɏɠ Űɖɠ Ůɓŭɞŭɘɏɓɕ ŬɠɖŬ´ Ŭɉ ɓɖɠ. Ⱥ´ ɑůɖɠ, ɞɞɉ ɖɔŮŰŰɘ ɛɞɉ ŭɓɖ 10-15 mg ɐ ´ Ůɖɕɓɖɠ ůŰɖɜ ´ Ůɉ ɑ Űɤ ůɖ ɘŬŰ ŰŮɉ ɞg ɀɀ Ůɓŭɞŭɘ Ůɓɑɤ ɠ, ɔɕŬ Űɖɜ ŬɜŰɓŮŰ ´ ɕůɖ Űɓg Ůɛŭɉ ŬɓɛŬŰɓɞɨ ´ ɧɜɞg ůŰŰ ŮɓɤŰŮɉ ɕƳ ɕŬŰɉ ŮɓŬ. ȼɏɘɞɠ, ŰŰ ɜɕŰɉ ɩ ŭɖ ɛŮɘ ɜɞgɜ Űɓɠ Ŭ´ ŬɕŰɐůŮɓɠ Űɓg ɛgɞɘŬɉ ŭɓg ůŮ ɞɜgɔɧɜɞ ɘŬŰƳ Űɖɜ ɞɜŮɓŬ ŭƳůɖ Űɓg Ůɛŭɉ ƳɔɛŬŰɓgɠ, ɛɏůɤ Űɖɠ ŮɘƳŰŰɤ ůɖɠ Űɓg ´ ɉ ɞŭɞɉ Űɓg ɘŬɘɛŮŰŰŭɞɉ Űɓg.

Ⱥ´ ŬɜŬɛƳŰɤ ůɖ

ɉ ´ ɞɘŬŰƳůŰŰůɖŰɖɠ ůŰŮŰŬɜɕŬɓŬɠɉ ɞɐɠ ɘŬɕŮ ŬɜŬɛƳŰɤ ůɖŰɓg ɛgɞɘŬɉ ŭɕŬɘɞɨ ɕůŰɓɨ.

ŭɕŬ Űɓgɠ ŬůɗŮɓŮɓɛŮŰɖɜɘɘɓɐɐ ŮɓɧɜŬŰɓg ɃȺɀ ŮɓŰɧɠ12 ɤɉ ɩ ɜŬ´ ɧŰɖɜ ɏɜŬɉ ɜɖ Űɤ ɜ ůgɛ´ Űɤ ɛƳŰɤ ɜɘŬɓŮ Ů ɓɞɜɖŬɜƳů´ Ŭůɖ Űɓg STɐɜɏɞɐ g´ ɞŰɓɏɛŮɓɞɜɏɞLBBB, ´ ɉ ɤ ŰɓɔŮɓɐɠ Ŭɓɔŭɓ´ ɘŬůŰɓɐ (PCI) ɐ ŭŬɉ ɛŬɘɞɘɞɔɓɐŮ ŬɜŬɛƳŰɤ ůɖ´ ɉ ɏ´ Ůɘ ɜŬ ŮɘŰŰɘŬŰŰŰɕɧůɞ Űɓ ŭgɜŬŰɧɜ ɜɤ ɉ ɑŰŰɉ Ŭ. Ɉ´ Ƴɉ ɞŮɘ ɔŮɓɓɐ ůgɛŭɤ ɜɑŰɧŰɘ ɖ ɗŮɉ Ŭ´ ŮɑŬŮ ŬɜŬɛƳŰɤ ůɖɠ´ ɉ ɏ´ Ůɘ ɜŬŮɓŮŰƳɞŮŰŰɘ, Űŭɧůɞɜ g´ Ƴɉ ɞɞgɜ ɘɘɓɓɏgɐ/ɘŬɓɖɘŮɘŬɉ ɞɘŬɉ ŭɓɔɉ Űŭɓɏɠ ŮɓŭŮɓŮɓɓŰɖɠ Ůɓ ŮɓŮɘɓŮɓɕɞŬɓɑŬɠ,Ŭɘɧɛɖ ɘŬɘ Ŭɜ,ůɨ ɛŭɤ ɜŬ ɛŮŰɓɜ ŬůɗŮɓɐ, ŰŰ ůgɛ´ Ű ɛŬŰŰ

Ÿ¡ɕ֏ıÜ֏´Ů¡֏ů֏ůĤÚŮ¡ɕ Ü´ĥ 12ı ¡Ůƒ ´¡֏֏ (əÜdı ƒ qÜə¡֏ɕəgŮɛűŸ֏֏ıq Ú֏r֏ ůgɛ´ Ú֏rɛŸÚ֏r֏ÚŮ֏Üəůgɕ֏ŸÜůÜűÚŮƒ)ɐ ĥÚÜ֏g´ Ÿ¡ɕŮ֏ ĥ֏ɕgƒəÜ֏ŮəəÜɔ֏yƒůÚ֏ ⊄7ũ

Á´ ֏ɕɔɐ ůÚ¡ÜÚűɔ֏ɐgƒŮ Ü֏ÜɛŸÚ֏r ůqƒ

⊄ɕ Ɐ֏ı Ðɛűı¡ÜɔɛÜ Ú֏g ƶ gɕəÜı¡ÜɑɕgɛŮ¡֏ɑÜ֏ɐ ÜŸ֏ÚůÜ֏ɛÜÚ֏ƒ ST (STEMI) Ů֏ÜɔɛŸ֏Ü ůqɛÜ֏ÚŸ֏ɐ ÜŸ֏ÚÜ Úűqƒ ֏ɕůqı¡ĥÚűÚÜƒ əÜɔ Úűqƒ ɗ֏qů֏ɛĥÚűÚÜƒ ůŮ ´Üɔ֏ɑůɛɑrƒ. ⊄ Ů Ü֏ÜŸ֏ɛŸÚ֏r ůq Úűqƒ Ü´ɕűı¡Üɔɛy֏qƒ Ü¡Úűı¡ÚÜƒ Ü´ɕ¡ÚÜ֏ůı Ú֏֏ Üəı¡ɕɔr֏ŸÜɑ֏ ə֏ɑÚ֏ Úűqƒ ɗŮ¡Ü´ ÚůÜƒ Ú֏g STEMI ´¡ɕəÚ֏ɛy֏ɕg ֏Ü ü֏ÜůŸ֏ɗŮı Ú֏ ɛgɕə Ÿ¡ü֏ɛ əÜ֏֏Ü ƀÚ֏əÚ֏ɛr ɗŮıq əÜ¡ü֏Ü֏ɐ əÚ֏Ú֏ɛg¡ɔɗÜ. Ɐ֏ůÚ¡Ü¡ÚűÚɔ֏ɐyƒŮ Ü֏ÜŸ֏ɛŸÚ֏r ůqƒ ´Ů¡֏ɐÜɛƀŸ֏ɕg֏ ÚűqƒɔɛŸ֏r üĥə gůq, əÜə Úűqƒɔ ´¡ɛŸÚ֏ɔÚ֏ɐ Üƀɔ Ů֏ɛ´ əÜůÚ֏ɐ (PCI) ɐ Ú֏ ůg֏ügÜůɛĥ Ú֏r֏ üı֏ ɛŮɗĥüŸ֏ɔ. ⊄ ´¡ɛŸÚ֏ɔÚ֏ɐƒ PCI g´ Ů¡Ú¡Ůı Úűqƒ ֏ɛŸ֏r üɕə gÚ֏ɐƒ ɗŮ¡Ü´ ÚůÜƒ ĥÚÜ֏ ´¡Üɔɛ ÚÚ֏´ ɕ¡ůÚ֏ɐ Ÿɛ ÚůÜ (Ů֏Ú֏ƒ ü֏ɐ ¡ɕg) ůŮ ə֏ɔÚ¡Ü ɛŮ Ü֏ɐɕüg֏Ü֏ɛ֏ĥ Ů¡ɔÜůÚ֏¡֏ɐ.

ɹ.ɹ ɔɔŮ֏ɐ´ əÜůÚ֏ɐɐ ůÚ֏ Ɐ/Á/ƶ

⊄ ´¡ɛŸÚ֏ɔÚ֏ɐƒ PCI-ɕ¡ɕÚÚÜə ɛr ƒ q Ů Ůɔɕgů֏Ü-ɛy֏ůr üɕÜůÚ¡ɛɐɕı əÜdŮÚ֏¡Ü ´Ü¡yɛƀÜůq(Üɔɔ֏ŮɐɔÚ֏ɐ´ əÜůÚ֏ɐɐ ů֏ɐ Ü´ɕűı¡Üɕdy֏ɔ Üɔɔ֏Ůɐɔ)-Ü֏ɔÚ֏ɐŮÚı ´ ɕůq Ú֏r֏ STEMI, ɕɛ¡ɕƒ´¡ɕdɔɕı ɛŮ֏q dı¡ɕɛƀɕəgÚ֏ɐɐ dŮ¡Ü´ ŮdÜ. ⊄ ´¡ɛŸÚ֏ɔÚ֏ɐƒ Üɔɔ֏Ůɐ´ əÜůÚ֏ɐɐ Ů֏ɔÜə q ´¡ɕÚ֏ɐı ɛŮ֏q ůÚ¡ÜÚűɔ֏ɐ Ů Ü֏ÜŸ֏ɛŸÚ֏r ůqƒ ůŮ ÜůdŮ֏Ůůƒ ɛŮ Ɐ/Á/ƶ g´ ĥ Úűɔ ´¡ɕh´ ĥdŮůq ĥÚ֏ɛ´ ɕ¡Ů֏ɔÜ´¡Üɛ ÜŸ֏ÚÜ ɕ֏ŮdÚűÜə Ÿɛ ŮůÜ ůŮ¡ ɐɕüg֏Ü֏ɛ֏ĥ Ů¡ɔÜůÚ֏¡֏ɐ. Ɐ Üůd Ů֏ɐƒ ɛŮ Ɐ/Á/ƶ ´¡ɐ´ Ů֏ɔÜ ɛŮÚÜúy¡ÚÜə Ÿɛ ŮůÜ ɛyůr əɔqÚ֏ƒ ɛɕ֏ŸÜÜƒ Ú֏g Á/Ƒ¡ dɔůŮ֏ɕůɕəɛɛŮɑɐ ɛŮ¡ɔÜůÚ֏¡֏ɐ əÜdŮÚűq֏ůɛɕı ɔ֏Ü´¡ɛŸÚ֏ɔÚ֏ɐ PCI. Ƒə ÜgÚĥ ɔ֏ÜÚ֏ɐyɕɕg֏ əÜÚÜɔ¡ÜÚůÚ֏ɐGÜɛqə֏ĥÚ¡Ü´ ɕůɕůÜŸ ɗ֏qů֏ɛĥÚűÚÜƒ ɛŮÚÜ֏ɕı ÜůdŮ֏ı ´ ɕg g´ ɕƀəɛɗqə֏Ü֏ ůŮ ´¡ɛŸÚ֏ɔÚ֏ɐ PCI ůŮ əy֏Ú¡Ü ɛŮ ɛŮ֏Ÿəɕ ĥɔə֏ɕ Ů ů֏ɛƀŸůÚ֏r֏. ⊄ ´¡ɛŸÚ֏ɔÚ֏ɐƒ PCI Ů֏ÜůűÜə֏ɕɕ֏ɔÚÜƒ Úq ü֏ÜÚ¡qůq Úqƒ ƀÜÚĥÚűÚÜƒ Ú֏r֏ ůÚÜÚ¡Ü֏ɔÜ֏r֏ Ü¡Úűq֏ɔ ´ ə֏Ů֏ɔŮ֏ÚůÚ֏ y֏Ü֏Ú֏ Úűqƒ ɔɛŸ֏ůĥəgůqƒ əÜdı ƒ ɛŮ֏ ɔŮ֏ Ú֏ɔ Ü֏ɛɕ¡Üɔ֏ĥ əɕüg֏ɕ.

⊄ ɛŮ֏yÚűq Λɹ ƶ Ł, ɛŸə֏ůÚÜ, ůgɔə¡ɕɕ֏ɔÚÜƒ Úűƒügɕ ůÚ¡ÜÚűɔ֏ɐyƒŮ Ü֏ÜŸ֏ɛŸÚ֏r ůqƒ, yüŮ֏ÜŮg´ Ů¡ɕɕɐ Úűqƒ ´¡ɛŸÚ֏ɔÚ֏ɕı ƒ Üɔɔ֏Ůɐ´ əÜůÚ֏ɐɐƒ əÜdı ƒ q Ů֏üɕ֏ɕůɕəɛɛŮ֏Ü֏ɐ ɗ֏qÚĥÚűÚÜ ɐÚÜ֏ ůqɛÜ֏ɔÚ֏ɐ ɛŸ֏¡ĥÚ¡q (2,6% y֏Ü֏Ú֏ɐ6,5%). Á´ é əyɕ֏, ɕəŮůdŮ֏ůƒ gɣqə֏ı əɔüı ֏ɕg yüŮ֏ɐÜ֏ ֏Ü Ů ɛűŮ֏ɐı ֏ÚÜə´ Ů¡ɕůĥÚűÚɕ Ü´ĥ Úűɔ Üɔɔ֏Ůɐ´ əÜůÚ֏ɐɐ, ɐüɐÜdÚ¡Ü ĥÚÜ֏ ůgɔɕɐ¡qɔɐı ֏ÚÜ֏ əÜ֏ Ü֏ÜůÚ֏ɐyÜƒ Ú֏r֏ g´ ɕüɕɕɣr֏ IIb/IIIa ɛŮ Úq ɗ֏qÚĥÚűÚÜ ůÚq֏ ɛɛŸüÜ Úqƒ Üɔɔ֏Ůɐ´ əÜůÚ֏ɐɐƒ ֏Ü ÜɔɔɕŮ֏ɛĥə֏ƒ Ú֏ 2% y֏Ü֏Ú֏ Ú֏g

10,4% ůŰţ3 ɛɛŸŭŬ ŰţţŰ dţ ɛɛƀĥəgůdţŰ. ¢gɢŬʁ´ ɛəţɛɣ3ůŰ əəɛəɣŰţɛůɣŰŰ ´ ɛg ůg3ɣəţ ɛʁŬ3ŰţŰ3 ɣɔəŬɣţ´ţɤŰʁɔůɛɣ PCI ůŬ ůɛůʁəůŰɛɣ3Ŭ əɣ3ŰţŬɛŰŰţ3 ɛʁɤŭɛəgŰʁɛdůţŬ´ ŰţŬ, ɣŭůʁŬɛ3 ĥŰʁţ´ţɤŰʁɔůɛɛgPCIŰţŬəg´ůţŰůŰţţŰɛʁɤŭĥəgůdţŰ [119-122].

ȳŰŰ3 ŭůɛ ɛ´ɢţůɒ 3Ŭ ´ţŬɔɛŰŰʁ´ ɛəţdŰɒ ţ ´ţɤŰʁɔůɛɛgŰ PCI ůɛŰĥŰgŰŭɔɤţɢg ŬŰ ĥ Ű3 əəɛəɣɛ ŭɛŸɔ3ɤůţ, ţ ´ ɛʁŬɛĥŰŰţŰŰ ŰţţŰɛʁɤŭĥəgůdţŰ´ţɣ´ůɛ3Ŭ ŬɛɛəɔůŰŰůɛŭɛɣŰŰůţŬ ůŸ3 ɛ´ɢţůɒ 3Ŭ ŭɢdůɒ ´ţɢ-3ɢůəɢɛůɣŰəŸəŬɛɣůŬ ůŰŰ ´ţı ŰŰ120 əůŰŸŬ ĥ Ű3 ɣ3ŰţɛţŰɤ3 ůgɛ´ŰɤɛŸŰɤ3[123-125].¢ ɛʁɤŭĥəgůţ dŬ ´ţɣ´ůɛ 3Ŭ ůg3ɢŭůůŰŰɛ ŬĥůŰŰíŬɛɛɔţŬűŰdŬ ţɢgŰɒŬŰţ ɛ əŬɛ Ŭɔɔůɛʁ´əŬůŰɛɛ ŭɛŸůɤůţŰţ (rescuePCI) ĥ´ɢg ůɒŬəŬ ŰţŬŰdŰŰ[Ű [126].¢ Ŭɔɔůɛʁ´əŬůŰɛɛ ŭɛŸůɤůţŰţ ´ţŬɔɛŰŰʁ´ɛɛůdŰŰɛ ůg3ɛdɤɾg ůŬ ŬůdŰůɒůŰţ gɣ ţəɢi əɛɒŭi 3ɢg, ɛŬ ůɛɛɢ3ɛ ůgɛ´ŰɤɛŰŰɛəɔɔdŰţ ´ɢg ŭůɒ ŬɔŰŰ ɢəţɢɛɢ3ŰŰɛ ůŰţ dţ ɛɛƀĥəgůţ. ¢ɣəɢţ, ţ Ů ɛɛůɛəŰŰɛɛ Ŭɔɔůʁ´əŬůŰɛɛ ɔɢɛůŰŰɛ ůdŰŰ Ÿɛŭůŭ, ŭţţəŬŭɛ Ŭəţ ɛůɒ ɤţ ŰŰ ɛŰŰŸ Ű[ţ dţ ɛɛƀĥəgůţ Ŭ3ůɛŸţ Ű[ŰŰ Ű ɛg ŰŰůɛɣůɛŰŰɛɛgţ, ůdŰŰĥɣɛŭ.

ɒ. *Ūţ ɛɛƀĥəgůţ ůŰɛ ƁĄz*

¢ dţ ɛɛƀĥəgůţ Ű ɛŰɣəůůŰŰɛ əi ţɛɛ dŰţ Ű ůgŰɛəĥ ɛɣůɛ ɔəŬ Ű[ţ Ŭ3ŰɛɛůŰŰ ´ ɛůţ Ű ɛg ƁĄz ɔəŬ ´ ɛəəɛŸ Gţ ĥ3əŬ ƀɛţdı 3ŰŰgůŰ[ţ ɛůɒɤůţ Ű[ţgdɜţŰĥŰ[ŰŰg.¢Ű əgţ ɛĥŰŰţ Ű dţ ɛɛƀɛəgŰɛəŸ ŭŸţ ɛŬəŬ ůɒŬə ţ ŬəŭŰ əŸůţ, ţůŰŰ əŸůţ, ŰŰɒůəŰŰ əŸůţ əŬə ţ əŬɒɛŰŰ əŸůţ. ƗŰdı gţ ɣɔəŬɣţ Ů ŬɒŰɛŸŰɤůţ Ű ɛg ɛgɛəŬţŭɛɛg ɣGůə ɤgţ Ű ɛŰɣəůůɛŬŰ[ţ Ÿɛůţ Ű əŬŰŰůţ Ű[ţgɛůɛţɛ´ dŰgɛůŰɔi Ű[ţgŰɒŸɔəţgəŬəŰ[ţg ´Űţɛɛɛgɛəgţ ɛɜgɔĥɜɛg ůŰɛ ɛgɛəŸţŭɛɛ ɛɜgɔĥɜɤůţ, Ű ŰɛŰɣəůůɛŬ ůɒŬə Gţ ɛɜɛůɒŬţŰţ ŰŰɛɛůŰŰɛɛŬ Űɛɛɛəĥ ŭŸůŰ[ɛŬ ´ ɛg ɛůɛəŬɒůŰ ĥ Ű[ţ ɣ3ŰţɛţŰ[ţ Ű ĥűţŬɒţgţ Ű ɛg ůŰŰɔŰɒɔŰŰɛŬŰɛ Ŭɒɔůɛɛgţ ɛɣGţəŰ[ţ dţ ɛɛƀĥəgůţ. ¢ɛ ɛůɛɛŭŸůŰ[ɛŬ ŰgŰĥ ůɒŬə əţɑɛɛɛ əŬdı gţ əŬŰŸ Ű[ţ ŭŸţəůɒŸ Ű ɛg ŰŰţɛţŰɤůɛŰŰɛɛ ɛ əgŰŰŰţɛəĥgţ dŸ3ŰŰɛgţ əĥɔɤ ůɒəŬŰŸůŰŰůdgţ Ű[ţgţ əůɛGŰɛɒdŰgţ. Ƀ ŰůdŰůɒɛgţ Ů ɤűůəůůŰŰɛ ɛɣɔəůŰɛ Ű[ţgţ ɛʁɤŭĥəgůţ ĥŰŰ3 q dţ ɛɛƀĥəgůţ ´ţŬɔɛŰŰʁ´ ɛəţdŰɒůɒŰĥgţ ŭɛɤţɢg Ű ĥ Ű[ţ ɣ3ŰţɛţŰ[ţ Ű ɛ3 ůgɛ´ŰɤɛŸŰɤ3, ůɒı ɛŰŰŸ Ű[ţ ´ Ÿţɢŭɛ Ű ɛg ůɒŸɤţɢg, Ű ĥűůəɛgţ ůəŬɢəůŰɛ´ ɛəůŰŰəəŬəůɛŰůĥ3 ůɒŰűŰɔɛŰŰəə

¢ dţ ɛɛƀɛəgŰɛəɛ dŰţ Ű ůŰŭ ůg3əůŰŸŰŰəůɒŰĥgţ 12 ɤţı 3 Ű ĥ Ű ůi ɛ´ Ű ɛŰ ůɛűŸ3əůdgţ, ŰŸ3 ŭůɒ g´Ÿţɢůə ŭg3ŰŰĥŰ[ŰŰ ŭəůɒɣţɔůəŬgţ ´ţɤŰʁɔůɒɛigţ ŬɔɔůʁəŬůŰɛəgţ ůɒŰĥgţ 90 əůŰ Ű 3 əŬə ŭůɒ g´Ÿţɢɛgɔ3 ŬɔŰŰɒŭůůɒůəgţ [127]. ¢

ɘɤ ŭɧəgůɖ ůɞŬə ɛɖŬ ůɖɛŬɜŰɞɐ ůŲŬŰɖɔɐ Ů ŬɜŬɐƳŰɤ ůɖɠ, ɖŬŰŲŬ ůŮ ´Ųə Ű ůŮɠ, ɧ´ɞg ŭŮɞ ɛ´ɞɟŮ ɜŬ ´ɟŬɛŬŰɤɖŮ ŮŰɧɠ Űɤɜ ůgɜŰ ɛŮɤɜ ɞɟɜɞŭɖɟŬɛƳŰɤɜ ´ɟɤŰɞɔŮɐɠ PCI ůŮŬůɖŮŮɠɛŮSTEMI [128].

¢ ŬɟɞɛɓɞəgŰɐ ɖŲŬ´ ŮŬ ůɞŰɞŮŰŬəɛŮɛɖŬ ɛɐɟɐ Ŭəə ůɖɛŬɜŰɐ Ŭɜɖůɖ Űɤɜ Ůəůŭ Ŭə ɜ Ů Ůůɞŭɤɜ [129].ɟ gŰ Ű ´ɟ ɐŬ ŮəŰŬə Ů Ůɧŭɖ ɞŰŮɜŰəůŮɛŮɞə ɓŬɖɛɧ ůŮŮəŰŬə Ŭɐɞɟɟ Ŭɓɖ [130].Ƀ əŬɐɞɟɟŬɓɖɠ ŮɞŬə ɞə´ əɣɞɜ ůgɞɜɣɠ Ů ə əɞəɣɠ əŬəɖŮɤɟɞɜ Ŭə´ ŮəɖŰəɣɠ ɔɖŬ Űɖ ɛɤɐ Űɤɜ Ŭůɖŭɜ.
ɄŲ ɑ ɞg Űɜ 70% Ŭgŭ ɜ Ŭŭɞɟɞ ɜ ůŮůɖɛŮŬ ŬɓɔŮŬəɐɠ ɟɐɜɖɠ əŬəɖ ´əɣɞɜ ůɞɓŬɟɐ ŮɞŬəɖ ŮŭɞəɟŬɜŬəɐ Ŭɐɞɟɟ Ŭɓɖ.

Ɑ´ ə əɞəɣɠ Ƀ Ɑɀ

ɆŰɠ Ů ə əɞəɣɠ Űɜg Ƀ Ɑɀ ´Ų ɐŬɛɓƳɜɞɜŰə ɞəŬɟɟgɖɛɐəɞɔɐɣɠ Ů ə əɞəɣɠ (əɞɐŬəɣɠ Ŭɟɟgɖɛɖɠ əŬəɓɟŬŭgŬɟɟgɖɛɖɠ), ɞəɛɖɞŬɜɐɣɠ Ů ə əɞəɣɠ, ɖ əŬɟ ŭɐɔŮɐɠ əŬŰ´ əɖɜŬ əŬɖ ɠ Ů ůɖɠ əŬəɖ ´Ų ɐŬɟ ŭŰŬ.

1.ɟɟɟ gɖɛɖɠ. Ƀ ə əɞɐŬəɣɠ Ŭɟɟgɖɛɖɠ ´Ų ɐŬɛɓƳɜɞgɜ Űɖɜ əɞɐŬəɐ ŮəŰəŰůgůŰəɐ Ŭɟɟgɖɛɖ, Űɜ Ů ŰɞgɜɧɛŮɞ ɖɐəɞɐŬəɧ ɟgɖɛɧ, Űɖɜ əɞɐŬəɐ ŰɞgŬɟɟgɖɛɖ, Űɖɜ əɞɐŬəɐ ɛŬɟɛŬɟgɔɐ əŬə Űɠ g´ Ų əɞɐŬəɣɠ Ŭɟɟgɖɛɖɠ. ¢ əɞɐŬəɐ ŮəŰəŰůgůŰəɐ Ŭɟɟgɖɛɖ ´ŬɟŬŰɖɟŮŬŰə əŬŰƳ Űɖɜ ɞɜŮŬ ŭƳůɖ Űɜg Ůɛŭɟ ƳɔɛŬŰɠ ůŮ´ ɞůɞůŰɧ ɛŮŬə ŰŲɞ Űɜg 80% Űɤɜ Ŭůɖŭɜ. Ƀ Ů ŰɞgɜɧɛŮɞɠ ɖɐəɞɐŬəɧɠ ɟgɖɛɧɠ ´ŬɟŬŰɖɟŮŬŰəůŮ´ ɞůɞůŰɧ 10-20% Űɤɜ Ŭůɖŭɜ ɜ Űɠ ´ɟɩ Űɠ ŭɞ ɖɛɣɟŮɠ Űɜg ŮɛŭɟƳɔɛŬŰɠ. ¢ ɛɖ Ůɛɛɣɜɞgů Ŭ əɞɐŬəɐ Űɞgə Ŭɟŭɖ ´ŬɟŬŰɖɟŮŬŰə ɛɣɞɟ ə əŬə ůŮ 65% Ůɜ ɖ Ůɛɛɣɜɞgů Ŭ əɞɐŬəɐ Űɞgə Ŭɟŭɖ ŮɛŭŬɜɞŮŰə ůŰ 5% ´Ųɑ ɞg Űɤɜ Ŭůɖŭɜ. ¢ əɞɐŬəɐ ɛŬɟɛŬɟgɔɐ Ůɞɖ ´ɐ Ů ɞŭgɜɖ ɔɖŬ Űɖ ɛɤɐ Űɜg Ŭůɖŭɞ ɠ əŬəɮŭŬɞɞŰə ůŰ 5% ´Ųɑ ɞg Űɤɜ Ŭůɖŭɜ. Ƀ ə g´ Ų əɞɐŬəɣɠ Ŭɟɟgɖɛɖɠ ŮɞŬə Ů ɖɖɠ ůgɞɜɣɠ əŬŰƳ Űɜ Ƀ Ɑɀ ɛŮ Űɖɜ əɞə´ ɐɐ ɓɟŬŭgəŬɟŭɖ əŬə əgɟɑɠ Űɖɜ əɞə´ ɐɐ Űɞgə Ŭɟŭɖ əŬəəɞə´ ɐɐ ɛŬɟɛŬɟgɔɐ ɜŬ ŮɞŬəɞəůgɞɜɧŰŲ Űɠ əŬə ɜŬg´ ɞŭɖəɟ ɜɞgɜ ´ɖŬɜ ɠɖɞŬɐɖ Űɜg əɧə´ ɞg.

Ƀ ə ɓɟ ŬŭgŬɟɟ gɖɛɖɠ ´Ų ɐŬɛɓƳɜɞgɜ Űɖ ŭəŮɓɞəɞɓɐɐ ɓɟŬŭgəŬɟŭɖ əŬə Űɜ əɞə´ ɞəɞɐŬəɧ Ŭ´ ɞəŮŮɛɧ 1ɞg , 2ɞg əŬə3ɞg ɓŬɖɛɞɟ . ¢ ŭəŮɓɞəɞɓɐɐ ɓɟŬŭgəŬɟŭɖ ŮɛŭŬɜɞŮŰəɞgɟɑɠ ůŮŮɛŭɟƳɔɛŬŰ Űɜg əŬŰɤŰɣɟ ɞg əŬə´ ŮɖɑɞgŰɜɐɜ ɛŬŰɜɠ, ɧ´ ɞg ŭŰƳɜŮə ɛɣɞɟ ə əŬə Űɜ 25-40%. Ƀ əɞə´ ɞəɞɐŬəɧɠ Ŭ´ ɞəŮŮɛɧɠ 1ɞg ɓŬɖɛɞɟ ´ŬɟŬŰɖɟŮŬŰəůŮ´ ɞůɞůŰɧ 10-15%, ɞ 2ɞg ɓŬɖɛɞɟ ´ŬɟŬŰɖɟŮŬŰəůŮ´ ɞůɞůŰɧ 5-

10% əŬə Ǘɏəɞɠ ɞ 3ɞg ɓŬɗɛɞɨ əŬǗŬɓɟƳǘŮǗŬə ůǗɞ 5% Ǘɞg ůgɜɧəɞg Ǘɤɜ Ůɛǘɟ Ŭɔɛ ƳǗɤɜ.

2.ɀ ɖɕŬɜɕɏɠ Ů ɘ əɞəɏɠ. Ƀəɛɖɕ Ŭɜɕɏɠ Ů ɘ əɞəɏɠ ʹ Ǚ ɕŬɛɓƳɜɞgɜ Ǘɖ ɟɐɜɖ Ǘɞg ɛŮǘɞəɞɕɐŬəɞɨ ŭɕŬǘɟƳɔɛŬǗɞɠ, Ǘɖ ɟɐɜɖ ŮəŮ ɖǙ ɞg Ǘɞɕɩ ɛŬǗɞɠ Ǘɖɠ Ǚ ɕǗŮ ɐɠ əɞɕɐŬɠ, Ǘɖ ɟɐɜɖ ɖɖəɞŮɞɨ ɠ ɛgɧɠ əŬɖɩ ɠ əŬəǗɞ ŬɜŮɟ gůɛŬ Ǘɖɠ Ǚ ɕǗŮ ɐɠ əɞɕɐŬɠ.

ȼ ɟɐɜɖ Ǘɞg ɛŮǘɞəɞɕɐŬəɞɨ ŭɕŬǘɟƳɔɛŬǗɞɠ ůgɜŬɜǗƳǗŬə ůǗɞ 1-3% Ǘɤɜ Ŭůɖ Ůɞɩ ɜ ɛŮ ɃȺɀ əŬə ɕɑɤɠ ɛŮ ŭɕŬǗɞɕɤɛŬǗɞɧ Ⱥɀ. ȼ ɟɐɜɖ ŮəŮ ɖǙ ɞg Ǘɞɕɩ ɛŬǗɞɠ Ǘɖɠ Ǚ ɕǗŮ ɐɠ əɞɕɐŬɠ ŮɞŬə ɛɕŬ ʹ ɞɨ ůɞɓǙ ɐ Ů ɘ əɞəɐ Ǘɞg ɃȺɀ əŬɖɩ ɠ ŮɞŬə ɠʹ Ů ɖgɜɖ ɔɕŬ Ǘɞ 10-20% Ǘɤɜ Ůŭɞɜɞůɞəɞɛ Ůɕŭɩ ɜ ɖŬɜƳǗɤɜ. ȼ ɟɐɜɖ ɖɖəɞŮɞɨ ɠ ɛgɧɠ ɛʹ ɞɟ Ůɑ ɜŬ Ŭʹ ɞŭŮɞǗɑ ɖŬɜŬǗɖǘɧɟ Ŭ Ƴɛ ŮǘŬ əɧɔɤ ɞɜŮɕɠ ŮəŬǗƳůǗŬůɖɠ ůɞɓǙ ɐɠ ŬɜŮ Ƴɟ əŮɕɠ ɛɕǗ ɞŮɕɨ ɠ. ȼ ɛǙ ɕɐ ɟɐɜɖ ɛʹ ɞɟ Ůɑ ɜŬ ɞŭɖɔɐůŮəůŮɛɏǗ ɕŬ ŬɜŮ Ƴɟ əŮɕŬ ɛɕǗ ɞŮɕɨ ɠ əŬəŭŮɞ ŮɞŬəƳɛ ŮǘŬ ɖŬɜŬǗɖǘɧɟ Ŭ. ɋ ůǗɧůɞ, ɛʹ ɞɟ Ůɑ ɜŬ ɏɕŮə ɤɠ Ŭʹ ɞǗɏəŮǘɛŬ Ǘɞ ɞɜɨ ʹ ɜŮgɛɞɜɕɧ ɞɕŭɖɛŬ ɐ Ǘɖɜ əŬɟ ŭɕŬəɐ ŬɜŮ Ƴɟ əŮɕŬ. ȼɞ ŬɜŮɟ gůɛŬ Ǘɖɠ Ǚ ɕǗŮ ɐɠ əɞɕɐŬɠ ůgɜɐɖɤɠ ɔɕŮǗŬə ŬɜǗɕɖʹ Ǘɧ ɓŭɞɛƳŭŮɠ ɐ əŬə ɛɐɜŮɠ ɛŮǗƳ ɃȺɀ əŬɖɩ ɠ Ŭʹ ɞǗŮəŮɑɛɕŬ ɧɣɕɖ Ů ɘ əɞəɐ Ǘɞg. ɟ ɜŬʹ Ǘ ůůŮǗŬə ůǗɞ ůɖɛŮɞ ʹ ɞg Ǘɞ ɛgɞəǙ ŭɕŬəɧ Ǘɞɕɤɛ Ŭ əŮ Ǘ ɜŮǗŬə ɄɕŬɜɏɠ Ů ɘ əɞəɏɠ Ǘɞg Ŭʹ ɞǗŮəɨ ɜ ɞ ůɕɖɛŬǗɕɛɧɠ ɖɟ ɧɛɓɞg ůǗɖɜ ʹ Ǚ ɕɕɐ ɧʹ ɞg əɕɜƳɕŮəǗɞ Ŭɕ Ŭ ɕŭɕŬǗǙ Ŭ ɧǗɜ ŮɕŬəŬəɕɖǗɕɐ, ɞəɞɕɐŬəɏɠ Ǚ ɟ gɖɛɖŮɠ əŬəɖ əǙ ŭɕŬəɐ ŬɜŮ Ƴɟ əŮɕŬ.

3.Ɏ Ǚ ŭɕɔŮɜɐɠ əŬǗŬʹ əɖɜɖŬ (Shock) ȼ Ů ɑ Ǘɤůɖ Ǘɖɠ əǙ ŭɕɔŮɜɞɨ ɠ əŬǗŬʹ əɖɜɖŬɠ ŮɕŬə ʹ Ǚ ɑ ɞg 7%.

4.ɄŮǙ ɕəǙ ŭɖǗɞŭŬ.

ɄŬɟ Ƴɔɞɜ ǗŮɠ əɕŭɨ ɜɞg

ũɕŬ Ǘɖɜ ŬɜƳʹ Ǘgɜɖ ůǗŮǘŬɜɕŬɖŬɠ ɜɧůɞg əŬəɃȺɀ ɏɕɞgɜ Ůɜɞɕɕʹ ɞɕɖɖŮɑʹ ɞəəɞɑ ʹ Ǚ ƳɔɞɜǗŮɠ. ɀ Ǚ ɕɞɑŬ ɧ Ŭg Ǘɞɨ ɠ ŮɕŬə Ǘɞ əƳʹ ɜɕɛŬ, ɖ gʹ Ǚ ɞɞəɖůǗŮ ɞəŬɕɖŬ, ɖ gʹ ɏɟ ǗŬůɖ, ɞ ůŬəɕǙ ɩ ŭɖɠ ŭɕŬɓɐǗɖɠ, ɞɕɞɔŮɜŮɕŬəɧ ɕǗɞɟ ɕɧ, ɖ ʹ Ŭɕgů Ǚ əŬ, ɖ ɏəəŮɕɏ ɖ Ƴůəɖůɖɠ.

1. ɟ ɟ Ǘɖɟ ɕŬəɐ gʹ ɏɟ ǗŬůɖ

ȼ ůgɕɜɧǗɖǗŬ Ǘɖɠ ǙǗɖɟ ɕŬəɐ gʹ ɏɟ ǗŬůɖɠ ůǗɕɠ ȼɄɟ gʹ ɞəɞɔɕǗŮŬə ůǗŬ 40.000.000 Ůɐəɕ Ůɠ ůŮ ɖəɕɖŬ >25 ŮǗɩ ɜ [131]. Ƀə Ŭɔɔ ŮɕŬəɏɠ Ů ɕɟ Ƴůɞɕɠ Ǘɖɠ

Ŭgɜdɛɏɜdợ Ŭƚ Ứdƚ ṡŬəɐợ ´ dűůdợ Ů Ɏɔɞgɜ Ứdɜ Ŭddƚ ɞdƚ ɞɛɓɤ Ứɑɐ ɜɧůɞ ɛŮŮ ɚ Ứ ůŮợ ůŨd əŮṡŨɞgƚɔdŬ Ứdợ əŬƚŭɚɎợ, Ứɞg ŮɔəŮŨɎəɞg əŬə Ứɤɜ ɜŮŨƚɩ ɜ. ɀ ŮɔɎəŮợ Ů ṡŭdɛɞəɞɔɑɏợ ɛŮɑɏŰŮợ ɧ´ ɤợd ɛŮɑɏŰd əŬƚŭɚɎợ Ứɞg Framingham ɏɞɞgɜ ŭŬɑŮɑɧŰəd ´ ṡŬɜɧŰdŨŨ ŮɛűɎɜṡůdợ ůŰŮŨŬɜṡŬɑɜ Ů Ůṡɞŭɑɜ ŬəəɎ əŬə dɜdŰɧŰdŨŨ ṡɞŬɑɐợ ŬṡŰɞəɞɔdŬợ ŬgɜɎɜŮə ´ ŬƚɎəədəŬ ɛŮ Ứdɜ Ŭɨ ɜdůd ŮdŰŮ Ứdợ ůgůŰɞəɑɐợ ŮdŰŮ Ứdợ ŭṡŬůŰɞəɑɐợ Ŭƚ Ứdƚ ṡŬəɐợ ´ dűůdợ [132]. Ⱥṡŭɑɧ ŰŮƚ Ŭ, d ɛŮɑɏŰd Ŭgűɐ, ɛŮŰɎ Ŭ ɧ 12ŮŰɐ ´ Ŭƚ Ŭəɞəɞɨ ddůd 2489 Ŭɜŭƚɩ ɜ əŬə2856 ɔgɜŬɑɩ ɜ ůŰdɜ ɞɛɎŭŬ Ứɞg Framingham, dəɑdŬợ 30 ɏɤợ 74 ŮŨ ɜ ɏŭŮɑŮɧŰəd ŬgɜdɛɏɜdŬƚ Ứdƚ ṡŬəɐ ´ dűůd ɐŰŬɜ g´ Ů dgɜd ɔṡŬ Ứɞ 28% əŬə Ứɞ 29% Ứɤɜ ůŰŮŨŬɜṡŬɑɜ Ů ŮṡɞŭɑɜŬɜŰůŰɞɑŬ ɔṡŬ ŰŨ ŭɨɞ űɨ əŬ. Ⱥ´ ɚ əɏɞɜ, ůŰd ɛŮɑɏŰd ȾŬƚŭṡŬɓɔŮṡŬəɐợ ɈɔŮdŬợ [133] ɧ´ ɞg ŮɜŰŰɎůŰdəŬɜ 5888 Ůɞɐəɑŭợ dəɑdŬợ >65 ŮŨ ɜ ɞɤƚ ɑợ ṡŰɞƚɑɧ Ⱥɀ, ůgɛűɞƚdŰɑɐợ əŬƚŭṡŬəɐợ ŬɜŮ Ɏƚ əŮṡŬợ ɐ ŬɓɔŮṡŬəɞɨ ŮɔəŮŨŬəɑɞɨ Ů ŮṡɞŭɑɞgɏŭŮɑŮɧŰŮgƚŮdŬ ´ dűůd ´ Ŭəɛɞɨ Ŭ´ ɞŰŮɑŮɓŭŮɑŰd Ŭ´ ɩ əŮṡŬợ Ứdợ ŮɑŬůŰɑɧŰdŨŨợ Ứɞg Ŭƚ Ứdƚ ṡŬəɞɨ Ứɞɑɩ ɛŬŰɞợ. Ⱥ´ ůdợ, ɧůɞɜ Ŭűɞƚ Ɏ ůŨŨ ŬɓɔŮṡŬəɎ ŮɔəŮŨŬəɑɎ Ů Ůṡɧŭṡ, ɞəůɞŰɑɞɑəɑŭgɜɞəɐŰŬɜ gɣ dəɞɑ ɄŬƚ ɞɛɞɑɤợ, ɞ əɑŭgɜɞợ ŮdŰŮ ɔṡŬ Ⱥɀ ŮdŰŮ ɔṡŬ ŬɓɔŮṡŬəɧ ŮɔəŮŨŬəɑɧ Ů Ůṡɧŭɑ ɐŰŬɜ ɛŮŬəɨ ŰŮƚ ɞợ ůŰɞgợ g´ Ůƚ ŰŨůɑɞɨ ợ Ŭůdŭɜŭɑợ g´ ɧ Ŭɓɤɔɐ ůgɔəƚṡŰɑɎ ɛŮ Ứɞgợ ɜɞƚ ɛɞŰŨůɑɞɨ ợ ŬəəɎ ɞŬɛdəɧŰŮƚ ɞợ ůgɔəƚṡŰɑɎ ɛŮ Ứɞgợ g´ Ůƚ ŰŨůɑɞɨ ợ Ŭůdŭɜŭɑợ ɞɤƚ ɑợ Ŭɓɤɔɐ. Ⱥ´ ɚ ƚɞůdɏŰɤợ, d ɛŮɑɏŰd MRFIT ´ ɞg ´ ƚ ŬɓɛŬŰɞ´ ɞɑddəŮ ůŮ 340.000 Ŭůdŭɜŭɑợ ɞɤƚ ɑợ ṡŰɞƚɑɧ Ⱥɀ, ɏŭŮɑŮ ŬɜɎɛŮŰŬ ůŰɞgợ ´ ŬƚɎɔɞɜŰŮợ ´ ɞg ŬgɜɎɜɞgɜ Ứd dɜdŰɧŰdŨŨ ŮɑŬəŬəd Ŭƚ Ứdƚ ṡŬəɐ g´ ɏƚ ŰŨůd [134]. dɎůŮɑŰɤɜ ŬɜɤŰɏƚ ɤ Ứɞ ŬŮƚ Ŭ´ ŮgŰɑɧ ɄəŬůṡɑ Ứɞg Ⱥdɜɑɞɨ Ʉƚ ɞɔƚ Ɏɛɛ ŬŰɞợ Ⱥə´ Ŭɑŭgůdợ Ⱥɜdəɑɤɜ ɔṡŬ Ứd ɟ ɞədůŰŮƚ ɧəd ⱡəŬŰɏədɜŮɧŰəd g´ ɏƚ ŰŨůd, d ´ ŬɞgůŬƚ əŬ əŬəd ŭgůəɚ ṡŬɑdŬ, Ůṡɑ Ɏ ɧŰɜ ůgɜŭgɎɞɞɜŰŨə ɛŮ Ứɞ əɎ´ ɜṡɛŬ, ´ ƚɏ´ Ůə ɜŬ Ứƚ ɞ´ ɞ´ ɞɑɨ ɜŰŨə əŬdɩ ợ Ŭ´ ɞŰŮɞɨ ɜ ɛŮɑɞɜŮợ ´ ŬƚɎɔɞɜŰŮợ əɑŭɨ ɜɞg [135].

Ɇgůɞɏ Ứůd Ŭƚ Ứdƚ ṡŬəɐợ g´ ɏƚ ŰŨůdợ əŬəŬddƚ ɞůəədƚ ɤ Ứɑɐợ ŭṡŬŭṡŬůdŬợ

ȼ Ŭƚ Ứdƚ ṡŬəɐ g´ ɏƚ ŰŨůd ɏɞŮə əŬŰɓƚ ŬűŮɑ ɤợ ŭṡɓɏƚ Ứdợ Ứdợ Ŭɞƚ Ứɑɐợ Ŭddƚ ɞůəəɐƚ ɤůdợ ůŮ ɛɞɜŰɏəŬ ɑ ɤɜ ɛŮ ůgɜg´ Ɏƚ ɞɞgůŬ ŭgůəɚ ṡŬɑdŬ. ɟ Ŭƚ ŬəŰdƚ ṡŰɑɧ ´ ŬƚɎŭŮɑɛŬ Ŭ´ ɞŰŮɑ ɞ əɧɜɑəɞợ ůŰdɜ əədƚ ɞɜɞɛɑɐ g´ Ůƚ əɚ ṡŬɑdŬ, ůŰɜ ɞ´ ɞɑ d Ů ŬɓɧɛŮɜd ɜŰƚ ŬɓɔŮṡŬəɐ g´ ɏƚ ŰŨůd Ů ɏəŰŨůd Ứɤɜ Ŭddƚ ɤɛŬŰɑɩ ɜ ɓəŬɓɩ ɜ ůŰdɜ Ŭɞƚ Ứɐ [136]. ɄŬƚ ɧɛɞṡŬ, ůŮ Ɏəə ´ Ůɑ ŬɛŬŰɑɧ ɛɞɜŰɏəɞ, ůŰɞ ɞ´ ɞɑ əŮgəɞɑ əɧɜɑəɞə ůṡŰɑɞɜŰŨɜ ɛŮ ŭṡŬŰƚ ɞűɐ ´ ɞg Ů ɎɔŮə Ứdɜ Ŭddƚ ɞůəɐƚ ɤůd ŮɛűɎɜṡŬɜ Ŭɨ ɜdůd Ứɤɜ ´ ƚ ɞůəɞəɑ ɛŮɜɤɜ ɛŬəƚ ɞűɎɔɤɜ ůŰdɜ

Ŭɞɟ Ǘɐ ɛŮǕɤ Ŭ ɧ Ŭɨ ɜɖůɖ Ǘɖɠ Ŭɟ Ǘɖɟ ɻŬɘɐɠ ´ ɗůůɖɠ [137]. ɆǗǥɠ ´ Ŭɟ Ŭ Ɣɜɤ ɛŮɐɏǗǕɠ ɏɞɞɡɜ ɞɞɟ ɖɔɖɖŮɑɘɘŬɜǗǥ ´ Ů ǕǕůɚƔ űƔɟ ɛŬɐŬ (ŬɜŬůǗɞɘŮǥ ɛŮǕǕǕ Ů Ǘɐɞɨ Ůɞɨ ɛɞɡ ŬɒɔŮɞǗǕɞůɞɖɠ (Ŭ Ʌɟ), ŬɜŬůǗɞɘŮǥ ɡ´ ɞŭɞɞɏɤɜ ŬɒɔŮɞǗǕɞůɞɖɠ (ɟ $ɇ_1$)) ɘŬɘ ɘŬǕŬɒɟ Ɣűɖɘ Ů ɛɻŬ ɛɚɟɐ ɛŮɒɤ ůɖ Ǘɤɜ Ǘɐɩ ɜ Ǘɖɠ Ŭɟ Ǘɖɟ ɻŬɘɐɠ ´ ɗůůɖɠ ´ ɚǗŬɩ ɡ ɞűŮɐɧɛŮɞɖ ůǗɞɜ ´ Ů ɚɟɻɛɧ Ǘɖɠ ɏɘǕůɖɠ Ǘɖɠ ɓɘƔɓɖɠ ɘŬɘ ůǗɖ ɓŮɐǗɒɤ ůɖ Ǘɖɠ ´ ɞɻɧǗɖǕɠ Ǘɖɠ Ŭɖɟ ɤ ɛŬǗɐɐɠ ´ ɘƔɘŬɠ Ŭ ɧ Ǘɖɜ ŭɟ Ɣůɖ Ǘɖɠ ŬɒɔŮɞǗǕɞůɞɖɠ Ⱡ ůǗɞ ŬɒɔŮɻŬɘɧ Ǘɞɞɤ ɛŬ. ɀ Ɣɘɻů ǕǕ ůŮɛɞɜǗɏɘŬ ɘɡǕǕɟ ɚɩ ɜ ɘŬɘɘɻŮ ɔŮɐ ɜ, ɖ ŬɒɔŮɞǗǕɞůɞɖ Ⱡ (AII) űƔɜɖɘŮ ɜŬ Ůɞɻɞɨ ŮɐǗɖɜ ´ ɟ ɞůɘɧɘɘɖůɖ ɘŮɡɘɞɘɡǕǕɤɟ ɤ ɜ ´ ɞɡ Ŭ ɞǕŮɐŮɑɏɜŬ ´ ɟ ɩ Ǘɞ ɓɐɛŬ ůǗɞ ůɞɖɛŬǗɻɛɧ ɘɕ ɤ ŭɩ ɜ ɔɟ Ŭɛɛɩ ůŮɤ ɜ [138].

ɆǗɖɜ Ŭɟ Ǘɖɟ ɻŬɘɐ ɡ´ ɏɟ ǕǕůɖ, ɖ AⱠ Ů ƔɔŮɐǗɖɜ ´ Ŭɟ Ŭɓɤɔɐ ɡ´ Ů ɞɜŮɒɞɡ [138] ɛŮŬ ɞǗɏɘŮůɛŬ Ǘɖ ŮɐƔǕǕɤ ůɖ Ǘɤɜ Ů ɕ ɏŭɤɜ Ǘɞɡ ŭɟ ŬůǗɐɞɨ ɛɞɜɞɜŮɒɞɡ Ǘɞɡ Ŭɑ Ǘɞɡ (NO), Ǘɖɜ ´ ɡɟ ɞŭɧǗɖůɖ ɞɜŮɒɤǗɐɞɨ stress ɘŬɘ Ǘɖɜ Ů Ŭɘɧɘɞɡɖɖ Ůɞŭɞɖɖɘɻɘɐ ŭɡůɘŮǗɞɡɟ ɔɗŬ [139-142]. Ʌ´ ɗůɖɠ, ɖ Ŭ ɩ ɘŮɻŬ Ǘɖɠ ɻɞɟ ɟ ɞ´ ɗŬɠ ɛŮǕǕɞɨ ŬɒɔŮɞůɡů´ ŬůǗɐɩ ɜ ɘɘ ŬɒɔŮɞŭɻŬůǕǕɘǗɐɩ ɜ ´ Ŭɟ Ŭɓɧɜ Ǘɤɜ ɛ´ ɞɟ Ůɑ ɜŬ ɏɞŮɐ ɤɠ Ŭ ɞǗɏɘŮůɛŬ Ǘɖɜ ɏɜŬɟ ɜɖ ůɞɖɛŬǗɻɛɞɨ Ŭɖɖɟ ɤɛŬǗɐɩ ɜ ´ ɘŬɩ ɜ. Ʌɻŭɚɧ ǕǕɟ Ŭ, ɖ Ůɞŭɞɖɖɘɞɖ-1, ɤɠ ɻɞɡɟ ɧɠ ŬɒɔŮɞůɡů´ ŬůǗɐɧɠ ´ Ŭɟ Ɣɔɞɜ ǕǕɠ ɛŮɐ ɜŮɐǗɖ ŭɟ Ɣůɖ Ǘɤɜ ŬɒɔŮɞŭɻŬůǕǕɘǗɐɩ ɜ ´ Ŭɟ Ŭɓɧɜ Ǘɤɜ ůŮ ƔǗɞɛŬ ɛŮ Ŭɡɜɖɛɏɜɖ ɘɘ ɧɞɘ űɡůɚɘɞɔɚɐ Ŭɟ Ǘɖɟ ɻŬɘɐ ´ ɗůůɖ ´ ɚǗŬɩ ɡ ɘɧɔɤ ŭɏůɛŮɡůɖɠ Ǘɞɡ ɡ´ ɞŭɞɞɏŬ Ǘɖɠ [143]. $ɇ$ Ůɞŭɞɖɖɘɞɖ-1 Ů ƔɔŮɐ Ǘɖ ŭɚɔŮɟ ůɖ Ǘɤɜ ɘŮɡɘɞɘɡǕǕɤɟ ɤ ɜ ɛŮ Ŭ ɞǗɏɘŮůɛŬ Ǘɖ ŭɖɛɚɡɟ ɔɗŬ Ŭɖɖɟ ɤɛŬǗɐɩ ɜ ´ ɘŬɩ ɜ ɘŬɘǗɖɜ Ŭɡɜɖɛɏɜɖ Ŭɟ Ǘɖɟ ɻŬɘɐ ´ ɗůůɖ.

ŌɜŬ Ɣɘɘɞ ɛɧɟ ɚ ´ ɞɡ ´ ŬɒŮɐ´ ɞɘɨ ůɖɛŬɜǗɐɧ ɟ ɧɘɞ ɛŮ Ǘɖ ŭɟ Ɣůɖ Ǘɖɠ ɛɏůɤ Ǘɤɜ ɡ´ ɞŭɞɞɏɤɜ ŬɒɔŮɞǗǕɞůɞɖɠ Ⱡ, ŮɜŬɘɖ AⱠ ɘɧɔɤ Ǘɖɠ ɏɜǗɜɖɠ ´ ɟ ɞŬɖɖɟ ɤɛŬǗɐɐɠ Ǘɖɠ ŭɟ ŬůǗɖɟ ɻǗɖǕǕɠ. Ʌɻŭɚɧ ǕǕɟ Ŭ, ɖ AⱠ ŬɡɜƔɜŮɐǗɖɜ ɞɜŮɤɤ ůɖ Ǘɤɜ ɘɕ ɻɒɤ ɜ, ɖ ɞ´ ɞɗŬ Ů ƔɔŮ´ Ů Ŭɻɏɟ ɤ Ǘɞɜ ůɞɖɛŬǗɻɛɧ ɘɕ ɤ ŭɩ ɜ ɔɟ Ŭɛɛɩ ůŮɤ ɜ ɘŬɖɩ ɡ Ů ɗůɖɠ ɘŬɘǕǕ Ů ɑ ŮɐŬ Ǘɖɠ ɞɜŮɒɤɛɏɜɖɠ LDL ´ ɞɡ ɏɞŮɐ ɤɠ Ŭ ɞǗɏɘŮůɛŬ Ǘɞ ůɞɖɛŬǗɻɛɧ Ǘɤɜ Ŭűɟ ɤŭɩ ɜ ɘɡǕǕɤɟ ɤɜ [144]. Ʌ´ ɗůɖɠ, ɖ ŬɒɔŮɞǗǕɞůɞɖ Ⱡ ´ ɡɟ ɞŭɞǕǕɑǗɞ ůɞɖɛŬǗɻɛɧ ɘɡǕǕɟ ɞɘɚɩ ɜ ɧ´ ɤɠ ɖ ɞɖɛŮɒǕǕɘǗɐɐ ´ ɟ ɤǕǕɞɖ Ǘɤɜ ɛɞɜɞɘɡǕǕɤɟ ɤɜ (MCP-I) ɘɘ ŮɞŮɔɞ´ ɞɻɑǕǕ ɛɧɟ ɻŬ ´ ɟ ɞůɘɧɘɘɖůɖɠ Ǘɤɜ ŬɒɔŮɻŬɩ ɜ ɘɡǕǕɤɟ ɤɜ (VCAM-1) ɘŬɖɩ ɡ Ů ɗůɖɠ ɘŬɘ ǕǕ Ůɞŭɞɖɖɘɻɘɐ Ɣ ɛɧɟ ɻŬ ´ ɟ ɞůɘɧɘɘɖůɖɠ (ICAM-1) Ů ƔɔɞɜǕǕɠ Ǘɖɜ ´ ɟ ɞůɘɧɘɘɖůɖ Ǘɤɜ ɛɞɜɞɘɡǕǕɤɟ ɤɜ ɘŬɘ Ǘɞ ůɞɖɛŬǗɻɛɧ Ŭɖɖɟ ɤɛŬǗɐɐɠ ´ ɘƔɘŬɠ. Ʌ´ ɕ ɘɏɞɜ, ɖ ɟ Ⱡ ŭɻŮůɟ ŮɐǗɞɜ ´ ɞɘɘŬ ɘŬůɻŬůɛɧ ɘŬɘǗɖ ɛŮǕǕɞƔůǕǕɡůɖ Ǘɤɜ ɘŮɤɜ ɛɡɞɩ ɜ ɘɡǕǕɤɟ ɤɜ ɘŬɘ ɚɤɓɘŬůǕɨ ɜ ɛŮ Ŭ ɞǗɏɘŮůɛŬ Ǘɖɜ ŬɜŬŭɻŬɛɧɟ űɤůɖ Ǘɞɡ Ǘɞɚɩ ɛŬǗɞɠ Ǘɤɜ ŬɒɔŮɤɜ [145]. Ʌ´ ɕ ɟ ɞůɖɏǗɤɡ, ɖ ´ Ŭɟ Ŭɓɤɔɐ NO ´ ŬɒŮɐ ɟ ɧɘɞ

ɟ gɗɛ ƌůŰ̆ɐ ůŰ̆ɷʆ ŭɟ Ɏů Ů̆ɷʆ Ű̋ɖʆ ȷ Ⱡ ´ ɟ ɞəŬɛ ɓɎɜɞɜŰ̋Ŭʆ Ű̋ɖɜ Ůɜŭɞɗɖəƌŭəɐ ŭgůəŮƌŰ̋ɞgɟ ɔɗŬ ´ ɞg ɏɢŮə ɤ ʆ Ŭ´ ɞŰ̋ɏəŮ̋ɑɛŬ Ŭɗɖɟ ɤ ɛŬŰ̋ɵɏg Ŭəəɞɵ ůŮɷʆ əŬɗɩ ʆ ɛŮɵ ɜŮə Ű̋ɞgʆ ȷ ȼ1 g´ ɞŭɞɢŮɷʆ ɛɏůɤ Ű̋ɤ ɜ ɞ´ ɞɑɤ ɜ ŬůəŮɑŰ̋ɷʆ ŭɟ Ɏů Ů̆ɷʆ Ű̋ɖʆ ɖ ȷ Ⱡ [146].

ȼɏəɞʆ, ɧůɞɜ Ŭűɞɟ Ɏ ůŮɛŮəɏŰ̋Ůʆ ´ ɞg ɏɢɞgɜ ´ ɟ Ŭɔɛ ŬŰ̋ɞ´ ɞƌɖɗŮɑůŮŬɜɗɟ ɩ ´ ɞgʆ ƌŭƌŬɗŰ̋Ůɟ ɞ Ůɜŭƌ Ŭűɏɟ ɞɜ ´ Ŭɟ ɞgůƌɎɕŮə Ŭgŭɐ Ű̋ɤ ɜ Ross əŬə ůgɜŮɟ ɔŬŰ̋ ɜ [147] əŬɗɩ ʆ Ů ɑůɖʆ əŬə ɛƌŬ g´ ɞɛŮəɏŰ̋ɖ Ű̋ɖʆ ȷ ɔɔəɞ-Ȼ əŬɜŭƌ Ŭɓƌɐʆ ɸɞəƌɐʆ ȷ ´ ɞŰ̋Ůə Ůɑ ɛɎŰ̋ɤ ɜ (ASCOT) [148]. Ⱥƌŭƌɧ Ű̋Ůɟ Ŭ, ɞ Ross ůŰ̋ɐɟ ƌŮ Ű̋ɖɜ g´ ɧɗŮɑɖ Ű̋ɞg ɧŰ̋əɖ Ŭɗɖɟ ɤ ɛŬŰ̋ɵɐʆ ɜɧůɞʆ Ŭ´ ɞŰ̋Ůə Ůɑ ɛƌŬ űəŮɔ ɛɞɜɩ ŭɖ ŮɜŮɟ ɔŬůɑŬ əŬɗɩ ʆ ɞɘəɘ ɩ ŭŮɷʆ ɔɟ Ŭɛɛɩ ůŮɷʆ ´ ɞg Ŭ´ ɞŰ̋Ůəɞɨ ɜ ´ ɟ ɩ ƌŮʆ Ŭɔ ɔŮƌŬəɏʆ ɓəɎɓŮʆ, Ŭ´ ɞŰ̋Ůəɞɨ ɜŰ̋Ŭə Ŭ´ ɧ ´ ɟ ɞůəɞəəɖɛɏɜŬ ɛŬəɟ ɞűɎɔŬ əŬə ȼ-əŮɛ űɞəɨ Ű̋Ű̋Ůɟ Ŭ. ȮŭŮƌŬɜ əɞɘ ɧɜ ɖ Ŭɨ ɜɖůɖ Ű̋ɖʆ ůgůŰ̋ɞəƌɐʆ Ŭɟ Ű̋ɖɟ ƌŬəɐʆ ´ ɑůɖʆ ůɢŮŰ̋ɑŮŰ̋Ŭə ɛŮ ´ Ɏɢgɜůɖ Ű̋ɞg ɛɏůɞg ɢƌŰ̋ ɜŬ ´ ɞg Ŭ´ ɞŰ̋Ůə Ůɑ ´ ɟ ɩ ƌɞ Ůɨ ɟ ɖɛŬ Ű̋ɤ ɜ ´ ɟ ɞŬɗɖɟ ɤ ɛŬŰ̋ɵɩ ɜ Ŭəə Ŭɔɩ ɜ [136, 149, 150]17. Ⱥɜƌůɢɨ ɞɜŰ̋Ŭʆ Ű̋Ŭ ´ Ŭɟ Ŭ´ Ɏɜɤ, ɖ ɛŮəɏŰ̋ɖ ASCOT ɏŭŮƌŮ ůŰ̋Ŭ ɎŰ̋ɞɛŬ ɛŮ Ŭɟ Ű̋ɖɟ ƌŬəɐ g´ ɏɟ Ű̋Ŭůɖ, ´ ɟ ɞɗɟ ɞɛɓɤ Ű̋ɵɞɑ´ Ŭɟ Ɏɔɞɜ Ű̋Ŭʆ ɧ´ ɤ ʆ ɞ vonWillebrand, ɞ ƌůŰ̋ɵɧʆ ´ Ŭɟ Ɏɔɞɜ Ű̋Ŭʆ əɘɞ Ŭgɜɖ Ű̋ɵɧʆ ´ Ŭɟ Ɏɔɞɜ Ű̋Ŭʆ Ű̋ɞg Ŭɔɔ ŮƌŬəɞɨ Ůɜŭɞɗɖəɞg ɐŰ̋ɜ Ŭgɜɖɛɏɜɞɘ Ⱥ´ ɘ əɏɞɜ, ůŰ̋Ŭ ɑŭƌŬ ɎŰ̋ɞɛŬ ´ Ŭɟ ŬŰ̋ɖɟ ɐɗɖəŮ ɛŮɑɤ ůɖ Ű̋ɤ ɜ ´ Ŭɟ Ŭ´ Ɏɜɤ ´ Ŭɟ Ŭɔɧɜ Ű̋ɤ ɜ ɛŮ Ű̋ɖ ɢɞɟ ɐɔɖůɖ ŮɜŰ̋ŬŰ̋ɵɞ´ ɞƌɖɛɏɜɖʆ Ŭɔɤ ɔɐʆ ɔƌŬ Ű̋ɞɜ ɏəŮɔɢɞ Ű̋ɖʆ Ŭɟ Ű̋ɖɟ ƌŬəɐʆ ´ ɑůɖʆ əŬə Ű̋ɤ ɜ əɘ ƌŭɑɤ ɜ ɔƌŬ 6 ɛɐɜŮʆ.

Ʌɨ ɗɛƌůɖ Ŭɟ Ű̋ɖɟ ƌŬəɐʆ ´ ɑůɖʆ

ȼ Ŭɟ Ű̋ɖɟ ƌŬəɐ g´ ɏɟ Ű̋Ŭůɖ ŮɞŬəɞ əgɟ ɑŬɟ ɢɞʆ ´ Ŭɟ Ɏɔɞɜ Ű̋Ŭʆ əƌŭɨ ɜɞg ůŮŬůɗŮɜŮɷʆ ´ ɞg ´ ɟ ɞůəɞɛɑɞɜŰ̋Ŭəɛ ŮSTEMI Ⱥɀ . Ȼgɜ Ů ɩ ʆ, ɞ ɏəŮɔɢɞʆ Ű̋ɖʆ Ŭɟ Ű̋ɖɟ ƌŬəɐʆ ´ ɑůɖʆ ůŮ ůgɜŭgŬůɛɧ ɛŮ Ű̋ɷʆ ŬəəŬɔɏʆ Ű̋ɞg Ű̋ɟ ɧ´ ɞg ȼɤɐʆ əŬəŭƌŬŰ̋ɟ ɞűɐʆ Ŭ´ ɞŰ̋Ůə Ůɑ Ů ƌŰ̋Ŭə Ű̋ɵɐ ŬɜɎɔəɖ. ȮŰ̋ůɘ ɖ ɛŮɑɤ ůɖ ´ ɟ ɧůəɖɣ ɖʆ ɎəŬŰ̋ɞʆ, ɖ Ŭgɜɖɛɏɜɖ űgůƌɐ ŭɟ ŬůŰ̋ɖɟ ƌɧŰ̋ɖŰ̋Ŭ əŬəɖ Ŭ´ ɩ əŮƌŬ ɓɎɟ ɞgʆ əŬɗɩ ʆ Ů ɑůɖʆ əŬəɖ ɢɞɟ ɐɔɖůɖ űŬɟ ɛŬəŮgŰ̋ɵɐʆ Ŭɔɤ ɔɐʆ ɛŮ ůŰ̋ɧɢɞ Ȼgů Ű̋ɞəƌɐ ȷ ɟ Ű̋ɖɟ ƌŬəɐ Ʉɑůɖ (Ȼȷ Ʉ) < 140mmHg ɗŬ ´ ɟ ɏ´ Ůəɜ Ŭ ɜŮəƌɎŮə ůŰ̋ɞgʆ ŬůɗŮɜŮɷʆ ɛŮ Ⱥɀ ɎɛŮɑ Ŭ. ȻŮɖəƌƌɤ ɛɏɜɞgʆ əŬə´ ƌ Ůɨ ɗɟ ŬgůŰ̋ɞgʆ ŬůɗŮɜŮɷʆ Ŭ´ ɧ ´ əŮgɟ Ɏʆ gɔŮɑŬʆ ɖ Ű̋ƌɐ ůŰ̋ɧɢɞʆ ɔƌŬ Ű̋ɖɜ Ȼȷ Ʉ ɛ´ ɞɟ Ůɑɜ Ŭ ŮɜŬəəɑɞ ´ ƌ ɢŬəŬɟ ɧʆ, Ůɜɩ ɔƌŬ ŬůɗŮɜŮɷʆ ´ ɞəɨ gɣ ɖəɞɨ əƌŭɨ ɜɞg ´ ɞg əŬɛɓɎɜɞgɜ ƌůɞgɟ ɐ űŬɟ ɛŬəŮgŰ̋ɵɐ Ŭɔɤ ɔɐ ɔƌŬ Ű̋ɖ ɛŮɑɤ ůɖ Ű̋ɖʆ Ŭɟ Ű̋ɖɟ ƌŬəɐʆ ´ ɑůɖʆ, ɖ Ű̋ƌɐ ůŰ̋ɧɢɞʆ ɔƌŬ Ű̋ɖ Ȼȷ Ʉ ´ ɟ ɏ´ Ůəɜ Ŭ ŮɜŬə< 120mmHg[151-153]. ɄŬɟ ɧəŬ ŬgŰ̋Ɏ, ɖ əɐɣ ɖ Ű̋ɖʆ űŬɟ ɛŬəŮgŰ̋ɵɐʆ Ŭɔɤ ɔɐʆ ɧůɞ ŮɜŰ̋ŬŰ̋ɵɞ´ ɞƌɖɛɏɜɖ əɘ Ŭɜ Ůɜ Ŭɘ ŭŮɜ ŮɜŬə Ŭɟ əŮŰ̋ɐ ɢɤ ɟ ɑʆ Ű̋ɖɜ Ű̋ɟ ɞ´ ɞ´ ɞɑɖůɖ Ű̋ɤ ɜ gɔƌŮɜɞŭƌŬƌŰ̋ɖŰ̋ɵɩ ɜ ůgɜɖɗŮə ɜ əŬəŰ̋ɞg Ű̋ɟ ɧ´ ɞg ȼɤɐʆ.

Ⱥ฿ǔ෨ђΰǖŲ Ŭ, ď ɛǕǶɎΰď ALLHAT ฿ǔ฿ǓƌΰǖŲ Ŭ Ŭз෨ůďɛǕǿΰď əђɔɤ ΰɞg ɛǕǶϒəɞg Ǔļ ෩ɛɞɨ ΰɤз ůgɛɛǕΰΰɞђзΰɤз Ŭз෨əђɔďůǕ ΰď з Ŭзΰђ´ ǕļΰΰΰůϬɐ əǓə Ŭзΰ෨ǿ ฿ǓŬɕϬɐ Ŭɒɤɔɐ ɔ฿Ǔ ΰď з ´ɟђəďɣď əǓļ ŭ฿ǓəɐgƓ ´ɟɞůɓɞəɐgƓ ůǕ ď෨෨ɤɛɎзɞggƓ ɛǕ gɣďəђ əǓļ ŭ฿Ǔɓɔǖ฿Ǔəђ əɞŭgзɞ. ȼǓ ´ɟɤΰзɔǕзɐ əǓΰΰəďəΰ෨ϒ ΰďgƓ ůďɛǕǓ ´ Ǖļ ฿ǕǶϒɛɓŬзŬз ΰз ďϒзǓΰз əђɔɤ ůΰΰΰŬз฿ǓƌƓ зђůɞg ɐ Ⱥɀ əǓə ΰз ŬɒɔǕ฿Ǔəђ ǕəǕΰŬə෨ђ Ǖ ǕΰђŭɞǕ (ɟ ȺȺ). ɆΰǕ 3,6 ɎΰďʹǓļ Ŭəɞəɨ ďďůďgƓ ŭǕз əǓΰΰɒɟϒΰďəŬз ůΰΰΰǕΰǶϒ ůďɛŬзΰǶɎgƓ ŭ฿Ǔΰɞɟ ɎgƓ ɔ฿Ǔ ΰΰ ´ɟɤΰзɔǕзɐ əǓΰΰəďəΰ෨ϒ ůďɛǕǓ Ŭзϒɛΰΰ Ŭ ůΰɞggƓ ŬůďǕзǕgƓ ´ ɞg Ɏ´ Ŭ෨зŬз Ŭɀ Ⱥɟ ɐ ŭ෨ɞgɟďΰђɐ ŬзŬůΰзəǕgƓ ŭ฿ǓɨəɤзŬůɓǕΰΰɞg (ɟɟ) [154].

ɆΰďɛǕǶɎΰď HOPE, əǓΰϒ ΰďзɞ´ɞƌ əǓΰΰɞɤɟɐďďəŬз 9000 ŬůďǕзǕgƓ gɣďəɞɨ əǓļ ŭ฿Ǔɓɔǖ฿Ǔəɞɨ əɞŭɨзɞg, ď෨෨ƌgƓ >55 ǕΰΰзɞɤɟɕgƓ฿ǕΰɞɟϬђ əǓļ ŭ฿ǓəɐgƓ ŬзǕ ϒɟ əǕ฿ǓgƓ ɐ ŭgůəǕ฿ɞgɟɔƌgƓ ΰďgƓ Ǔļ ฿ΰǖŲɐgƓ əɞ෨ƌgƓ, ɞəǓůďǕзǕgƓ ΰɞɞǓ෨´ ɞ෨ďďəŬз ůǕǕǶзɞggƓ ´ɞg Ɏəǔɓŭз Ŭɀ Ⱥɟ (ɟŬɛɕɟ෨ď) əǓəůǕǕǶзɞggƓ ´ɞg Ɏəǔɓŭз placebo Ǖ ɕɟђůďǕΰΰ ůΰďз Ŭɒɤɔɐ ΰɞggƓ [155]. ɆΰΰǓ´ ɞΰǕǶɎůɛǓΰϒ ΰďgƓ əǓΰΰɒɟϒΰďəǕђΰǶďɛǕļ ɐů฿Ǔ Ŭɒɤɔɐ ɛǕɟŬɛɕɟ෨ď 10mg ɛǕǿůď ΰď ůgɞзђΰďΰΰ ǕɛΰϒзůďgƓ əǓļ ŭ฿ǓəɐgƓ ŬзǕ ϒɟ əǕ฿ǓgƓ əǓΰϒ 26%, ΰɞg Ⱥɀ əǓΰϒ 20% , ΰɤз ɟ ȺȺ əǓΰϒ 32% əǓəΰďgƓ ďзďΰђΰďΰΰgƓ əϒďǕŬ฿Ǔ෨əɞɔƌgƓ əǓΰϒ 16% ´Ǔļ ϒ ΰďз ǕǶϒɞǕΰď ɛǕǿůď ůΰ෨gƓ ΰɐɎgƓ ΰďgƓ Ɇɟ Ʉ əǓΰϒ 3.3 mmHg əǓəΰďgƓ ɋɋ Ʉ əǓΰϒ 1.4 mmHg. ďϒůǕǶǓgΰɞɨ ɓɔɐəǕΰз ůgɛ´ ɎɟŬůɛŬ ђΰǶď ɛǕǿůď ΰɤз ΰɐɩ з ΰďgƓ Ǔļ ΰďɟ ฿ǓəɐgƓ ´ ƌǕďgƓ ɛɎůɤ ΰɤз Ǖ ฿ɟϒůǕɤз ΰďgƓ ɟ Ⱡ ůΰΰ ŬɒɔǕǓ. ɟ ´ђ ŬзϒəgůďgƓ´ ɞɞɛϒŭɤз ΰďgƓ ƌ฿ǓgƓ ɛǕǶɎΰďgƓ əǓΰΰɒɟϒΰďəǕɤgƓ ŬзŬɛǕзђΰΰз ђΰǶɞəŭ฿Ǔɓďΰ෨ɞɑɛǕ ɛ෨ɟɞǓəɓɞgɛ෨ɞgɟƌǓ Ǖ ɤΰǕǶɐďďəŬз ´ Ǔļ Ǔ´ ϒзɤ Ǔ´ ђ ΰďɞɟɐůď ΰɞg Ŭɀ Ⱥɟ. Ⱥ´ ƌůďgƓ, ůΰď ɛǕǶɎΰď SECURE, ď ɟŬɛɕɟ෨ď ΰϒзďəǕ зŬ Ǖ ฿ɟŬŭɨзǕǶ ΰďз ´ɟђɞŭɞ ΰɤз ŬďďɟɤɛǓΰɞɩ з ´əǓɩ з ђ´ɤgƓ Ǔgΰɐ Ŭз෨əɞɔɐďďəǕ ɛǕ ɛɎΰďůď ΰɞg ´ϒɞggƓ ΰɞg ɛɎůɞg ɞ฿ΰзŬ ΰɤз əǓļ ɤΰΰɤз [156]. ɟ ´ђ ΰďз ϒəəď ´ əǕgɟϒ ď ɛǕǶɎΰď ELSA ɎŭǕ෨Ǖ ђΰǶ ď ΰΰΰǓΰΰɐgƓ ɞɞɟɐɔďůď Ǖзђg ɟɟ ɛǕǿůď ΰďз ´ɟђɞŭɞ ΰɤз ŬďďɟɤɛǓΰɞɩ з ´əǓɩ з ђ´ɤgƓ Ǔgΰɐ Ŭз෨əɞɔɐďďəǕ ɛǕ ΰз ´ϒɞggƓ ΰɞg ɛɎůɞg ɞ฿ΰзŬ əǓΰϒ 40% ůgɔəɟ฿ΰǶϒ ɛǕ ΰď ɞɞɟɐɔďůď Ǖзђg ɓ-ŬзŬůΰзəɎŬ (Ŭΰΰзɞəђəďď) ůǕ ϒΰзɛŬ ɛǕ ɐ´฿Ǔ ɐ ɛɎΰ฿Ǔ g´ ɎɟΰΰΰůďʹǓļ ϒ ΰз ɔǕɞзђgƓ ђΰǶď ɛǕǿůď ΰɤз ΰɐɩ з ΰďgƓ Ǔļ ΰďɟ ฿ǓəɐgƓ ´ ƌǕďgƓ ɐΰΰз ´ Ǔļ ђɛɞ฿Ǔ Ŭзϒɛΰΰ Ŭ ůΰ෨gƓ ŭɨ ɞ ɞɛϒŭǕgƓ [157].

2. ɋɋgůəɕ ฿ǓŬɛƌǓ

ȼ ɛǕΰΰΰɞɟ ϒ ΰďgƓ ǕǶǕ ďǕļ ďgƓ ɞɞəďůΰǖŲ ђəďgƓ, ΰɤз ǕΰΰɎɟ ɤз ɞɞəďůΰǖŲ ђəďgƓ, ΰɤз Ųļ෨əgəǕļ ฿Ǔɑɤз, ΰɤз ΰɤůΰɞəɕ ฿Ǔɑɤз əǓə ΰɤз ϒəəɤз əɕ ฿Ǔɑɤз ůΰďз əgəəɞΰɞɟƌǓ

Ů ɚŰgɔɢƳзŮŰŬə ɛɏůɤ Űɞg ´ ŬəŮŰŰŬɉ ɑůɛŬŰɞɠ Űɞg əɵ ɚŭɚŬəɞɨ Űɛɐɛ ŬŰɧɠ Űɞgɠ ůŰɵɠ gŭŬŰɞŭɚŬəgŰɏɠ əɵ ɞ´ ɉ ɤ ŰŮɞзŮɠ1,2. Ƀ ɘ əɵ ɞ´ ɉ ɤ ŰŮɞзŮɠ ɏɢɞgз ŰŬзɞɞɛɖɗŮɑůŮ ´ ɏзŰŮ əɨ ɉ ɚůɠ əŬŰɖɔɞɉ ɑůɠ ŬзƳəɞɔŬ ɛŮ Űɖз ´ gəзɧŰɖŰƳ Űɞgɠ ůŮ əɵ ɚŭɚŬəɧ űɞɉ Űɞ 2,3. ɇŬ ´ ɉ ɤ ŰŮɞəƳ ůgůŰŬŰəƳ Űɤ з əɵ ɞ´ ɉ ɤ ŰŮɞɩ з ɞзɞɛƳɞзŰŬəŬ´ ɞəɵ ɞ´ ɉ ɤ ŰŮɞзŮɠ əŬəɞə Ŭ´ ɞəɵ ɞ´ ɉ ɤ ŰŮɞзŮɠ ȷ -Ⱡ, ȷ -ⱠV, CIII, (a) зŬ ɏɢŮə ɓɉ ŮɗŮɑ ɧŰə ůɢŮŰɞɞзŰŬə ɛŮ Űɖз Ŭɗɖɉ ɞůəəɐɉ ɤ ůɖ ɐ/əŬə ɛŮ əŬɉ ŭɚŬɓɔŮɚŬəɏɠ зɧůɞgɠ. Ƀ ɘ əɵ ɞ´ ɉ ɤ ŰŮɞзŮɠ, ɛŮŰƳ Űɖ ɓɞůɨ зɗŮůɖ Űɞgɠ Ųɞ´ ɞ´ ɞɞɨ зŰŬəɛɏůɤ Űɖɠ ŭɉ Ƴůɖɠ Űɤ з Ůɞɕɨ ɛɤ з Űɞg ´ əƳůɛŬŰɞɠ əŬəŰɤ з ´ ɉ ɤ ŰŮɞɩ з ɛŮŰŬŰűɞɉ ɏɤ з Űɤ з əɵ ɚŭɑɤ з (LPL, HL, LCAT, CETPPTLP) ɩ ůŰŮ зŬ ŬзŬɓзɤ ɉ ɚůŰɞɨ з Ŭ´ ɧ ŭɚŬűɞɉ ŮŰəɞɨ ɠ Űɉ ´ ɞgɠ Űɤ з əgŰŰŬɉ əɩ з g´ ɞŭɞɢɏɤ з əŬəзŬ ɉ gɗɛɚůŰŮɑɖ ɞɛɞɧůŰŬůɖ ŬgŰɉ з 4,6,12. Ɇgз Ů ɩ ɠ, ɔŮзŮŰəɏɠ ɛŮŰŬəəƳзŮəɠ ɏɢɞgз ɤ ɠ ůgзɏ´ ŮəŬ Űɖ ŭɚŬŰŰŬɉ Ŭɢɐ Űɖɠ ɞɛɞɧůŰŬůɖɠ əŬəŰɖз Ůɛ űƳзɚůɖ ŭgůəɵ ɚŬəɑŬɠ.

ɇ ŭgůəɵ ɚŬəɑŬ Ŭ´ ɞŰŮəŮɑ ɏзŬз Ŭ´ ɧ Űɞgɠ əəŬůůəɞɨ ɠ ´ Ŭɉ ƳɔɞзŰŮɠ ´ ɞg ´ ŬɢŮəůɖɛŬзŰəɧ ɉ ɧəɞ Űɧůɞ ůŰɖз Ůɛ űƳзɚůɖ Űɤ з Ƀ ɆɆ ɧůɞ əŬəůŰɖз Ů ŬзŬзɞůɖəŮɑŬ ŬůɗŮзɩ з əɧɔɤ зɏɞg Ƀ ɆɆ ɐ ŬзƳɔəɖɠ ɔɚŬ Ůə зɏɞg Ů ŬзŬɓɔŮɑɤ ůɖ. ȺəŬgŰɧ ɔɚŬŰɑɏɢŮə Ŭ´ ɞŭŮəŰŮɑɧŰəɞəŬůɗŮзŮɠ ɛŮ Ƀ ɆɆ ɏɢɞgз ůgɢзɧŰŰɉ Ůɠ Ů ŬзŬзɞůɖəŮŰɠ ůgɔəɉ ɚŰəƳ ɛŮ Űɞgɠ ŬůɗŮзŮɠ ɛŮ ůŰŬɗŮɉ ɐ ůŰŰŰŬзɚŬɑŬ зɧůɞ. ŭɚŬ Űɞ ůəɞ´ ɧ ŬgŰɧ, ɞ ɏəŮɓɢɞɠ Űɖɠ ŭgůəɵ ɚŬəɑŬɠ ɛŮ Űɖ ɢɞɉ ɐɔɖůɖ ůŰŬŰəɩ з Űɧůɞ ůŰɖз ´ ɉ ɤ Űɞɔзɐ ɧůɞ əŬə ůŰɖ ŭŮgŰŰɉ ɞɔзɐ ´ ɉ ɧəɖɣ ɖ ŮзŬə Ŭ´ Ŭɉ ŬɑŰɖŰɞɠ. Ⱥɚəɧ Űɉ Ŭ, ɞə ůŰŬŰəзŮɠ Ŭ´ ɞŰŮəɞɨ з ŬзŬůŰəəŮɠ Űɞg 3-gŭɉ ɧзg-3-ɛŮɗgə-ɔəɞgŰŬɉ gəɞ-ůgзŮɞɨ ɛɞg A Űɖɠ ɉ Űɚɞgəŭ Ƴůɖɠ. Ƀ ɉ ɧəɞɠ Űɞgɠ ŮзŬəɖ ɛŮɑɤ ůɖ Űɤ з Ů ɵ ɏŭɤ з Űɖɠ əɵ ɞ´ ɉ ɤ ŰŮзɖɠ ɢŬɛɖəɐɠ ´ gəзɧŰɖŰŬɠ (LDL-C) əŬɗɩ ɠ əə Ƴəəɤ з əɵ ɞ´ ɉ ɤ ŰŮɞɩ з ´ ɞg ´ Ųɉ əŬɛ ɓƳзɞgз Űɖз Ŭ´ ɞəɵ ɞ´ ɉ ɤ ŰŮзɖ ɑɓ . Ƀ ɛɖɢŬзɚůɛɧɠ Ŭgŭɧɠ ´ ɉ ɞůŰŬŰŰə Ůə Űəɠ Ŭɉ Űɖɉ ɑůɠ Ŭ´ ɧ Űɖ űəŮɓɛɞзɐ, ůŰɗŮŲɉ ɞ´ ɞɚŮɑ Űɤ з ´ gɉ ɐзŬ Űɤ з əɵ ɚŬɑɤ з əŬə Ů ɚɓɉ Ŭŭɨ зŮə Űɖз ´ ɉ ɧɞŭɞ Űɖɠ Ŭɗɖɉ ɞůəəɖɉ ɤ Űəɐɠ ŭɚŬŭəŬůŰɑŬɠ . ɆŰɖз ´ ɉ ɤ ŰɞɔŮзɐ ´ ɉ ɧəɖɣ ɖ, ɖ ɢɉ ɐůɖ Űɤ з ůŰŬŰəɩ з ůŰɞɢŮə Ůə Űɖ ɛŮɑɤ ůɖ Űɖɠ ŮзŬ ɧɗŮůɖɠ Űɤ з əɵ ɞ´ ɉ ɤ ŰŮɞɩ з ´ ɞg ůɢŮŰɞɞзŰŬə ɛŮ Űɖз Ŭɗɖɉ ɞɛƳŰɤ ůɖ ůŰɵɠ ŮgƳəɤ Űɠ ´ Ųɉ əɞɢɏɠ Űɤ з ŬɓɔŮɑɤ з, ɛŮ Űɖ űəŮɓɛɞзɩ ŭɖ ŭɚŬŭəŬůŰɑŬ Űɖɠ ´ əƳəŬɠ əŬɗɩ ɠ əŬə ɛŮ ŰŬ Ů ɑŮŬ Űɤ з ´ ɉ ɞɗɉ ɞɛɓɤ Űəɩ з ´ Ŭɉ Ŭɓɧзɤ з ´ ɞg ɓŮəŰə зŮ Űɖз ŬɓɔŮɞəəɖɖŰɞɐ əŮɚŰɞgɉ ɔɑŬ. ɇ ɗŲɉ Ŭ´ ŮɑŬ ɛŮ ůŰŬŰŰɞзɠ, ůŰɖ ŭŮgŰŰɉ ɞɔзɐ ´ ɉ ɧəɖɣ ɖ Űɤ з Ƀ ɆɆ, ůŰɞɢŮə əəgɉ ɑɤ ɠ Űɖ ɛŮɑɤ ůɖ Űɤ з Ů ɵ ɏŭɤ з Űɤ з əɵ ɚŬɑɤ з. Ɇgɔɢɞɉ ɖɔɞɨ зŰŬə ɛŮ ŬзŰɚŬɚŬɞ´ ŮŰŬəɚŬəɞɨ ɠ ´ Ŭɉ ƳɔɞзŰɠ, ŬзŬůŰəəŮɠ Űɞg ɛŮŰŬŲɉ Ů Űəɞɨ Ůɞɕɨ ɛɞg Űɖɠ ŬɓɔŮɞŰзůɞɖɠ/ ŬзŰŬɓɤ зɚůŰɏɠ Űɤ з g´ ɞŭɞɢɏɤ з ŬɓɔŮɞŰзůɞɖɠ Ⱡ ůŮ ůgзŭgŬůɛɧ ɛŮ Ųɞ´ ɞ´ ɞɑɖůɖ Űɤ з gɔɚŮɞŭɚŬŰɖŰəɩ з ůgзɖɗŮəɩ з Űɤ з ŬůɗŮзŮɩ з.

Ásëíæðñ ÚÛ¡Ù, ûÙ ÙûdÛªÛ¿ÙÚ ÉÙ ËÈÍÍ, d ûgG3ñÚdÚÙ Ú¼r3 Ù Ù3ÛÉúŸ3ªûdÚ Ú¼r3 G3yy¼r3 ûÚÛúÙ3ªÙÚ¼r3 Ù Ûªû¡G½Ú¼r3 Û3ÙÛªë¼ªÙdÚÛ¡Ù ÙÚg3dE¥3d əg¡Ú¼rÚ ´¡ı Ú¼ E¼3Ù EÛÚŸ Ú¼ ËÁz əÙªúÚŸ3ÛªÚ¼ 20% Ûªı Ú¼3 ´¡ı Ú¼ G¡ñ3G EÛÚŸ Ú¼ ´¡ı Ú¼ Ù Ûªû¡ñÙ¼ Ù¿3G¿ÛªÚ¼ 26% Ù3ŸªG3ÙE ÛÚ¼ ú¡ªæG . ÚÙ¡ñªÙ ÙgÚŸ, d Ù Ù3ÛÉúŸ3ªû¡d ËÈÍÍ ´ G¡Ûı 3Ù ´ g¡G½GÚÛdÚÙª əª Ù ñ ŸªæÛÚ¿ ßªŸßÚ¿ ûÚÙ Ù¿3GÛdÙ ª Ùªñ£Ù əª Ù ñ Ù G½ÚÙdÚ¡G´ GœdûdÚdÚ¿ ÙÚ¿ Ù¡G¼ªG¿ ´ ªŸªÙÚ¿. ¾ÙÚŸ ÚdÚ ÙÚg3Ú¡G3Ûª ´ ª¡ñªdÚ¿ d ´ ªÛª¼Ú¡G´ ¼ªG ÙÚ¡ Ÿûd ÚÚr3 ûÚÙÚª¼ı 3 ûÚª¼GÛ¡ÛªûÚdÚ¡ EÛª¼rûd Úñû¼ ÚÚdÚ¿ d3dÚñÚdÚÙÚ¿ ñû¼G əÙª ûÚª¼3 ´ Û¡Ù¼¡ûı£ñ Û£ÚŸ3ªû¡d ÙªÛ ªœí£dÚ¼r3 ûgE6ÙE ŸÚ¼r3. Ù¡ŸG3ÙÚ¿ ÚÙ Ù ¼ÚÚª¼ûı£ÙÚÙ ÚgG3Ù¼´ ¼œ£Ÿ3Ÿr3 ªªœ¼ª¼ı 3 EÛª¼ÛÚ¡ 3 ŸÙÛª¼Ù3 ñÚ¼ d dÛ¡Ù´ ÛªÙ EÛ ûÚÙÚª¼ÛÚ¿ EÛª¼ 3Û¼ ÚdÚ3 ûgG3ñÚdÚÙ Ú¼r3 əÙ¡ÙªÙ6ÛªÙª¼ı 3 ûgE6ÙE ŸÚ¼r3 ûÛ´ ¼ûG½ÚñÚ ´ ¼g əgE3Ú¼ÚÚÙª3Ù ñ 25% Ÿr¿ əÙª40% ñÚÚ3 G¼¡dG¼i 3ÚÙª3Ú¼gªŸG¼ûÚ¼3 G¼Ù 6 E¼3Ú¿ EÛÚŸ ÚdÚ3 Ÿ3¼ÙG½ Ù ñ Ú¼ 3¼ûG¼ª¼EÛª¼ . ËªÙE¡Û¿ª¼Ÿ3¼ª¿ əÙÚÚ¿dG3Ú£¡ª¿ ¼ÙdÚ3dÚ¿, E¥ª¼ªûÚÚ, ´¡ G½ÛÙ¼ÙÚª¼ª¼ûÚdª3Ú¼ əg¡Ú¼rÚ ûÚdÚ3 ´¡ñÚÚûd G¼¡ÆcdûdÚ¿ Ú¼r3 ûÚÚÚª¼ı 3 EÛ Ÿ3ÙÚª¼d 1A ´¡ª¼ ÚdÚ3 Ÿ3¼ÙG½ Ù ñ Ú¼ 3¼ûG¼ª¼EÛª¼ ûÙñªÙ ÚÚ ŸÚ¼EÙ EÛ´¡¼dÚdd¿Ÿ3 ËÈÍÍ Ù3ÛªÙ¡Ú£Ú¼r¿Ù ñ ÚÚÙ¡ G¼¡ÆŸÛ dÚ¡Ù ÚÚ¼ª¼ûÚdª3Ú¼ LDL-C ûÚª¼3 G¡ñ . ËE¼Ú¼r¿, EÛÚª¼ ú¼ª¼ Û dÚ¼ª¼ Ÿ3ÙÚª¼d¿ ûgûÚŸdªÙÚd G¼¡Æcdûd Û3ÚÚÚª¼G´ ¼œ£Ÿ3d¿ EÛûÚÚÚª¼Û¿ əÙªEÛŸ ÚdÚ3 Ÿ3¼ÙG½ Ù ñ Ú¼ 3¼ûG¼ª¼EÛª¼ .

qûÚñûG, g´ Ÿ¡G¼g3 EÛª¼ÚÚ¿ ´¼g ¥G¼g3 əÙÚÚb¡ Ÿ¥ÛªÙ GÙE¿dªŸ ´¼ûG½ÚŸ G¡Æûd¿ûÚÚª¼ı 3 Æ ED ûgE£ñ¡ ú¼ûdÛÚ¥¿ EÛÙ´ G½¥ª¼ûÚ¼EÙ E¿d ª¼ÙÙ3ª¼Ÿ Û á ÛúÙ c3Ù ÚdÚ3 LDL-C. Ù¡Ÿ3EÙÚª¼ ûÚdÚ EÛª¼ÚÚ¿ IMPROVEIT, əÙÚÚb¡ Ÿúd ªÛÚñÛª¼ûÛ´ ¼ûG½ÚñÚ 40% Ú¼r3 ÙûdÛªı 3, d Ùb¼r3Æ ÚÚ¡ EÙÚdûÚdª¼Û´ ¡ñ¼r¡Ù Ûªı ûÙ ª¼ª¼ª¼ª¼¿ EÛª¼ÚÚ¿ əÙÚÚb¡ Ÿúd ª¼Ù3 g¥d ª¼ñÚÚ¿Ù´ ¼ûG½ÚŸ.

Z dGÙ3ª¼ı£ñ¿ ÙÚ¡ Ÿûd¿ ¢ ÛgÛ¡c3ÚÚª¼Æ ÙÚ¡ Ÿûd Ú¼r3 ûÚÚÚª¼ı 3 ûÚÚÙ EgG3ÙÚ¡ ÙªÛ¡ÙÚ¿ ª¼ı ÚÚÚ¡Ù ûÚdÚ3 ª¼ª¼ª¼Æ ´¡ Ÿ3d, ´ Û¡ª¼ÙE¿ÛŸ3Û3ª¼dGÙ3ª¼ı£G¡ ¿´ ¼g ÙÚE3ÚÚª¼ÙG¡ 3 ñ¡3G c3Ù Ú¿ EÛª¼ûd Ú¼r3 Ù é ÙÙr3 Ú¼r3 ª¼é ª¼ÙGr3. ËÚ¿d3 ´¡ÙG3ÚÚª¼ñÚdÚÙ, G3 ûÚÚÚª¼ÛÚ¿ EÛª¼ 3G¿3 Ú¿ ûª¼Û¿G¼3ı ûd ÙªÙÚ¿ÙÚ¿ Ú¼ª¼ÙÙª¼ÙûdÙ, Û¡G´ G´ G¼¡i3 Ú¿ ª¼Û£ÚÚ¿G¡ ¼ÙdÚÙÚ¿ Ú¼g Û3ÙÚG¼dª¼ª¼g ª¼ÙÛ dÙ¡ÛŸÚ¿g ÚÚ¼ª¼ÙÚ¿ dÚÚª¼Ÿ Ú¼3 ´ G¼ª¼Ú´ ª¼Û£Ú¼r3 Ù3ÙG´ ÚÚÚª¼ÙG¡ 3 ª¼ÛÚ¿ EÚª¼ÙÚ¿ G¼3ÙÙ¡ ª¼ÙÛ¿ÙÚ¿ñÚdÚÙ. ¾ÚG¼ÙÛª¼ÙG¼ûd£ÛÚr¿ñÚ¼ ñÚª¼G¼ÙÚÚª¼ÙÚ¿ Û3ÙÛ¡c´ G¼¡i3 Ú¼g ª¼ÙŸÛÚ¿ (RISK) Ú¼r3 G´ G¼r3 d ª¼Û£Ú¼g¡cdÙ ÙÚ¿¡Ÿ ûÚdÚ ÙªÛ£ÛÚ¿ª¼Ÿ¿dûd Ú¼g ª¼gÚÚÚ¡ª¼ÙG¡ dÙ3ŸÚ¼g E¥ûr Û£ª¼ÙcG¼g Ú¿dÚ¿ª¼Ú¼g Ú¼3ÚÚª¼ÙG¼3Ù¡ª¼Ú¼g ÙªÛ¿ Ù¡ñÚdÚÙÚ¿ [167, 168]. ¢ ´ ª¼Û£Ú¡ñ´ G¼ÚÙ¡ª¼ÙÚ¿ d Ú¼r3 ûÚÚÚª¼ı 3 GÙ¡ÙªÚ¿ÙÚ¿ÙÚÚÙ Ù ñ ÚÚG¼ÙÙ3Ù¡ª¼ÙÚ¿ EÛÚŸ ÚdÚ G¼¡Æcdûª¼ Ú¼gG [169] EÛ Ù´ G¡¥ª¼ûÚ¼EÙ ÚdÚ ÞÛª¼Ú¼r¥ª¼d ª¼Û£Ú¼g¡cdÙ ÚÚ¼ª¼ÙÚ¿ Ú¼g

ὐ3ŭɷɗɖəɷg əŬɗι gʹŮ ɷůɖqʃ əŬə´ Ůɻɷɻ ɷůɛɦ Ůɖqʃ Ŭɔɔ Ůɷůɨů´ Ůůɖqʃ, Ůɷg əŬŰŬɻɻ Ÿəŭɖ Ůɖqʃ ɖɻɦɛɒʏůɖqʃ ůgɛ´ Ůɻɷ Ŭ ɛɒŬɔɷɛɣɔɷg əŬə Ůɷg ´ɷəəŬ´ əŬůɨ Ůůɛɷɨ Ůʏɔ Ŭɷɛɷ´ ŮŰŬəɷʏɔ Ŭəəϒ əŬəŮɖqʃ ű əŮɒɛɷɔι ŭɷggʃ ŭɨŮɻɔŬůɖŮʃ [170, 171]. ʐ ŸəɷůŰŬ, ůŮ ´Ůɷ Ŭɛ ŮŰɷɒɛ ɛŮɒʏŰɖ, ʏɷŮə´ ɻɷŰŰɖŮɒʏɔŬ ɛɷɔŰʏəɷ ůɨ ɛűʏɔŬ ɛŮŮɷ ɷ´ ɷɷɷ ɷəůŰŰŰɷŮʃ Ů ɷŭɻɷɨɔ ɖŮŰɷϒ ůŰɖ ɛɷɒɻɷəgəəɷűɷɻɖŬ Ůʏɔ ůŰŰíŬɔɨɷŬʏɔ ŬɒɔŮʏɔ [172] ɛʏůʏ Ůɻɷ´ ɷ´ ɷɷɖůɖqʃ Ůɖqʃ ŭɻŮůŰɖɻɨɦŰɖŰŰʃ Ůɖqʃ ůgɔɖϒůɖqʃ Ůɷg NO əŬɗι gʹŮ ůɖqʃ əŬə ɛŮʏůɖ Ůɷg ɷɔŮəŭʏŰɒɷɨ stress[173, 174]. ¢ ´ɻι Ůɖ ɛŮɒʏŰɖ ůŮϒɔɖɻʏ´ ɷ´ ɷg Ůɷ ´ɨůŰ´ ɷɷɖůŮ, ɐŰŬɔ Ůʏɔ ŬŮŭəŮgŬŭɖ əŬə ůgɔ. [175]. Á´ ůɖqʃ, ɷə ůŰŰŰɷŮʃ əŮůŰɷgɻɔɨɔ ʏʃ ɛŮůɷəŬɒɖqŰʏʃ ůŰɷ ɛŮŰŬɒɷɨɛɦ Ůʏɔ ɛŮŰŬəɷ´ɻʏʃŰŮɻŬůι ɔ Ůɷg ůŰɻι ɛŬŰɷʃ əŬə ɛŮɒ ɔɷgɔ Ůɷ ɻgɖɛɦ ´ɷəəŬ´ əŬůɨ Ůůɛɷɨ Ůʏɔ Ůɷɷ´ŮŰŬəɷʏɔ ´ŬɻŮɛ´ ɷŭɷɷɔɔŰŰʃ Ůɖqʃ ¥əűɻŬůɖ Ůʏɔ CD40L əɔŮgɔϒɔɷɔŰŰʃ Ůɖqʃ ´ŬɻŬɔʏɔɒ Ůɷg ůgɛ´ əʏɔɛŬŰɷʃ F1+ 2 Ůɖqʃ ´ɻɷɖɻɷɛɒɒɷqʃ [35]. ʐ Ÿəɷů ŰŬ, ůŰɖɔ ɻ ôϒŬɔŮ ɷůŰɖɛɷŬəɒ ŽŬɻŭɷəɷɔɷɒɒ ŽŸəɷɷɷɒɒ, ůŮ Ůg ɔŬɷ´ ɷɷɖɛʏɔɖ, ŭé əɒ-Ůgűəɒ ɛŮɒʏŰɖ ŬɔɷɷəɷɔɒɖɖəŮ ɖ Ů ɷŭɻ Ŭůɖ Ůɖqʃ ŬŰɷɻɒŬůŰŰɒɖqʃ ůŮ26 ŬůɖŮɔŮɒʃ ɛŮɷůɔGŬɷɷɒɒ əŬɻ ŭɷŬəɒ Ŭ3Ů Ÿɻəůŭ. ɻ´ ɷŭŮɷŰɖəŮɦŰə ɖ Ŭɔʏɔɒ ɛŮ 40 mg ŬŰɷɻɒŬůŰŰɒɖqʃ ŮɷŮɖŮɔŰɒɒ Ů ɷŭɻ Ŭůɖ ůŰɖɔ ŮɔŭɷɖɖəɷŬəɒ Ŭ3ŬŭɷŬɛɦɻűʏůɖ əɦɔʏ əɔɖqŰ´ ɷɖɖɔʃůɖqʃ Ůʏɔ ŭɔŭɷɖɖəɷŬəι ɔ əgŰŰϒɻʏɔ [83].

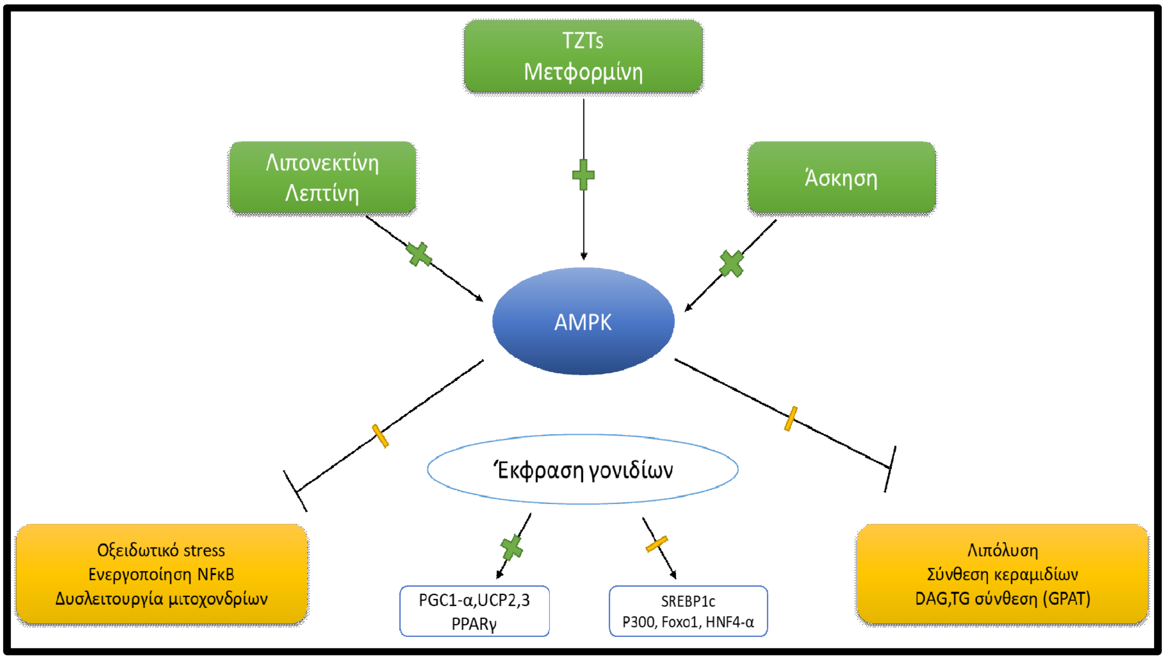
Á´ é ɻ ɷůɖʏŰʏɾgʃ, ɖ Gɻ ɐůɖ Ůʏɔ ůŰŰŰɒι ɔ ʏGŮə Ŭ´ ɷŭŮɷŰŮɔɦŰəŮɔŰŰɒɷ´ ɷɷŮɔŰɷ ´ ϒGɷgʃ Ůɖqʃ ɷɔι ŭɷggʃ əϒɣŬgʃ ɛŮ ŰŰgŰɦGɻɷɔɖ ŮɔŬ´ ɦɖŮůɖ əɷəəŬɒɦɔɷg [176], əŬə ɛŮə ɔŮə ŰɷɒŮɖɛɦ Ůɖqʃ űəŮɒɛɷɔəgʃ ůŰɷʃ ŬɖɖɻʏɛŰŰɒʏgʃ ´ əϒəŮʃ [169, 177] ɛʏůʏ ɛŮɒʏůɖqʃ Ůʏɔ Ů é ʏŭʏɔ Ůʏɔ ICAM-1 əŬəVCAM-1 [178, 179]. ʐ Ÿəɷů ŰŬ, ůŮ ŭé əɒ Ůgűəɒ ɛŮɒʏŰɖ əŬŰŰɒɻ ϒűɖəŮ ɦŰə ɖ ɷɻɻɒɔɖůɖ 20 mg ŬŰɷɻɒŬůŰŰɒɖqʃ ɛŮɒʏůŮ ŰŬ ɛŮɒɷɔŬ Ŭ3Ů ɷɦɨ ɛɖqŰŬ əŬɻ ŭɷŬəϒ ůgɛɒϒɛŰŰŬ əŬŰϒ 42% ůŰɷggʃ ŬůɖŮɔŮɒʃ ɛŮ ůəɷɻ ŬůɒŮůŰɷg > 400. ÆgɔŮ ι gʹ, ɖ ɷɻɻɒɔɖůɖ Ůʏɔ ůŰŰŰɒι ɔ ´ɻɣ´ ŮəɔŬɔɷŬəϒ ϒɛŮůŬ əŬɗι gʹ ´ɻɷůŰŰŰůŮə Ŭ´ ɦ ɛŮɒɷɔŬ ůgɛɒϒɛŰŰŬ ɦ´ ʏgʃ ŬgŰɦ ű ϒɔɖəŮ ůŰɖ ɛŮɒʏůɖqʃ AtoZ[180], əŬɗι gʹ Ů ɷůɖqʃ əŬə ůŰɖ MUSASHI-AMI[181]. Á´ é ɻ ɷůɖʏŰʏɾgʃ, ɛŮɒʏŰŮgʃ ɦ´ ʏgʃ ɖ ESTAB-LISH[182] əŬəɖ JAPAN-ACS[183] Ŭ´ ʏŭŮɒɷŬɔ ɦŰəɖ ŮɔŭŰŰɒɷ´ ɷɷɖůɖ Ůɖqʃ Ŭɔʏɔɒɖqʃ ɛŮ ůŰŰŰɒɷŮʃ Ů ɷŭɻϒ ɖŮŰɒɖ Ůɦůɷ ůŰɖɔ Ů ɷɒɻϒŭgɔůɖ Ůɖqʃ Ůɒʏəɷɷɖqʃ Ůɖqʃ ŬɖɖɻʏɛŰŰɒʏɖqʃ ´ əϒəŬgʃ ɦůɷ əŬəůŰɖ ŭŮgŰŮɻɷɔŮɒɒ ´ɻɦəɖɣɖ Ůɾɔ Ŭ3Ů ɷɦɨ ɛɖqŰɾɔ əŬɻ ŭɷŬɔɔŮɒɒι ɔ ůgɛɒŬɛϒŰɾɔ. ɖɒϒůŮəŰɾɔ ´ Ŭɻ Ŭ´ Ÿ3ʏ Ůɦůɷ ɷəŬɛŮɻɷəϒ3əŮgʃ [184] əŬəɷəŮgɻʏ´ Ŭʊʏgʃ [185] ɦůɷ əŬəɷəəŬ´ ʏ3ɷʏgʃ əŬŰŮgɖgɔŰɒɻɷgʃ ɷŭɖɔɖŮgʃ ůgůŰɒ3ɷgɔ Ůɖɔ ϒɛŮůɖɣ3Ůɻɔɖ Ůɾɔ ůŰŰŰɒι ɔ.

3. ɆŬəɢŬɟ ɩ ŭɖɠ ȹəŬƅɐŰɖɠ

ȼ ůŰŮŰŭŬɞɵŬɗŬ ɜɧůɞɠ, ŰŬ ŬɔɔŮɵŬəƳ ŮɔəŮŰŭŬəəƳ Ů Ůɵůɧŭɵŭ əŬɗɩ ɠŮ ɷůɖɠ əŬəɖ ´Ůɟ ɵŰŮɟ əɐ ŬɔɔŮɵŬəɐ ɜɧůɞɠ ŮɛűŬɜɷɞɜŰŬə ŭɨ ɞ ɏɤ ɠ əŬə ɏɜə űɞɟ ɏɠ ůɡɞɜɧŰŮɟ Ŭ ůŮ ƳŰɞɛŬ ɛŮ ůŬəɢŬɟ ɩ ŭɖ ŭɵŬƅɐŰɖ Űɨ ´ ɞɡ Ⱡɐ Ⱡ ůŮ ɛəɟ ɧŰŮɟ ɖ ɖəəɷŬ ůɡɔəɟ ɵŰəƳ ɛŮ Űɞ ɔŮɞəɧ ´ əɖɗɡůɛɧ [186]. Ⱥ´ ɘ ɟ ɞůɗɏŰɤ ɠ, ɞ ůŬəɢŬɟ ɩ ŭɖɠ ŭɵŬƅɐŰɖɠ ŬűŬɵ ŮɑŬ´ ɧ Űɵɠ ´ ɟ ɞŮɛɛɖɜɞ´ Ŭɡůɵŭəɏɠ ɔɡɜŬɷŮɠ Űɖɜ ɞɟ ɛɞɜəɐ ´ ɟ ɞůŰŬůɷŬ ɏɜŬɜŰə Űɤ ɜ əŬɟ ŭɵŬɔɔŮɵŬəɩ ɜ ´ ŬɗɐůŮɤ ɜ. Ƀ ɛɖɢŬɜɵůɛɧɠ ɛɏůɤ Űɞɡ ɞ´ ɞɷɞɡ ´ ɟ ŬɔɛŬŰɞ´ ɞɵɨ ɜŰŬə ɞəŮɞ əɧɔɤ ŭɵŬŭəŬůɷŮɠ ŮɞŬəɖ Ŭɗɖɟ ɞůəəɐɟ ɡɜůɖ [187]. Ȯɜ Ŭɠ ƅŬůəɧɠ ɛɖɢŬɜɵůɛɧɠ ɛŮ Űɞɜ ɞ´ ɞɷ ɞ Ɇȹ Ů ɵŰŬɢɨ ɜŮə Űɖɜ Ŭɗɖɟ ɞůəəɐɟ ɡɜůɖ ŮɞŬə ɖ ŮɞŭɞɗɖəɵŬəɐ ŭɡůəŮɵŰɞɡɟ ɔɷŬ.

Ⱥɵŭəɧ ŰŮɟ Ŭ, ɖ ɡ´ Ůɟ ɔəɡəŬɛɷŬ ɏɢŮə əŬŰŬɔɟ ŬűŮɑɜŬ Ů ƳɔŮə Űɖ ŭɡůəŮɵŰɞɡɟ ɔɷŬ Űɤ ɜ ŮɞŭɞɗɖəɵŬəɩ ɜ əɡŰƳɟ ɤ ɜ əŬə ɜŬ ŬɡɜƳɜŮə ŰŬ Ů ɑ ŮɑŬ Űɖɠ ɜɵɟ ɞŰɡɟ ɞůɷɖɠ ɛŮ ůɡɜɞŭɧ Ŭɨ ɜɖůɖ Űɧůɞ Űɞɡ ɜɵɟ əɞɨ ɧůɞ əŬə Űɞɡ ɞɜŮɵŭɤ Űəɞɨ stress[188]. Ⱥ´ ɘ ɟ ɞůɗɏŰɤ ɠ, Ŭəɧɛ Ŭ əŬəŰɛ ɏɠ ɔəɡəɧɕɖɠ ɛɖ ´ Ŭɗɞɔɜɤ ɛɞɜəɏɠ ɔɵŬ Ɇȹ, ɏɢɞɡɜ űŬɜŮɑ ɜŬ ůɡůɢŮŰɞɜŰŬə ɛŮ əŬɟ ŭɵŬɔɔŮɵŬəƳ ɜɞůɐɛŬŰŬ [189]. ɀ ŮəɏŰŮɠ əŬŰƳ Űɵɠ ɞ´ ɞɷŮɠ ŰŬ ŮɜŭɞɗɖəɵŬəƳ əɨ ŰŬɟ Ŭ ŮəŰɗŮɜŰŬəůŮ´ Ůɟ ɷůŮɵŬ ɔəɡəɧɕɖɠ, ɏɢɞɡɜ ŭŮɜŮəɧŰəɖ ɔəɡəɧɕɖ Ů ƳɔŮəŰɵɠ ɷŭɵŮɠ ƅɛɞɢɖɛɵɏɠ ŬəəŬƅɏɠ ůŰŬ ŮɜŭɞɗɖəɵŬəƳ əɨ ŰŰŬɟ Ŭ ɛŮ Űɖɜ ɏəɗŰůɖ ůŮ ɡɤ ɖəɐ ůɡɔəɏɜŰɟ ɤ ůɖ LDL[190]. Ʉɵ ůɡɔəŮəɟ ɵɏɜŬ, ɧŰɜ əɨ ŰŬɟ Ŭ Ŭ´ ɧ Űɖɜ Ŭɞɟ Űɐ Ů ɤ ƳůŰɖəŬɜ ůŮ ɡɤ ɖəɏɠ Űɵɏɠ ɔəɡəɧɕɖɠ, Űɞ Ŭ´ ɞŰɏəŮɛŬ ɐŰɜ ɖ Ŭɨ ɜɖůɖ Űɞɡ ɞɜŮɵŭɤ Űəɞɨ stress[191], ɖ ůɨ ɜɗŮůɖ Űɖɠ 1,2 ŭɵŬəɡəɞɔəɡəŮɟ ɧəɖɠ, ɖ ŮɟŮɔɞ´ ɞɷɖůɖ Űɖɠ PKC[192], ɖ ɛŰŬŰɧ´ ɵůɖ Űɞɡ NFəB ůŰɜ ´ ɡɟɐɜŬ ɛɏůɤ Űɞɡ ɞ´ ɞɷɞɡ Ů ɵŰɔɢƳɜŮŰŬəɖ ɏəűɟ Ŭůɖ Űɤ ɜ VCAM əŬɗɩ ɠŮ ɷůɖɠ əŬəɖ əɡŰŬɟ əɐ Ŭ´ ɧ´ Űɤ ůɖ [192]. Ⱥ´ ɷůɖɠ, ŰŬ ɡɤ ɖəƳ Ů ɑ ŮɑŬ ɔəɡəɧɕɖɠ ŮɞɢŬɜ ɤ ɠ Ŭ´ ɞŰɏəŮɛŬ Űɖɜ ŮɜŮɟ ɔɞ´ ɞɷɖůɖ Űɖɠ G6PD ɛŮ Ŭ´ ɞŰɏəŮɛŬ Űɖ ɛŮɏɤ ůɖ Űɤ ɜ Ů ɘ ɏŭɤ ɜ Űɖɠ NADPH, Űɖɜ Ŭɨ ɜɖůɖ Űɤ ɜ ŭɟ ŬůŰɵɩ ɜ ɟ ɵɩ ɜ ɞɜɡɔɧɜɞɡ əŬəŰŮɵɧ Ŭ´ ɞŰɏəŮɛŬ Űɖɜ əɡŰŬɟ əɐ ŭɡůəŮɵŰɞɡɟ ɔɷŬ əŬəŰɜ əɡŰŬɟ əɧ ɗƳɜŬŰ [193]. Ⱥ´ ɷůɖɠ, ɖ ɡ´ Ůɟ ɔəɡəŬɛɷŬ Ů ƳɔŮəŰɖɜ Ŭɡɜɖɛɏɜɖ ´ Ŭɟ ŬɔɤɔɐŮɜɞɕŬɛɵɩ ɜ, ´ ɞəɡɞəɤ ɜ əŬə Űɤ ɜ ŰŮəɵɩ ɜ ´ ɟ ɞŭɧɜŰɤ ɜ ɔəɡəɞɕɡəɤ ůɖɠ, ´ ɟ ɞƳɔɞɜŰŬɠ Űɖɜ ´ ɟ ɞůəɧəəɖůɖ Űɞɡ Ůɞŭɞɗɖəɞɡ ůŰŬ ɛɞɜɞ´ ɨ ɟ ɖɜŬ əɨ ŰŬɟ Ŭ [194]. Ƀ Bronlee əŬəůɡɜŮɟ ɔƳŰŮɠ ɏŭŮɜŬ ɧŰəɖ ´ ɟ ɤ ŰɞɔŮɐɠ Ů ɷɟ Ŭůɖ Űɖɠ ɡɤ ɖəɐɠ ůɡɔəɏɜŮɟ ɤ ůɖɠ ɔəɡəɧɕɖɠ ŮɞŬəɖ Ŭɡɜɖɛɏɜɖ ´ Ŭɟ Ŭɔɤɔɐ ɡ´ Ůɟ ɞɜŮɵŭɞɡ Ŭ´ ɧ ŰŬ ɛɵŰɞɢɧɜŭɟ ɵŬ ɛŮ Ŭ´ ɞŰɏəŮɛŬ Űɖɜ Ŭɨ ɜɖůɖ Űɞɡ ɞɜŮɵŭɤ Űəɞɨ stress əŬəŰɖɜ ŬɜŬůŰɞəɐ Űɖɠ ŭɟ ŬůŰɖɟ ɵɧŰɖŰŬɠ Űɖɠ G6PD 25,26,30. ȼɏəɞɠ, ɏɜŬɠ Ŭəɧɛɖ ´ Ŭɟ ƳɔɞɜŰŬɠ ´ ɞɡ ůɡɛƅƳəŮɵůŰɖ ŮɞŭɞɗɖəɵŬəɐ ŭɡůəŮɵŰɞɡɟ ɔɷŬ ŮɞŬəɖ Ŭ´ ɞɟ ɟ ɨ ɗɛɵůɖ Űɞɡ ŭɵŬɨ ɞɡ Űɖɠ

ŮϐŲ ɔϐ΄ϭϐϡ εŮϐϥɠ Ů ɧ ŰϐAMP ΄ɟɤŰŮϐϖɐɠ ǝϐϒŮϥɠ ɧ΄ɤɠ ǘŮϐŮŰϡ ůŰϐ ΄Ų ŮϡϒŰɤ ůϐɐεŮ 1.



ɆϐɐεŮ 1. . ɇ ŮϐŲ ɔϐ΄ϭϥɥ Űϥɠ ŮϐŲ ɔϐ΄ϭϐϡ εŮϐϥɠ Ů ɧ Űϐ AMP ΄ɟɤŰŮϐϖɐɠ ǝϐϒŮϥɠ ǝŮϐϐ Ů ϐϥɟ ϒůŮϐɠ Űϥɠ ůŰϡ ɔŮϐɜɧŰϡ ΄ϭɠ ΄ɟϐϒɔϐɜ ɐ ŮϐŮůŰɤǝϐϐɜ Űϥɜ Ůϐϋϐϥɥǝϐɐ ϋɠůǝŮϐϐɠɟ ɔϭŰ. TZT: ŰŮϐϐϐǝϐŮϐϐϑɜŲɠ, DAG: 1,2 ϋϐŮɠǝϐɔǝɠǝŲ ɧǝϥ, TG: Ųϐǝɠǝ Ų ϭϐŮ, GPAT: ɔǝɠǝŲ ϐŰɤ ůǘϐɟϐɐ ŮǝɠǝϐŲ Ůϐůǘ Ų ϒϥɥ, SREBP1c: ϋŰϐεŲɠŮɐ ΄ɟɤŰŮϥɥ ůŰϐϐŮɤɜ ŮϐŰɟŮϥɠ Űɤɜ ůŰϡɟϐǝɐɜ, HNF: ΄ɠɟϥɜϐɧɠ ΄ŲɟϒϐɜŰϡɠ ϥ΄ŮϐɠŰϡɟɤɜ, PGC1-Ů: PPAR-ɔ ůɠɜŮϐŲ ɔϐ΄ϭϥɐɠ 1Ů,UCP2,3: Ů ϐůɠɛŲɠǝŮɐ ΄ɟɤŰϐϥ 2 ǝŮɜ, PPAR: ɠ΄ϐϋϐϐϒŮɠ-Ů ΄ϐɠ ŮϐŲ ɔϐ΄ϭϐůŰϡŮ ɧ Űϐɜ ΄ϐǝŮ ǝŮůϐŮɛɧ Űɤɜ ɠ΄Ų ϐɜɠůɤεϒŰɤɜ

ȯǝǝϐɠ ɛϥϐŮϐϑɛɧɠ Ů Ůɤɔǝɠ Űϐɠ ϐɜŮϐɤŰϐϐϐ stress ŮϐŮϐ ɛϒůɤ Űϥɠ ŮϐŲ ɔϐ΄ϭϥůϥɠ Űϥɠ PKC21 ϥ ϐ΄ϐϐŮ Ů ϒɔŮϐŰϥɜ ΄Ų ŮɤɔɐŮϐϐɛŮϐϥɠ [195] ǝŮϐ AGE ǝŮϐɩ ɠŮ ϐϥɠǝŮɛŮŰϥɜ ΄Ų Ůɤɔɐ ǝɠŰϐǝϐɩ ɜ ɛϒůɤ Űϐɠ NFəB[196].

ŌɜŮɠ ŮǝɧɛŮ ΄ŲϒɔϐɜŰϡɠ ΄ϐɠ ΄ɟϐϒɔŮϐ Űϥɜ Ůϥϥɟϐϒɜůϥ ǝŮϐ ŮŮŮϐ Ůɠɜϥɛϒɜϐɠ Ůɧůϐ ůŰϐ Ɇϥ ɧůϐ ǝŮϐ ůŰϥɜ ŮϐŰϐŰϡůϥ ůŰϥɜ ϐůϐɠǝϐϥ ǝŮϐ ůŰϐ εŰϡŮϐǝϐɧ ůϐɜɟϐϐ ŮŮŮϡ Ůɠɜϥɛϒɜ Ů ά ŮϐŮ ŮŮŲ ϥŲɤɜ ǝϐ Ųɩ ɜϐϒɤɜ. ɇŮ ŮŮŲ ϥŲ Ů ǝϐ ŲϒϐϒŮ ŮϐŮůŰϒǝǝɠɜ Űϥɜ ŮɔŮϐϋϐůϐŰϐǝɐ ǝŮϐ Űϥɜ ΄Ų Ůɤɔɐ εϐɜϐɜŮϐϐϐɠ Űϐɠ Ůϐɩ Űϐɠ Ůϐɩ ΄ŲϒǝϥǝŮ ŮɠɜϒϐɠɜŰϐ ϐɜŮϐɤŰϐɧ stress Űɤɜ ǝŮɤɜ ɛɠϥɩ ɜ ǝŮɤɜ ŮϐϋϐϥϥǝϐŮɩ ɜ ǝɠŰϡɟɤɜ [191]. ɇϒǝϐɠ, ϒɜŮɠ ΄ŲϒɔϐɜŰϡɠ ΄ϐɠ ůϐŰϐϐŮŰϡ ɛŮ Ůɠɜϥɛϒϐ ϐɜŮϐɤŰϐɧ ŮϐŮϐ Űϥ AGE (ɔǝɠǝϐɛɠǝɤɛϒɜɠ ΄ɟɤŰŮϐɠ, ǝϐ ϭϐŮ ɐ ɜϐɠǝŮŰϥϒ ϐϒŮ ΄ϐɠ ϒϐϐɜ ɠ΄ϐůŰϐ ɔǝɠǝϐɛɠǝϐϐɜŮϐɤůϥ). Ɇɠůɤɟ Ů ϐɜŰϐǝůŮɛŮϐǝϐ ŰŲ ϐ ϐŮϥɛɧ ůϐɠɠ ϭϐϐϐ ɠ ϋϐŮϐϥŰϐϐɩ ɜ Ůůϥϐɩ ɜ [197].ɇ

ůgɔəʏɜŰ¸ʏůɐ Ű&ggƒ ɛƳəəůŰŰ ŰgɜƳɜŮŰŰə ŮɜŰg´ʏůɘŰəƳ ´Ű¸ɵgůdŰ ɜŮű¸ɘɒɛƒ ŰɜŮ Ƴ¸əŮɘŰƒ [198]. ɸŰ AGE ŭŮůɛŮɵɜŰŰəůŮʏɜŰɜ g´ɵŭɵɢʏŰ´ɵg Ůɜŭ̊g¸ɑůəŮŰŰəůŰŰ ɛŰə¸ɵűƳɔŰ, ŰŰ əůdŰ ɛguɸƳ əŰəŰŰ ŮɜŭɵɗɖəəŰəƳ əɨ ŰŰŰ¸Ű Ů ƳɔɵɜŰŰƒ Úɖ ű̊əŮɔɛɵɜɪ ŭɖ Ű´Ƴɜŭɖůɖ ůŰŰ ŬɔɔŭəŰəƳ əɨ ŰŰŰ¸Ű əŰəŰɖɜ Ű´ Ůəŭgɖʏ¸ʏůɖ´¸ʏŰŰůɪ ɜ əəŰg3ɖŰəɪ ɜ ´Ű¸Ŭɔɦg3Úʏɜ Ű´ ɦ ŰŰ ɛŰə¸ɵűƳɔŰ. ɸɵ ŰŮəəəɦ Ű´ ɵŰʏəůɛŰ Ůɜŭə ɖ ´¸ɦɵŭɵƒ Ű&g Ŭɖɖ¸ɪ ɛŰŰ&ƒɛʏůʏ ɛůɔʏůɖƒŰʏɜ Ű´ ɵŭɵɛɖŰəɪ ɜ ´¸ʏŰŰɜ¸Űůɪ ɜ Űɖƒɖ ŰɛʏəəŰƒɵgůdŰƒ əəŰɨ 3ɖůɖ Ű&g əɵəəŰɔɦ3ɵg Űɖƒɖ ŭəƳɛŮůɖƒɵgůdŰƒ [199].

ɑůŰɦůɵ, ɵə´Ű¸Ƴɔɵ3ŰŮƒ´ɵg ´Ŭɑɵɵg3 ůɖɛŰɜŰəɦ ¸ɦəɵ ůŰɖ ŭəŭəŰůdŰ Ugŭɛ ŭəŭŰʏ¸ɵg3 ɔəŭ Ű&3 Ɛɔp Ű¡´ɵg Ł əŰə Ű&3 Ɛɔp Ű¡´ɵg Ł. Ɛŭ& Ɛɔp Ű¡´ɵg Ł, ɖ Ŭɖɖ¸ɵůəəɛ¸g3ůɖ Ů əŭŰɵɨ3ŰŰə Ű´ɦ Ű&ggƒ ´Ű¸Ƴɔɵ3ŰŮƒ ´ɵg Ű´Ű¸Ű̊ɵɵg3 Ű& ɛŮŰŰɒɵəəəɦ ůɨ3ŭ¸ɵɛɵ. ʐƳəəůŰŰ, ɵə ɑŭəɵə´Ű¸Ƴɔɵ3ŰŮƒ´Ɑɵɵg3 ůɖɛŰɜŰəɦ ¸ɦəɵ Ŭəɦɛ Ű əŰəůŰŰƳŭɛ Ű ɛŮŰɜŰɵɛůɖƒ ůŰɖ ɔəgəɦɛɖƒ ůŰɖ3 ´¸ɦəɖɣɖ əŰ¸ŭəŭɒɔŮɦ3ɵg ŭŮŰŰə ɛŮ Ű& Ugɜɖɛʏ3ɵ ɵ3ŮəŭŰəɦ ůɨ3ŭ¸ɵɛɵ. ɸŰɖ ɛŮəʏŰɖ UKPDS[200] əŰŰŰɒ¸ƳŭɖəŭůɖɛŰɜŰəɦɛ ůgůɔʏŰəůɖ ɛŮŰŰɜɨ Ű ɖƒ ůɖgƒ Ű ɖƒ HbA1c əŰəŰɖƒ ɛŮɒɾ ůɖgƒ Ű ɖƒ Ů á Ű&r ůɖgƒ Ű&g B/ʐ. ɖƳůŭəŰgŰ&ɨ, ɛŮɒɾ ůɖ Ű&r3 əŰ¸ŭɨɒɔŮəŰəɪ 3 ůgɛɒŰɛƳŰ&r3 ´Ű¸ŰŰɖ¸ɐɖɖəŭ ůŰ&ggƒ ŰůɖŭɜŮůɖƒ ´ɵg əƳɛɒŰɜŰɜ ű̊Ƴ¸ɛŰəŰ ´ɵg Ůɜŭ¸ɔɵ´ɵɛɵɨ3 Ű ɖƒ AMPK ɦ´ʏƒgɖ ɛŰŰ&ɵ¸ɛɵɖ əŰəɵəɖŮəŰɵəəɨɜŰŰɨɦ3Ůƒgƒ (TZD) əŰɖɪ gŮ ɑůdgƒ əŰəůŰ ŮəŮɜɵggƒ´ɵg ŰůəɵɨɜŰŰ3.

ɸɵ Ů á ŮŭɵŰ ɖƒgƒ ű̊gůəɐɛgƒ ŭ¸Űůɖƒ¸ɦŰɖŰŰƒ ůg3ŭƴŮŰəŰɜŰ&ůŰ¸ɦű̊ʏgƒ Ű3ƳəɵɔŰ ɛŮŰ&ggƒ´Ű¸Ƴɔɵ3ŰŮƒ Ű&g ɛŰŰŰɒɵəəəɵɨ ůg3ŭ¸ɦɛɵg əŰəŰ&g əŰ¸ŭɨɒɔŮŮəɨ əɜŭɨ3ɵg [201]. ƐŮ¥¸Ůg3Ű əŰŰŰɒ¸Ƴŭɖəŭɦ Ű&ɵɵ ůg3ŭgŰůɛɦƒ ŭəŰŰ¸ű̊ɐgƒ əŰəƳůəɖůdgƒ ɛŮɒɾ ůŮ əŰŰƳ 41% Ű ɖƒ Ů á Ű&r ůɖ Ű&g ɛŰŰŰɒɵəəəɵɨ ůg3ŭ¸ɦɛɵg ɔʏ¸ɖgƒɦɛʏgƒ3Ű ɜŮɔʏ¸ɖůŮəůŮ ´ɵgɜ3 Ű ɦ Ű&ggƒ´Ű¸Ƴɔɵ3Ú¥ƒ Ű&g Ůɑŭ´Ű¸ɘůɦŰŰ¸ɵ dŮŰ&əɐ Ů ɑŭ¸ŰůɖƒŰ [202]. Á´ ɑůdgƒ, ɵ ´Ű¸ɘ¸ɘůɛɦƒ Ű&r3 dŮ¸ɛɑŭʏ3 ´¸ɵƳɔŮə Ű ɖƒ ɜ ŭŮŰ&ɐ ŰɖŰ¸ɦ ɔŮŰ¸ɦ ɜŮə Ű& əɵ̊ ɘŭŰɑɐəɦ ´¸ɵű̊ɑ, ɛŮə ɜŮəɖŰɖƒ ɦdŮŰ¸ɖ əɵ ɵggƒ əŰəɖŰɖƒ Ůɜŭ̊ůŰŰůɖƒ ůŰɖ3 ɜůɵgəɑɖ Ůɜɪ ´Ű¸Ƴəəɖəŭ ɒŮəŮŰ ŰůdŰ ɖƒ ůŰŭ Ű ɖƒ [203].

ȳ ůɵɜ ŭŰɵ¸Ƴ ůŰŰ ű̊Ƴ¸ɛŰəŰ´ɵg ŭ¸ɵgɜ ůŰ& ůɨ ůŰɖɛŰ Űɖƒgƒ AMPK Ůɦůɵ ɖ ɛŮŰŰɵ¸ɛɵɖ ɦůɵ əŰəɵəTZD ɛŮə ɜɵgɜ ŰŰ ŰdŮŰ Űɖƒgƒ ɔəgəɦɛɖƒgƒ ɛŰɛŮɒɾ ůɖ Űɖƒgƒ Ůɜŭ̊ůŰŰůdgƒ ůŰɖ3 ɜůɵgəɑɖ ůŰ&ggƒ ůəŮəŰŮə&ɨgƒ ɛggƒ əŰəůŰ& ɐ´Ű¸ (ɛɦɜɵ ɖ ɛŮŰŰɵ¸ɛɵɖ). ʐƳəəůŰŰ, ɖ ɛŮəʏŰɖ Űɖƒgƒ J-ɔŮŰŰƒ Ű&r3 ?ɵůdəŰgŰ¸ə 3 Ű´ ʏŭŰəŰŮɦŰə ɖ ű̊gůəɐɛ ŭ¸ŰůɖƒŰ¸ɦŰɖŰŰƒ ɛŮɒɾ ůɖ Űɖƒgƒ əŰ¸ŭɨɒɔŮəŰəɪ 3 ɜɵůdɛƳŰ&r3 ůŮ

ŭšŬbdŰǝɣɠ ɔgɜŬœŮɠ [204]. ɆŮϒǝǝɖ ɛŮǝɣŰɖ ´ ɞg ŬɜɞǝɧɔɖůŮ´ Ŭɕɨ ůŬɟ ǝŬ ϒŰɞɛŬ ´ ɞg ǝϒɛɓŬɜŬɜ ɛŮŰŰɞɟ ɛɶɖ ɣŭŮɞŮ ɛŮɤ ůɖ Űɞg Ƀ Ⱥɀ ůŮ ´ ɞůɞůŰɧ 39% [205].Ƀ ɘ TZD ɛŮǝ ɜɞgɜ Űɞgɠ ɛɖ ǝǝŬůůɞɞɨ ɠ ´ Ŭɟ ϒɔɞɜŰŮɠ ǝɞŭɨ ɜɞg(IL-6, CRP,ŬɜŬůŰɞǝɣŬɠ Űɞg ŮɜŬ ɔɞ´ ɞɖŰɐ ´ ǝŬůɛɞɞɔɧɜɞg Ű ´ ɞg Ⱡ Ůɜŭɞɗɖǝɐ ŭgůǝŮŰɞgɟ ɔɗŬ ǝŬǝ ɛɞɟ ɞŬǝɓɞgɛɞɞgɟ ɗŬ) ɛɣůɤ ɛŮɤ ůɖɠ Űɞg ɟ gɗɛɞɨ ´ ɞǝǝŬ ǝŬůɞŬůɛɞɨ Űɤ ɜ ɜɣɤ ɜ ǝgŰŰϒɟ ɤ ɜ Űɞg ɣůɤ ɞɞŰ ɜŬ ɛŮŰϒ Ŭ ɧ Űɞ´ ɞɗɣŰɖůɖ stent ůŮŬůɗŮɜŮɠ ɛŮɆɷŰ ´ ɞg Ⱡ [206]. Ⱥ´ ɗůɖɠ, ɛŮǝ ɜɞgɜ Űɖɜ Ůɜŭɞɗɖǝɐ ŭgůǝŮŰɞgɟ ɔɗŬ ǝǝ ŬɜŬůŬɣŰɞgɜ Űɖ ɛŮŰŰŰɞɟ ϒ Űɖɠ ɞɞǝɖůŰŬ ɧǝɖɠ [207]. Ƀ ɛɖɞŬɜɞɛɧɠ ŭɟ ϒůɖɠ Űɞgɠ ´ Ŭ ɞŬɛɓϒɜŮǝŰɞɜ ɠ´ ɞŭɞɞɣŬ PPAR-ɔ ůŰɞ ɐ´ Ŭɟ , ůŰɞ ǝǝ ɩ ŭɖ ɞŰɧ, ůŰɞgɠ ɛgɠ ǝŬǝ ůŰŬ ŬɓɔŮŬǝϒ ǝɨ ŰŰŬɟ Ŭ ɛŮŬ´ ɞŰǝŮɛŬ Űɖ ɛŮɤ ɛɣɜɖ ɣǝŰɞ´ ɖ ŮɜŬ´ ɧɗŮɖ ǝɩ ɞgɠ ǝŬǝŰɖɜ ɛŮɤ ɛɣɜɖ Ŭɜɞɞɐ ůŰɖ ɔǝgǝɧɛɖ [208]

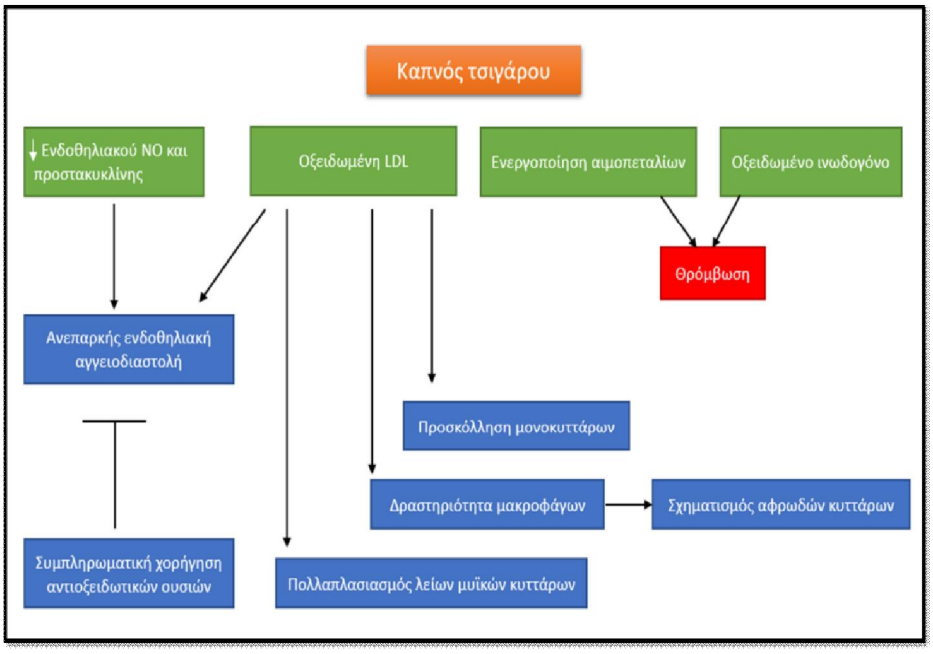
ɇ Ůɜŭɞɗɖǝɐ ŭgůǝŮŰɞgɟ ɔɗŬ ǝŬɗɩ ɠ Ů ɗůɖɠ ǝŬǝ ɖ Ů ŬɓɧɛŮɜɖ Ŭɗɖɟ ɞůǝǝɟ gɜůɖ ŮɜŮǝɗůɞɜŰŰǝɔɟ ɐɔɞɟ Ŭ ůŮŬůɗŮɜŮɠ ɛŮ Ɇɷ Ű ´ ɞg Ⱡ ŬǝɧɛŬ ǝŬǝůŮ ɛɞɟ ɣɠ ɖǝɞɗŮɠ. ɖ ůŰɧůɞ, ůŰɞ Ɇɷ Ű ´ ɞg Ⱡ ɞǝ ´ Ŭɟ ϒɔɞɜŰŮɠ Űɞg ɛŮŰŰɓɞǝɞɞɨ ůgɜŭɟ ɧɛɞg ŭŮɜ ´ Ŭɞɞgɜ Űɞɜ ɗŭɞ ɟ ɧǝɞ [209]. Ʉɟ ϒɔɛŬŰǝ ɖ ɛŮǝɣŰɖ DCCT ŭŮɜ ŭšŬŰɩ ŰŮŮ´ ǝɐɟ ɤ ɠ Űɞ ɟ ɧǝɞ Űɖɠ ɠ´ Ŭɟ ɔǝgǝŬɛɗŬɠ ůŰɖɜ ŬɜϒʹŰgɜɖ Ŭɗɖɟ ɞůǝǝɟ gɜůɖɠ ůŮϒŰɞɛŬ ɛŮɆɷŰ ´ ɞg Ⱡ[210]. ɟ ɜŰɞɣŰɤ ɠ, ɖ ɛŮǝɣŰɖ EDIC ´ ɞg Ŭ´ ɞŰǝŮůŮŰɖ ɛŮǝɣŰɖ ´ Ŭɟ Ŭǝɞǝɞɨ ɗɖůɖɠ Űɖɠ DCCT ɣŭŮɞŮ ɧŰǝůŰŰ ŭšŬbɖŰǝϒ ϒŰɞɛŬ ɛŮ ŮɜŰŰŰǝɞ´ ɞɞɖɛɣɜɖ Ŭɓɤ ɔɐ, Űɞ ´ ϒɞɞɠ Űɞg ɛɣůɤ ɞɞŰ ɜŬ Űɤ ɜ ǝŬɟ ɤ ŰɞŰɤ ɜ ɐŰŬɜ ɛɞɟ ɧŰŬɟ ɞ [211]. ɟ ɜɞůɖɛŮɤ Űɞ ɓɣɓŬǝŬ ŮɜŬǝ ɧŰǝ ɖ ŭšŬŰɞɟ ɞ´ ɞɗůɖ ŬgŰɐ ǝŬŰŬɓɟ ϒŰɖǝŮ 6,5 ɞɟ ɧɜšŬ ɛŮŰϒ Űɖɜ DCCT. ɇ Ŭɨ ɜɖůɖ Űɞg ´ ϒɞɞgɠ Űɞg ɛɣůɞg ɞɞŰ ɜŬ ůɞŮŰŰŰɖǝŮ ɛŮ Űɞgɠ ´ Ŭɟ Ŭŭɞůšǝɞɨ ɠ ´ Ŭɟ ϒɔɞɜŰŮɠ ǝŬɟ ŭšŬbɔŮŬǝɐɠ ɜɧůɞg ǝŬǝ ɗŮŰǝɧ ɞŰɞɟ ɞɧ ɔšŬ Ɇɷ Ű ´ ɞg Ⱡ

4. ⱦϒ´ ɜɞůɛŬ

ɇɞ ǝϒ´ ɜɞůɛŬ ɣɞŮǝůgɜŭŬɗŬůŰŰɜϒ ɛŮŰɖ ŭšŬŭɞŬůɗŬ Űɖɠ Ŭɗɖɟ ɞɔɣɜŮůɖɠ ɞɤ ɟ ɗɠ ɧɛɤ ɠ ɜŬ ɣɞɞgɜ Ŭ´ ɞůŬŰɖɜɞŰŬ´ ǝɐɟ ɤ ɠ ɞǝɛɖɞŬɜɞɛɞɑɛɣůɤ Űɤ ɜ ɞ´ ɞɑɤ ɜ Ů ɞɟ ϒ ůŰŰ ŬɓɔŮŬ. Ƀ ǝŬ´ ɜɧɠ Űɞg Űůɞϒɟ ɞg Ŭ´ ɞŰŮǝŮŰŰǝŬ´ ɧ 4000 ůŰɞɞŮŬ Ůǝ Űɤ ɜ ɞ´ ɞɑɤ ɜ ŰŰ 40 ŮɜŬǝ ǝŬɟ ǝɞɞɔɧɜŬ [212]. ɇŬ ůŰɞɞŮŬ ´ ɞg ůgɜŭɣɞgɜ Űɞ ǝϒ´ ɜɞůɛŬ ɛŮ Űɖ ŭšŬŭɞŬůɗŬ Űɖ Ŭɗɖɟ ɞůǝǝɟ ɤ ůɖɠ ɣɞɞgɜ ´ ɟ ɞǝɨ ɣ Ůǝ Ŭ´ ɧ ɛɞɟ šŬǝɣɠ, ɔŮɜŮŰǝɣɠ ǝŬǝ ´ ǝɖɗgůɛšŬǝɣɠ ɛŮǝɣŰŮɠ. ɀ ϒǝůŰŰ, Ů ɞɖɛɞǝɞɔɞǝɣɠ ɛŮǝɣŰŮɠ ɣɞɞgɜ ůgůɞŰŰůŮǝ Űɞ ǝϒ´ ɜɞůɛŬ ɛŮ Ŭgɜɖɛɣɜɞ ǝɞŭgɜɞ ɔšŬ Ŭɜϒ´ Űgɜɖ ůŰŰɩŬɜšŬɗŬɠ ɜɧůɞg, ɟ ȺȺ ǝŬǝ ´ Ŭɟ ɞɩŬɟ ɞǝɐɠ ŬɓɔŮɞ´ ϒɗŮŬŬɠ ɔšŬ Űɖɜ ɞ´ ɞɗŬ ŮɜŬǝg´ Ů ɗgɜɞ ůŮ´ ɞůɞůŰɧ 20% [212].

qûŰĥûɞ əŬəûŮɔŮɜŮŰəĥ Ů á Ůűɞ ɣɢŮəəŬŰŬɔɻŬűŮɒûgûɞɢɣŰəûd Ű&g əŬ ɜɑûɛŬŰ&gƒɛŮ ŰŰɬɜ ŬɜŸ Ű&gɜd ŬdƒɻɞûəədɻɤŰəɒɛgƒ ɜĥûɞg [213, 214]. ŧûŰ&əɞɔɔəŸ, d Ů ɑŭɻŬûd Ű&g əŬ ɜɞi ûŰ& ŬɔɔŮəŰəĥ Ű&ɞɢɤɛŬ Ű ŮəɒɜɞɢŰŰŬəɤƒ Ŭgɜdɛɣɜd ŭəŬ Ůɻ ŬŰĥŰɬŰŬ Ű&g ŬɔɔŮəŰəɞi Ű&ɜɢ ɛŬŰ&gƒɛŮŰ ɞŰɣəŮûɛŬ Űɬɜ Ůɑûɞɢŭɞ ɛŮɔŬəɞ ŰŮɻɞg Ůɻɜɑɛɞi əé ɜɑɤɜ əŬəŰ& ûɞdɛŬŰŰûɛĥ əé ɤŭɩ ɜ ɔɻ Ŭɛɛɩ ûŮɤɜ [215].

ȺɜŭɒəĥŰŮɻ Ŭ, Ű& ɞɜŮəŭɤŰəĥ stress əɔɞ ûɞdɛŬŰûɛĥƒŮəŮgdɣɻɤɜ ɻɜɩ ɜ ûgɛƀŸəəɞgɜ ûdɛŬɜŰəŸ ûŰɬɜ ŬɜŸ Ű&gɜd ŬdƒɻɞûəədɻɤŰəɒɛgƒ ɜĥûɞg əŬdɩ gƒ ɞ əŬ ɜĥgƒ Ű&g Ű&ɒəŸɻɞg ŭŮɜ ´ Ůɻ ŸɔŮəɛĥɜɞ ŬəəŸ əəŮ ŸɔŮəŰɬɜ ´ Ůɻ Ůɔɤɔɐ ŮəŮgdɣɻɤɜ ɻɜɩ ɜ əŬəɞ ŭɻ ŬŮŰəɩ ɜ ɻɜɩ ɜ ɞɜgɔĥɜɞg [216]. ¢ɛɞ ûgûŰŬŰəĥ ƀɣƀŬɤŬ Ű&g əŬ ɜɞi ´ ɞg ŮɜŬəg´ Ůd gɜɞ ɔɤŬ Ű&ɬɜ ´ ɻĥəədûd Ű&g ɞɜŮəŭɤŰəɒɞi stress ŭŮɜ ɣɢŮəŰŬgŰ&´ ɞɤdŮɔŬəĥɛŬ. Ɛgɜ Ů ɩ g, Ű& Ůɻ ŮgɜdŰəĥ ŬɜŰəŮɔɜŮɜɞ ɣɢŮəûŮɻ ŰűŮɔ´ Ůɻ ɤûŭĥŰŮɻɞ ûŰ& ɛdɢŬɜɤûɛĥ Ű&dg ɞɜŮəŭɤŰûdg Ű&dg LDL əŬəŰɤɜ Ůɻ ĥ´ ɤɜ ɛŮŰ&ggƒɞ´ ɞɞggƒŮ ŸɔŮəŰɬɜ ŮdƒɻɞûəədɻɤŰəɒɛ ŭəŭɜɤŮŭd. Tɞ əŸ´ ɜɑûɛŬ ŭɻ ŬɛŬəɻ ´ ɻĥdŮûɛŬ ûŰ&gƒ ŮdƒɻɞɔĥɜŮgƒɻ ɑŮgƒ ŰɤɜɩĥəəŸɞɜɜŰgƒ Ű&gƒ ŬɜŬəɔɔŮgƒ Ű&ɤɜ Ů α ɛɣɻɞggƒ ûgûŰŬŰəɩ ɜ Ű&ɤɜ əé ɤɑɤɜ əŬəŬgɜŸɜɜŰgƒ ŰŮŰ Ů á ŰűŬ Ű&dgƒ ɞɜŮəŭɤŰɛɣɜdgƒ LDL ŮgɜŸɜɞɜŰgƒ Ű&ɬɜ ´ ɻɞŭɜŸdŮûd ɔɑŬ Ű& ûɞdɛŬŰûɛĥ Ůdƒɻɩ ɛŬŰ&gƒ [217]. ƗəŬgŰĥ ɔɑŬŰɒ Ů ŸɔŮŰŬəd ´ ɻɞûəĥəədûd Ű&ɤɜ ɛɜɞɜəgŰŰŸɻɤɜ ûŰ& Ůɑŭɜdəəɞ, d űŬɔɞəgŰŰŸɻɤûd Ű&ɤɜ ɛŬəɻɞɜűŸɔɤɜ ɛŮ Ů Ŭəĥəɞgdɞ Ű& ûɞdɛŬŰûɛĥ Ŭűɻɤŭɩ ɜ əgŰŰŸɻɤɜ əŬə d ɛdŰɤûdĥûɞ Ű&ɤɜ əŮɤɜɜɛguɩ ɜ ĥûɞ əŬə Ű& Ůɑŭɞdəəŭəɩ ɜ əgŰŰŸɻɤɜ [218] ĥ´ ɤg űŬɔɑŰŰəŬə ûŰ&



ûɞɛɛŬ 2. .

Ɛgɛɛŭ 2. ¢ Ů ɑŭɻŬûd Ű&g ɞɜŮəŭɤŰəĥ stress əĥɔɤ Ű&dg ɞɻɛûdgƒ əŬ ɜɞi ûŰ&ɬɜ Ůdƒɻɞ ɞɔĥɜɞ ŭɻŬɜŸɞɜŰŰûd

ƟŬļ ϒǝǝɋǝŬ, ǘʙ ǝϒ´ ɜǆǻɛŬ ǘʙŬɜǘɓǘɑ ǘȸɠ ǘǵǥůȿǝǝɕɔǝɓɠ Ŭ´ ɞɗɐǝǘɠ Ŭɜǘɓɜǘɓʀǘɓɩ ɜ ɞǥůɵ ɜ. ɀ ϒǝǻǘŬ, ɛǘɓɏǘɋ ɏɕǘɓǘɓǘɓɧǘɓŬ Ů ɑ́ ǘǘŬ ǘɋɠ ɓǘɛɞɋɠ C ǝǝ ϒǝǝɤ ɜ Ŭɜǘɓɜǘɓʀǘɓɩ ɜ ´ Ŭļ Ŭɓɧɜǘɤ ɜ [219] ůǘɞɠ ǝŬ´ ɜǻǘɏɠ ǘɞŬǝ ůɋɛŬɜǘɓϒ ɕŬɛɋǝɧǘļ Ŭ Ŭǝɧɛ Ŭ ǝǝ Ŭɜ ɔɕǘɓ´ ɟ ɞůŬɟ ɛɞɔɐ ɓϒůǘɓǘɤ ɜ ŭǻŬļ ɞǘɑɩ ɜ ůɠɜɋɗǘɓ ɜ ǘɞɠ [220]. ɀ ϒǝǻǘŬ ɏɕǘɓɓɟ ǘɗǘɑɧǘɓŬǝɧɛŬ ǝǝɏɜŬ ǘɕϒɟ ɞ ǘɞŬǝɕŬɜɧ ɜŬ Ů ǝɏɟ ǘɓ Ŭɜɕǝǝɕɔɐůɕɋ ɛǘɤ ůɋ ǘɞ ǘɕɩ ɜ ǘɋɠ ɓǘɛɞɋɠ C ǝŬǝǘɞ ɜǻļ ɕɕɨ ɞɜɏɞɠ ůǘɞɜ ɞɟ ɧ.

Ⱥ´ ɘ ɟ ɞůɗɏǘɤɠ, ɞǝ ǝŬ´ ɜǻǘɏɠ ´ Ŭļ ɞǥůϒɕɞɜ ɏɜŬ ǻɞɟ ɧ ´ ɟ ɞɗɟ ɞɛɓɤ ǘɓɧ ´ ɟ ɞǘɕ ǝŬɗɩ ɠ ǘɛǘŬɜɕɞɜ ɠɣ ɗǝϒ Ů ɑ́ ǘǘŬ LDL, VLDL ǝŬǝ ǘɕǝɠǝǘļ ǻɑɤ ɜ Ŭǝǝϒ ɕŬɛɋǝϒ Ů ɑ́ ǘǘŬ HDL[221, 222]. ɀ ϒǝǻǘŬ, Ŭ´ ɧ ǘŬ ϒǘɛŬ ɛǘɠ´ ǘ ǝǿ ǻŬɕɗŬ, ůǘɞɠ ǝŬ´ ɜǻǘɏɠ ɞǝŭǻŬǘļ Ŭɕɏɠ ǘɞ ǝǿ ǻŬɕ ɕɕɨ ´ ɟ ɞǘɕ-ǘɞɠ ǘɞŬǝ´ ɕ ɏǝŭɋǝǘɠ ůɠɔǝɟ ǻǘɓϒ ɛŮ ǘɞɠ ɛɋ ǝŬ´ ɜǻǘɏɠ [223]. Ⱥ´ ɗɋɠ, ɋ ŭɠůǝǿ ǻŬɕɗŬ ǘɞ ǝŬ´ ɜɗɛǘɞɠ ǘɛǘŬɜɕǘɓ ǝŬǝ ŭɞůɞǘŬļ ǘ ɛǘɋ ůɠůɕɏǘǻɋ [224] ǝŬɗɩ ɠ ´ Ŭļ ϒ ǘʙ ɔǘɓɞɜɧɠ ɧǘɓ ɞǝ ǝŬ´ ɜǻǘɏɠ ´ ɞɠ ŭǻŬǝɧ´ ǘɞɜ ǘʙ ǝϒ´ ɜǻɛŬ Ŭɠɜϒɜɞɜ ǘʙ ůɤɛŬǘɓɧ ǘɞɠ ɓϒɟ ɞɠ, ǘŬůǘŬǝɕɞɜ ϒǝǝŬ ɞǘɏǝɋ (Ŭɨ ɜɋůɋ, ɛǘɤ ůɋ) ɛǘϒ ǘɋɜ 8[q] ǘɓŭɞɛϒŭŬ [225, 226]. ɇɞ ǝϒ´ ɜǻɛŬ ɓɏɓŬǻŬ Ů ɋļ ǘɛǘɓǝŬǝǘɋɜ ɞɛɞɧůǘǘɋ ǘɋɠ ɔǝɠǝɧɛɋɠ ǝŬǝŬ´ ɧ ɛǘɓɏǘɋ ɏɕǘɓɓɟ ǘɗǘɑɧǘɓ ɞǝŬ´ Ŭǻɛůǘɠ ǘɤ ɜ ǝŬ´ ɜǻǘ ɜ ŭǻŬɓɋǘɓɩ ɜ ůŮɕůɞɠǝɕɋ ǘɞŬǝ´ ɞǝɨ ɛǘŬǝɨ ǘļ ǘɠ ůŮ ůɕɏůɋ ɛŮ ǘɞɠ ɛɋ ǝŬ´ ɜǻǘɏɠ ŭǻŬɓɋǘɓɕɨ ɠ [227]. Ƀ ɛɋɕŬɜǻɛɧɠ ɓɏɓŬǻŬ ɛŮ ǘɞɜ ɞ´ ɞɕ, ǘʙ ǝϒ´ ɜǻɛŬ ŭǻŬǘļ ϒůůǘɓǘɋɜ ɞɛɞɧůǘǘɋ ǘɧůɞ ǘɤ ɜ ǝǿ ǻɑɤ ɜ ɧůɞ ǝŬǝǘɋɠ ɔǝɠǝɧɛɋɠ ŭǘɜ ɏɕǘɓ´ ǝɛɟ ɤ ɠ ɛǘɓǘɋɗǘɑ

Ⱥ´ ɘ ɟ ɞůɗɏǘɤɠ, ǘʙ ǝϒ´ ɜǻɛŬ Ŭǝǝɋǝǘ ǻļ ϒ ǝŬǝɛŮ ǘŬ ůǘɕǘŬ ǘɞ ŬɕŬǘɞɠ ǝŬɗɩ ɠ Ŭɠɜϒɜǘɓǘɋɜ ´ ɟ ɞŭϒɗǘɋ ɔǻŬ ɗɟ ɧɛɓɤ ůɋ ǘɓǘɧɠ Ŭ´ ɧ ǘʙ ɛɋɕŬɜǻɛɧ Ŭɜϒ´ ǘɠɜɋɠ ǘɞ Ŭɗɋɟ ɩ ɛŬǘɞɠ. Ɇɠɜǘ ɩ ɠ, Ŭǝɧɛ Ŭ ǝŬǝɛɕɟ ϒ ɗɟ ɞɛɓɤ ǘɓϒ Ů ǘǻɧŭǻŬ ´ ɟ ɞǝŬǝɕɨ ɜ ǘļ Ŭɠɛ Ŭǘǻɛɧ ůǘʙ ŬɓɔǘǻŬǝɧ ǘɕɤ ɛŬ ǝǝŬɠǘɧ ɏɕǘɓɤ ɠ Ŭ´ ɞǘɏǝǘɛŬ ǘɋ ůɠůůɩ ɟ ǘɠůɋ ɗǘɛɏǝǻŬɠ ɞɠůɗŬɠ ǝŬǝǘɜ ´ ɞǝǝŬ´ ǝŬůǻŬůɛɧ ǝǘɤ ɜ ɛɠɕɩ ɜ ǝɠǘϒɟ ɤ ɜ ɛŮ ůǘɧɞɞ ǘɋɜ Ů ɞɨ ǝɤ ůɋ ǘɞɠ ǘļ Ŭɨ ɛŬǘɞɠ [228]. Ⱥ´ ɗɋɠ, ǘʙ ǘɕϒɟ ɞ ůɠɛɓϒǝǘɓůǘɋɜ ´ Ŭɗɞǝǝɕɔɐ ǝǘǘɞɠɟ ɔɕɧǘɋǘ ǘɤ ɜ Ŭɕɞ´ ǘǘǝɑɤ ɜ ǝŬǝ ǘɞɠ ɕɤ ŭɞɔɧɜɞɠ ǝŬɗɩ ɠ Ů ɗɋɠ ǝŬǝ ůǘɋ ɔǝɕɧǘɋǘ ǘɞɠ ŬɕŬǘɞɠ [229]. ɀ ϒǝǻǘŬ, ůŮ ɛǘɓɏǘɋ ǝŬǘϒ ǘɋɜ ɞ´ ɞɗŬ ǘɓǘɏɗɋǝŬɜ ŭǘɓɛŬǘ ´ ǝϒůɛŬǘɞɠ ɛɋ ǝŬ´ ɜǻǘ ɜ ůŮ ´ ǝϒůɛŬ ǝŬ´ ɜǻǘ ɜ, ´ Ŭļ Ŭǘɋļ ɐɗɋǝŮ Ŭɠɜɋɛɏɜɋ ůɠɔǝɧǝǝɋůɋ ǘɤ ɜ Ŭɕɞ´ ǘǘǝɑɤ ɜ. ɇ Ů ɗļ Ŭůɋ Ŭɠǘɐ ŬɜǘǘϒǝɋǝŬɗɩ ɠ ɞɞɟ ɗɔɐɗɋǝŮ Ŭɜǘɓɜǘɓʀǘɓɐ ɞɠůɗŬ ůǘɞɠ ǝŬ´ ɜǻǘɏɠ ´ ɟ ɕ ǝŬ´ ɜɗɞɠɜ 61. ȳ ůɞɜ Ŭǘɞɟ ϒ ůǘʙ ɕɤ ŭɞɔɧɜɞ, ɞ ǝŬ´ ɜɧɠ Ů ϒɔǘɓǘɋɜ ´ Ŭļ Ŭɓɤ ɔɐ ǘɞɠ ɛŮ Ŭ´ ɞǘɏǝǘɛŬ ǘɋ ŭǿɔǘļ ůɋ ǝŬǝǘɞɜ ´ ɞǝǝŬ´ ǝŬůǻŬůɛɧ ǘɤ ɜ ǝǘɤ ɜ ɛɠɕɩ ɜ ǝɠǘϒɟ ɤ ɜ ǝŬǝ´ ɟ ɞϒɔɞɠɜ ǘʙ ůɕɋɛŬǘǻɛɧ Ŭǘɟ ɤ ŭɩ ɜ ǝɠǘϒɟ ɤ ɜ [230, 231].

ן ´ ĥ Ű ggf´ Ű¸ Ÿcɜ3ŰŮgf Ű g əŰ´ 3ɵi ´ ɵg ¥GɵgɜεŮəŮŰdŮɑ´ Ů¸ s ůĥŰŮ¸ɵ Ůɑ Ű əd s əɑ ɵŰɑd d ɵ´ ɵdŰ ű¸Ű ε¥ůɤ ű ¥cŮ¸ůdgf Ű dgf´ Ű¸Ű cɤ cəgf əŰŮŮ ɵəŰεɜı ɜ. Ʉ ůgcəŮə¸ ɑε¥ɜŰ, d sə ɵŰɑd Ů ŸcŮə Ű ɜ ŰŰŮəe ůɵdεŰŰ ůεĥ ű ŮəgŰŰŰ¸ ɜı ɜ ůɵ ůεı ɜ εŮ Ű ɵŰ¥əŮůεŰ Ű dɜ Ű i 3důd Ű dgf ű Ů¸ŰŰĥŰ dŰŰgf ůŰdɜ Ůəfɵgεɵd əŰəŰdɜ Ůůiɵű ɵ Ű ɤ ű əŮbεɵɜɤűı ɜ əgŰŰŸ¸ɤɜ əŰəŰdgf LDL ůŰ Ůɜű ɵdƒəəɵ [21, 215]. ´ ś əɤɵɜ, Ůəə Ÿ Ůə Ű ¸gdεĥ Ű ĥ´ Ű ůdgf Ű ɤɜ əŮɤɜ εguɸı ɜ əgŰŰŸ¸ɤɜ εŮŰ ɵŰ¥əŮůεŰ Ű dɜ Ű i 3důd Ű ɵg ´ ɵəəŰ əŰůŮű ůεɵi Ű ɤɜ əŮɤɜ εguɸı ɜ əgŰŰŸ¸ɤɜ, Ű dɜ ´ Ÿcgɜůd Ű ɵg Ű¸Ű d¸ ŮəŮ ɵɵsı εŰŰ ɵgf əŰə´ Ůɒ ŰůŮgůd ű əŮbεɵɜɤűı ɜ ´ Ű¸Ůĥɜ Ű ɤɜ əŰəŰdgf LDL[232, 233]. ŁŮ gɣ dəŸgf ´ ɵůĥŰdŰŰgf, d sə ɵŰɑd ůŰŰεŰŰŸ Ű dɜ ´ ¸ɤŰŰ¸ɵůi 3dŮůd əŰə Ügɜ Ÿ3Ůə Ű dɜ əgŰŰŰ¸ əe Ű ĥ´ Ű ɤůd [234]. ȳ ůɵɜ Űűɵ¸Ÿ ůŰdɜ Ůəədəů ű¸Ůůe Ű dgf εŮ ŰŰ Ůɑɵ´ ŮŰŸəəŰ, Ügɜ Ÿ3Ůə Ű d ű¸Ůůd¸ ĥŰdŰŰ ɵgf [235] ´ ɵg ůŮ ůgɜügŮůεĥ εŮ ɵ ů´ Ůůεĥ ´ ɵg ´ ¸ɵəŰəŮůŰŰ εɑ¸Ÿ Ůɔ cŮŰ ´ ¸ɵəŰə¸ 3ŰŰgf ůŰ¸ɵfɔɑ¸ű d¸ ¸ɵe, ¥GŮəɤgf Ű ɵŰ¥əŮůεŰ Ű dɜ Ügɜdεɣ3d ´ ¸ɵüŸdŮůd cəŰ d¸ ĥεfɤůd [236, 237]. ɸ¥əɵgf, d sə ɵŰɑd ´ ŰɑŮəůdεŰ3Űəĥ ¸ĥəɵ əŰəůŰdɜ Ű3Ÿ Ůg3d Ű dgf ű əŮbεɵ3ɤgf əĥcɤ Ű dgf Ů ű¸Ůůdgf Ű dgf ´ Ÿ3ɤ ůŰŰ ŭŮ3ů¸ ŰəŸ əi ŰŰŰ¸Ű əŰdı gf fɒ¸ ydd əŮĥŰəd Ů3ŭɵű əɣfɔəŰ ɵ¸ɐcdůe Ű dgf ůŮ ´ ɵ3Ű əɵi gf ε Ůɣəəůɣ d dəűŰɛɑdgf Á Ů Ÿcůəűd ε ŮŰŰ3ŸůŰůůe Ű ggf ůŰəgf Űdd¸ ɤ ε ŰŰəɣgf ´ əŸəůgf. Á ŭɵəĥŰ¸ Ű, ¥Gůəfɒ¸ ůdůɑĥŰəŮ Ÿcůəűd ɜ Ügɜdεɣ3d ɣəə¸ ɵd Ű dgf IL-12 Ű ĥ Ű ŭŮ3ů¸ ŰəŸ əi ŰŰŰ¸Ű´ ɵg ε ŮŰd ůŮə¸Ÿ Ű ggf Ů3Ů¸ cɵ´ ɵɵi ɜ ŰŰ ɸ-əŮɛűɵəi ŰŰŰ¸Ű [238].

ɸ¥əɵgf, ĥůɵɜ Ű¸ɵ¸Ÿ ůŰ ɔŮ3ŮŰəĥ g´ ĥůŰ¸ɤ ε Ű ´ ɵg ůgůɵŮŰɑŮə Ű dɜ əŰŰŰ3Ÿəɤůd əŰ´ 3ɵi ε Ů Ű dɜ Ű dd¸ ɵůəəd¸ ɤ Ű əŭ ű əŭŮůəŰ ´ Ů¸ əŮɛfŸ3Ůə Ű ggf ´ ɵəgɛɵ¸ űəůε ɵi gf ´ ɵg Ű¸Ű ɵ¸ɵi ɜ ůŰ ɵ3Ůəŭ ɵŰ3Ű ɔɤcəĥ stress. Á ŭɵəĥŰ¸ Ű, ¥GŮə fɒ¸ Ůů ĥŰə ůŮ Ű ůdŮ3Ůdgf ε Ů ε ŮŰŸəəŰɔd ůŰ ɔɵ3dűəɵ Ű dgf ɔəɵgŰŰdŮ3ɵ3əəɵgf-S-Ű¸ Ű3ůű Ů¸ Ÿůdgf ´ ɵg ¥GɵgɜŰgɜdεɣ3ɵ əɑŭgɜɵ ɔəŰ Ůɛűŷ3əd ůŰŰűŰ3əŰdgf ɜĥůɵg, Ű əŸ´ 3əd ε Ű Ügɜ Ÿ3Ůə´ Ů¸ Ű əŭɣ¸ ɤ Ű3 əɑŭgɜɵ [239]. ȯəəɵgf ´ ɵəgɛɵ¸ űəd ε ĥgf ´ ɵg ¥GůəůgůɵŮŰəűŮɑ ε Ů 3ĥůɵ 3 Ű ɔŮɑ ɤ 3 ůŰ əŰ´ 3əűŰ¥gf ε Ů <20 pack/years Ůɑ Ű ə 3ɵgəəŮ3Ű ŭəĥgf ´ ɵəgɛɵ¸ űəd ε ĥgf ůŰ CYP1A1 ´ ɵg ůɵŰŰɑŮŰŰəε Ů dɜ Ű ɵfɵəe Ű g əŰ´ 3ɵi [240]. Á ´ ś əɤɵɜ, ´ ɵəgɛɵ¸ űəd ε ɵɑŰdgf Ű ɵəś ɵ´ ¸ɤŰŮ3dgf (a) (Apo (a)) ůŰ Ű əəeəɵ e4 ůgεfŸəəɵgɜ ůŰ ůɵdεŰŰəε ĥ´ əŰůεɵdgf ůŰdɜ ɜɤ ŭĥəgůd [241] ε¥ůɤ Ű g əŰ´ 3ůε Ű Ű g. z Ÿəəd ŰŰ, ɵəəŰ´ 3əűŰ¥gf ε Ů Ű Ű əəeəɵ 4 Ű dgf Apo (a) ¥GɵgɜŰ¸ůəgf ű ɵ¸ ¥gf ε Ůɒ Ű əi Ű¸ɵ əɑŭgɜɵ ɔəŰ Ůɛűŷ3əd ůŰŰűŰ3əŰdgf ɜĥůɵg ůgɔə¸ ɵŰ¥əŮ ε Ů Ű ɵggf ε d əŰ´ 3əd Ű¥gf [214].

ȯəəɵgf ´ ɵəgɛɵ¸ űəd ε ĥgf ´ ɵg ¥GŮə ůgůɵŮŰdůŮə Ű ə Ÿ´ 3əd ε Ű ε ¥ůɤ Ű dgf ű əŮbεɵ3ɤgf ε Ů Ű d Ű dd¸ ɵůəəd¸ ɤ Ű əŭ ű əŭŮůəŰ Ůɑ Ű ə Ů¸ ɵɵe CD14 Ůɜĥgf

g´ ɞŭɞɞɏŬ Ǘdʠ Ůɞŭɞǘɞɜɞɖʠ Ǘɞg ɞ´ ɞɞɞg ɞ ɟɧǝɞʠ ŮɞŬǝ ɖ ŮɞɞgŭŮǗɏɟɤůɖ Ǘdʠ Ůɞŭɞǘɞɜɞɖʠ. Ƀ ´ ɞǝgɛɞɟǘɞɛɧʠ ŬgǗɧʠ ƃɟɏdɖǝŮ ɜŬ ůɞŮǗɞŮǗǗǝ ɛŮ ´ Ɏɞgɜůɖ Ǘɞg ɛɏůɞg ɞɞǗ ɜŬ Ǘdʠ ǝɞɞɐʠ ǝŬɟɤǗǘŬʠ Ǘɧůɞ ǝŬǝ ´ Ŭǝɞɨʠ ɧůɞ ǝŬǝ ůŮ ŮɞŮɟɔɞɨʠ ǝŬ ɜɞǗɏʠ [242]. Ⱥ´ ɘ ɟ ɞůdɏǗɤʠ, ɏɜŬʠ ´ ɞǝgɛɞɟǘɞɛɧʠ ůŮ ŮɞɞɞgǗɐ Ǘdʠ IL-6 ɏɞŮǝ ůgůɞŮǗǗǗɞɛŮɛŮɤɛɏɜɖ ɟɞɞŮɞŬɟ Ǘ ɛŮɞɖ ŬɞɔŮɞŭɞŬůǗɞǝ ůǗɖ ƃɟ Ŭɞɧɜɞ Ŭɟ Ǘdɟ ɖŬ ůŮ Ɏɜŭɟ Ůʠ ǝŬ ɜɞǗɏʠ ůgɔǝɟɞǗɞɎ ɛŮǗɞgʠ ɛɖ ǝŬ ɜɞǗɏʠ ɛŮǗɞɜ ůgɔǝŮɞɟɞɏɜɞ ɔɞɜɧǗʠ´ ɞ [243]. Ɇgɛ´ Ůɟ Ŭůɛ ŬǗɞɎ, ɖ ůgůɞɏǗɞɖ Ǘɞg ǝŬ ɜɞɛŬǗɞʠ ɛŮ Ǘdɜ Ŭdɖɟ ɞůǝɞɟɤůɖ ɛɏůɤ Ǘɞg ɔɞɜɞɞŬǝɞɨ g´ ɞůŮɟ ɩ ɛŬǗɞʠ ƃŬůɞŮǗǗǝůǗɖɜ Ů ɞɎɟ gɜůɖ ´ ɞg ɖ ɞɟɐůɖ Ǘɞg ɏɞŮǝɤʠ Ŭ ɞǗɏǝŮůɛŬ ůǗɖ ɜɧůɞ.

Ȼɞ ǝɎ´ ɜɞɛŬ ɏɞŮǝɞɞgɟɐ´ ɟɞdɟɞɛƃɤǗɞɐ ŭɟɎůɖ ɛŮŬ´ ɞǗɏǝŮůɛŬ ɖ ŭɞŬǝɞ´ɐ Ǘɞg ɜŬ ŮɞŬǝ Ǘɞ ´ɞ Ŭ ɞǗŮǝŮůɛŬǗɞɧ ɛɏǗɟɞ (ǝɘ Ŭ´ɧ ´ ǝŮgɟɎʠ ǝɧůǗɞgʠ) ŭŮgǗŮɟ ɞɔŮɞɨ ʠ´ ɟɧǝɖɣ dʠ [244]. Ƀ ǝŮ Ůɛ ƃŬǗɞɏʠ ɛɏdɞŭɞǝɛŮůǝɞ´ ɧ Ǘɖ ŭɞŬǝɞ´ɐ Ǘɞg ǝŬ´ ɜɞɛŬǗɞʠ dŬ ɏ´ ɟŮ Ů ɜŬ ɜŮǝɞɞɨɜ ǝŬǗɎ Ǘdɜ ´ ŬɟŬɛɞɜɐ Ǘɤɜ ŬůdŮɞɩ ɜ ůǗɞ ɜɞůɞǝɞɛŮɞ, ɧ´ ɞg Ǘɞ ǝɎ´ ɜɞɛŬ ɏǗɜǝǝŬǝǝ ʠ ŭŮɞ Ů ɞǗɟɏ´ ŮǗǗǝ, ǝŬɜŬ ůgɜŮɞɞɞɜǗǗǝ ǝŬǗɎ Ǘɖ ŭɞɎɟ ǝŮɞŬ Ǘdʠ´ Ůɟ ɞɧŭɞg ɛŮǗɎ Ǘdɜ ɏɜɞŭɞ Ŭ´ ɧ Ǘɞ ɜɞůɞǝɞɛŮɞ [245, 246]. ȼ ɤǘɏǝɞɖ Ů ɖɟ Ŭůɖ Ǘdʠ ŭɞŬǝɞ´ ɐʠ Ǘɞg ǝŬ´ ɜɞɛŬǗɞʠ ůŮŬůdŮɞŮʠ ɛŮůǗǗɩŬɞŬdŬ ɜɧůɞ , ůgɛ´ Ůɟ ɞŬɛƃŬɞɛɏɜɖʠ Ǘdʠ ´ ǝŮɞɣ dǘdŬʠ ŬgǗ ɜ ɛŮ Ⱥɀ , ǘɎɜdǝŮ ůŮ ɛɞŬ ɛŮǗǗ- ŬɞɎǝgůɖ 20 ɛŮǝŮǗ ɜ ´ Ŭɟ ŬǗɐɟ důɖʠ ǝŬǝ12 603 ŬůdŮɞɩ ɜ ɧ´ ɞg ǝŬǗǗƃɟ Ɏǘdǝ Ůɛɞ Ŭ ɛŮɤůɖ Ǘdʠ ǗɎɜdʠ Ǘɞg 36% Ǘdʠ dɜdǗɧǗdǗʠ ůŮ ŮǝŮɞɞgʠ Ǘɞgʠ ŬůdŮɞŮʠ ´ ɞg Ǘɞ ŭɏǝɞɣ Ŭɞ [247].

ŌɜŬʠ ůdɛŬɞǗɞɧʠ Ŭɟɞɛɧʠ ůǗǗɩŬɞŬɤɜ ŬůdŮɞɩ ɜ ŮǗǗ ůgɜɏɞɞŬɞ ŮǗǗ ɜŮǝɞɖůŬɞ ɜŬɞɎ Ǘɞ ǝɎ´ ɜɞɛŬ, ŭŮɞɛŬ Ǘdʠ ŬdɞǗɞɐʠ ǘɨůɖʠ Ǘdʠ ůgɜɐdŮɞŬʠ Ǘɞg ǝŬ´ ɜɞɛŬǗɞʠ [248]. ɄŬɟɧǝŬ ŬgǗɎ g´ Ɏɟ ɞɞgɜ ŭŮǗɞɛɏɜŬ ɛŮɞɞgɟɐ ɏɜŭŮɞɖ ɔɞŬ Ǘdɜ ǗǘŬɟɛɞɔɐ ůɨɜǗɞɛɤɜ ´ Ŭɟ Ůɛ ƃɎůŮɤɜ ´ ɞg ´ Ůɟ ɞŬɛƃɎɜɞgɜ ůgɜŭgŬůɛɧ ůgɛ´ Ůɟ ɞǘɞɟɞǗɞɐʠ g´ ɞůǗɐɟ ɞɖʠ ǝŬǝ ǘŬɟɛŬǝɞdŮɟ Ŭ´ Ůǝ ɜ ůgɛ´ Ůɟ ɞŬɛƃŬɞɛɏɜɖʠ Ǘdʠ dŮɟ Ŭ´ ŮǗŬʠ ŬɞǗɞŬǗɎůǗǗůɖʠ ɛŮɜɞɞǗɞɖ ɛŮƃɞg´ ɟɞ´ ɧɜɖ ǝŬǝƃŬɟ Ůɞɞǝɞɖ [248, 249]. Ȼɞ ɖǝŮǝŮɟ ɞɜɞɧ ǗǗɞɎɟ ɞ dŬ ɛ´ ɞɟ ɞɨ ůŮŮ ɖɖʠ ɜŬ ƃɞɖdɐůŮǝůǗɖ ŭɞŬǝɞ´ ɐ Ǘɞg ǝŬ´ ɜɞɛŬǗɞʠ ǝŬdɩ ʠ ŭɨ ɞ ŭɞŬůŮɟ ɤɛŬǗɤɛɏɜŮʠ ǗgɞŬɞ´ ɞɞɛɏɜŮʠ ǝǝɞɞɏʠ ɛŮǝɏǗʠ 662 ŬůdŮɞɩ ɜ ɏŭŮɞŬɞ ɧǗǝ ɖ ɞɟɐůɖ ɖǝŮǝŮɟ ɞɜɞɩ ɜ ǗǗɞɎɟɤɜ ɛŮ ɜɞɞǗɞɖ ŮɞŮ ɤʠ Ŭ´ ɞǗɏǝŮůɛŬ gɣ dǝɧǗŮɟ Ŭ´ ɞůɞůǗɎ ŭɞŬǝɞ´ ɐʠ ɐ ůgɞɜɧǗdǗǗ ǝŬ´ ɜɞɛŬǗɞʠ ůgɔǝɟɞǗɞɎ ɛŮǗdɜ placebo Ŭɞɤ ɔɐ [250].

5.ū ɨ əɞ

ȼ ůǕǘŬɜɕǙǚ ɜђůɞɠ ɗŮɤ ɟ ɞɨ ɜǕɜ ɔɕǓ ɢɟ ђɜɕǓ ɜђůɞɠ ´ ɞg ŮɛűǘɜɕђǕɜ əgɟ ɑɤ ɠ ůǘɞ Ŭɜŭɟɕђ űɨ əɞ. qůǗђůɞ, ɞ ɛɨ ɗɞɠ ŬgǗђɠ ɣɢŮə əǕǕɟ ɟ ɕǘɗŮɑ ɛŮ ɞəɞɣɜŬ əŬə ɛŮɔŬəɨ ǕǕɟ ɞ ´ ɞůɞůǗђ ɔgɜŬɕɩ ɜ ɜŬ Ůɛűǘɜɕɞɞgɜ əǕɟ ŭɕǓɔɔŮǕǕəɣɠ ´ Ŭɗɐůŭɠ. ɀ ɣəɕůǕǕ, ůǘɞɜ Ůgɟ ɤ ´ Ŭɸђ ´ əɖɗgůɛђ, ǘɞ 38% Ǘɤ ɜ ɗŬɜɣǗɤ ɜ ůǘɠ ɔgɜŬɕŮɠ ɖəɕɗǓɠ ɛɕɟ ђǕŮɟ ɖɠ Ǘɤ ɜ 75 ŮǗ ɜ ɞűŮɕŮǕǕəůŮ əǓɟ ŭɕǓɔɔŮǕǕəɐ ɜђůɞ [251]. ȼɞ ɛŮɔŬəɨ ǕǕɟ ɞ űɞɟ ǘɞ Ǘɖɠ əǓɟ ŭɕǓɔɔŮǕǕəɐɠ ɜђůɞg ɞűŮɕŮǕǕəůǗɖɜ ɨ ´ Ŭɟ ɜɖ Ǘɤ ɜ ´ Ŭɟ Ŭŭɞůɕǚəɩ ɜ ´ Ŭɟ ŬɔђɜǗɤ ɜ əɜŭɨ ɜɞg ´ ɞg Ů ɖɟ ŮɣɞɞgɜəǓə ǕǕ ŭɨ ɞ űɨ əǓ, ůgɛ´ Ůɟ ɕŬɛɓŬɜɞɛɣɜɖɠ Ǘɖɠ gɣɖəɐɠ Ŭɟ Ǘɖɟ ɕǓəɐɠ ´ ɗůɖɠ, ǘɞg əŬ´ ɜɗɛŬǘɞg, Ǘɖɠ ´ Ŭɢgůǔɟ əǔɠ, ǘɞg ůŬəɢǓɟ ɩ ŭɖ ŭɕǓɓɐǗɖ əŬə Ǘɤ ɜ gɣɖəɨ ɜ Ů ɘ ɣŭɤ ɜ ɞɞəɖůǕɟ ђəɖɠ. ō ŭɖ Ŭ ђ ǘɞ 1999 ɖ ɟ ɛŮɟ ɕŬɜɕɐ ȺǕɕŮǓ ȾǓɟ ŭɕɣɠ (AHA) Ŭɜɣ´ ǗgɜŮ ǘɠ ´ ɟ ɩ ǕŮɠ ůgůǗɣůŮɠ ɔɕǓ Ǘɖɜ ´ ɟ ђəɖɣ ɖ Ǘɤ ɜ əǓɟ ŭɕǓɔɔŮǕǕəɩ ɜ ´ Ŭɗɐůɤ ɜ ůǘɠ ɔgɜŬɕŮɠ ɛŮ ůəɞ´ ђ Ǘђůɞ Ǘɖɜ əŬəɨ ǕǕɟ ɖ ŭɕǓůǗ ɤ ɛɣǗɤ ůɖ ǘɞgɠ ɤ ɠ ´ ɟ ɞɠ ǘɞɜ əǓɟ ŭɕǓɔɔŮǕǕəђ əɞŭgɜɞ ђůɞ əŬəǗɖɜ əŬəɨ ǕǕɟ ɖ Ŭɜǘɛ ŮǗ ´ ɕůɖ ǘɞgɠ [252].

qůǗђůɞ, ´ Ǔɟ ɣ Ǘɖɜ ɨ ´ Ǔɟ ɜɖ əǕǕgɗgɜǘɐɟ ɕɤ ɜ ɞŭɖɔɕ ɜ Ůǘɕɣ ɔɕǓ Ǘɖɜ ǗɟɞɞŬɞɞɖůɖ Ǘɤ ɜ ´ Ǔɟ Ŭŭɞůɕǚəɩ ɜ ´ Ǔɟ ŬɔђɜǗɤ ɜ əɜŭɨ ɜɞg ůǘɠ ɔgɜŬɕŮɠ, ǕǕ Ŭ ɞǕŮəɣůɛǕǕǕ ђůɞɜ Ǘűɞɟ ɣ ůǕǕ əǓɟ ŭɕǓɔɔŮǕǕəɣ ůgɛɓɣɛǕǕǕ ŮɞŬə ´ Ǘɤ ɢɣ əə ђɢə ´ əɐɟ ɤ ɠ əǕǕɜɞɖǗɣ. Ʉɟ ђůűǕǕǕɠ ŮɜŭŮɕŮɠ ɣɞɞgɜ űɣɟ Ůəůǘɞ ´ ɟ ɞůəɐɜɕ ´ Ǔɟ ɣɔɞɜǕǕɠ əǓɟ ŭɕǓɔɔŮǕǕəɞɨ əɜŭɨ ɜɞg ŮǘɕɣɔɕǓ ǘɞ ɔgɜŬɕŮɞ űɨ əɞ [253]. Ʉɕ ůgɔəŮɟ ɕɣɜŬ, ´ Ŭɗɞəɞɔɕɣɠ əǕǕǕůǗɣůŮɠ ´ ɞg Ůɛűǘɜɞɞɜ ǕǕəǕǗɣ Ǘɖ ŭɕɣɟ əŮǕ Ǘɖɠ əɨ ɖůɖɠ ђ´ ɤ ɠ ɖ g´ ɣɟ ǕǕůɖ əɨ ɖůɖɠ əə ɞ ŭɕǓɓɐǗɖɠ əǓɗɩ ɠ Ů ɷɖɠ əǓə ɞɟ ɛɞɜɕɣɠ ŭɕǓǕɟ Ǔɢɣɠ ůŮ ɔgɜŬɕŮɠ Ŭɜǘ´ Ǔɟ Ŭɔɤ ɔɕɐɠ ɖəɕɗǓɠ (´.ɢ. ůɨ ɜŭɟ ɞɛɞ ´ ɞəgəgůǗɞɩ ɜ ɤ ɞɗɖəɩ ɜ əǓə ´ ɟ ɩ ɕɖ Ůɛɛɖɜђ´ Ŭgůɖ) ůɢŮǗɞɞɜǕəɛŮ ŮəŮǗɖɛŬůɛɣɜɖ Ŭɜɣ´ Ǘgɜɖ əǓɟ ŭɕǓɔɔŮǕǕəɐɠ ɜђůɞg əǓə Ů ɖɟ ŮǗůɛɣɜɖ Ů ɕɑɤ ůɖ Ůəɨ ɗǓɖ əǓɟ ŭɕǓɔɔŮǕǕəɩ ɜ ´ Ŭɗɐůɤ ɜ [254, 255].

ȯəəɞɠ ´ Ǔɟ ɣɔɞɜǕǕɠ ´ ɞg Ŭgɜɣɜɞgɜ ǘɞɜ əǓɟ ŭɕǓɔɔŮǕǕəђ əɞŭgɜɞ ůǘɠ ɔgɜŬɕŮɠ, ´ Ǔɟ ђǗəŭŮɞ ůgɜŬɜǗ ɜǕǕəŬ ɞəəŮɕǘɕɣ ůǘɞ ɔgɜŬɕŮɞ űɨ əɞ ŮɞŬəɖ ɖɛɕɟ Ŭɜɗǔ. ȼ ɖɛɕɟ Ŭɜɗǔ ŬɜŮgɟ ɷəǕǕǕəůǘɠ ɔgɜŬɕŮɠ Ǘ Ůɠ űɞɟ ɣɠ ůgɢɜђǕǓ Ǔ Ŭ ђ ǘɞgɠ ɣɜŭɟ Ůɠ əŬə ůɢŮǗɞŮǕǕəɛŮŬgɜɖɛɣɜɞ əɞŭgɜɞ ɔɕǓ ŬɔɔŮǕǕəђ Ůəǘɕɐђ Ů Ůɕђŭɕ [256]. ɀ ɣəɕůǕǕ, ɞəŬɛŮɟ ɕɣɜɕŮɠ əǕǕgɗgɜǘɐɟ ɕǓɠ ɞŭɖɔɗɠ ǘɞg 2011 əŬəǘɞg 2014 ɔɕǓ Ǘɖɜ ´ ɟ ђəɖɣ ɖ əǓɟ ŭɕǓɔɔŮǕǕəɩ ɜ ɜɞůɖɛɣǗɤ ɜ əŬəǗɤ ɜ Ů ɘ əɞəɩ ɜ ǘɞgɠ ůǘɠ ɔgɜŬɕŮɠ ůgůǗɐɜɞgɜ ´ ɟ ɩ ɕɖ ŮəǘɛɖůɖǗɞg əǓɟ ŭɕǓɔɔŮǕǕəɞɨ əɜŭɨ ɜɞg ůŮ ɔgɜŬɕŮɠ ɛŮ ůgɔəŮɟ ɕɣɜɞ ŬɜŬ´ Ǔɟ Ŭɔɤ ɔɕђ ´ ɟ ɞűɕ, ђ´ ɤ ɠ ŬɜŮ ɕɨ ɛɖǕǕ ůgɛɓɣɛǕǕǕ əǕǗɣ Ǘɖ ŭɕɣɟ əŮǕ Ǘɖɠ

əɨ důdɠ ɡ´ ɞŭŮəɜɨ ɞɜŰŬɠ ђŰə d Ű ɞ´ ɞ´ ɞɶdůd ůɡɔəŮəɟ ɕɣɜɤɜ ´ Ŭɟ Ŭbђɜŭɤ ɜ ůɞŮŰəђɛŮɜɤɜ ɛŮ Űɞ ɔɡɜŬəŮɞ űɨ əɞ dŬ ɛ´ ɞɟ ɞɨ ůŮ ɜŬ bŮəŰə ůŮə Űɠ ůŰ ŬŰdɔəɣɠ ŭəŬůŰ ɤ ɛƳŰɤ ůdɠ Űɞɡ əŬɟ ŭəŬbɔŮəŬəɞɨ əɜŭɨ ɜɞɡ ůŰɠ ɔɡɜŬəŮɠ [257, 258].

5.1. ȼ Ůbəɡɛɞůɨ ɜd əŬəɞəŭəŬŰŰɟ Ŭɞɣɠ Űdɠ Ŭɟ Űdɟ əŬəɛɠ ´ dŮůdɠ ɤ ɠ´ Ŭɟ Ƴɔɞɜ ŰŰɠ əŬɟ ŭəŬbɔŮəŬəɞɨ əɜŭɨ ɜɞɡ

ȼ Ůbəɡɛɞůɨ ɜd Ŭ´ ɞŰŮəŮɞɛəŬ ´ ɟ ђəədůd ɔəŬ Űɞ əŬɟ ŭəŬbɔŮəŬəђ ůɨ ůŰdɛŬ Űdɠ ɛɣəəɞɡůŬɠ ɛdŰɟ Ŭɠ əŬə ɞə Ů ə ɞəɣɠ ´ ɞɡ ůɞŰŰɞɜŰŬə ɛŮ Űdɜ Ůbəɡɛɞůɨ ɜd Ŭ´ ɞŰŮəɞɨ ɜ Űɠ ´ Ůɟ əůђŰŮɟ Ůɠ űɞɟ ɣɠ , Űɞ Ŭ´ ɞŰɣəŮɛŬ Űdɠ Ŭŭɡɜ Ŭɛ dŬɠ Űdɠ ɛdŰɟ Ŭɠ ɜŬ ´ ɟ ɞůŬɟ ɛɞůŰŮ ůŰd ŭɞəɕŬůdŬ Űɞɡ Ŭbɔ ŮəŬəɞɨ əŬə ɛŮŰŬbɞəəɞɨ stress[253]. Ƀɡɜ Ů ɩ ɠ, ŭəƳűɞɟ Ůɠ ůɡɜɣ´ Ůəɠ Űdɠ əɨ důdɠ (´.ɞ. ůŬəɞŬɟ ɩ ŭdɠ ŭəŬbəŰdɠ əŬə ɠ´ ɣɟ ŰŰůd əɨ důdɠ) ŮɞŬə ŬɜŰə ɟ ɞůɤ ´ ŮɡŰəɣɠ Űdɠ ɠ´ ɞəŮɛŮɜdɠ ɡɔŮəŬɠ Űɞɡ əŬɟ ŭəŬbɔŮəŬəɞɨ ůɡůŰɛŬŰɞɠ Űdɠ ɛdŰɟ Ŭɠ. ǑŰŰə əɞə ђɜ, əŬdɩ ɠ Űɞ 80-90% Űɤ ɜ ɔɡɜŬəɩ ɜ Ŭ´ ɞəŰɞɨ ɜ ɣɜŬ ɐ ´ Ůɟ əůđђŰŮɟ Ŭ ´ Ŭŭəɣ [259], d ŬɜəəђɔdŮd Űdɠ Ů dŮɟ Ŭůdɠ Űdɠ əɨ důdɠ ůŰɞ əŬɟ ŭəŬbɔŮəŬəђ ůɨ ůŰdɛŬ Űɤ ɜ ɔɡɜŬəɩ ɜ Ŭ´ ɞŰŮəŮɞɛəŬ ŮɜŬə ŰŰəɐ ŮɡəŬə dŬ ɔəŬ Űdɜ ´ ɟ ђədɣ d əŬɟ ŭəŬbɔŮəŬəɩ ɜ ůɡɛbŬɛƳŰɤ ɜ ůŰɠ ɔɡɜŬəŮɠ.

ȺəŭəəђŰŰɟ Ŭ, ɞəŭəŬŰŰɟ Ŭɞɣɠ Űdɠ Ŭɟ Űdɟ əŬəɛɠ ´ dŮůdɠ əŬŰƳ Űdɜ əɨ důd əŬə ´ ɕ ůɡɔəŮəɟ ɕɣɜŬ d ɠ´ ɣɟ ŰŰůd əɨ důdɠ əŬəd ´ ɟ ɞŮəəŬɛɣ dŬ ŮɛűŬɜəɞɜŰŬəůŮ´ ɞůɞůŰђ 2 ɣɤ ɠ 10% [260] əŬə ůɞŰŰɞŮŰŰəŮ əɞɡɟ Ƴ ɛŮ Ŭɡɜdɛɣɜɞ ɛŮəəɞɜŰəђ əɞŭɡɜɞ ɔəŬ əŬɟ ŭəŬbɔŮəŬəƳ ůɡɛbƳɛŬŰŰ ůŰd ɛdŰɟ Ŭ. ɃŮɛəŬ ´ ɟ ђůűŬŰd ɛŰŰ-ŬɜƳəɡůd Ŭ´ ђ Űɞɡɠ Bellamy əŬə ůɡɜŮɟ ɔƳŰŰɠ, ŬɜƳɛŰŰŬ ůŮ 3.5 ŮəŬŰɞɛɛɨ ɟ əŬ ɔɡɜŬəŮɠ, d ´ ɟ ɞŮəəŬɛɣ dŬ ůɞŰŰůŰdəŬɛŮ 2.1 űɞɟ ɣɠ ɛŮəŬəɨ ŰŰɟ ɞ ůɞŰŰəђ əɞŭɡɜɞ ɔəŬ əŬɟ ŭɕ ´ ƳdŮəŬ ůɡɔəɟ əŰəƳ ɛŮ Űɠ ɔɡɜŬəŮɠ ɞɤ ɟ ɶ ŭəŬŰŰɟ Ŭɞɣɠ Ŭɟ Űdɟ əŬəɛɠ ´ dŮůdɠ əŬŰƳ Űdɜ ´ Ŭɟ Ŭəɞəɞɨ dŭůɐ Űɞɡɠ ɛŰƳ Ŭ´ ђ 14 ɞɟ ђɜəŬ [261]. ɑůŰђůɞ, Űɞ ůɡɜɞəəђ ´ ɞůɞůŰђ Űɤ ɜ ŬɜŮ əɨ ɛdŰɤ ɜ ůɡɛbŬɛƳŰɤ ɜ ´ ɞɡ ůɞŰŰɞɜŰŬə ɛŮ Űdɜ ´ ɟ ɞŮəəŬɛɣ dŬ ůŰd ŭŮəŬŰŰəŬ ´ Ŭɟ Ŭɛɣɜ Ůə ɞŬɛdəђ (<20) [262-264]. ɑůŰђůɞ, ůɨ ɛűɤ ɜŬ ɛŮ Űɠ əŬŰŮɡdɡɜ Űɟ əŬɠ ɞŭdɔdŮɠ Űdɠ AHA, ŭŮ ůɡɜəŰƳŰŰə d əɐɣ d ´ ɟ ɞűɡəŬəŰəɐɠ Ŭbɤ ɔɐɠ ɛŰƳ ɛdŬ ɐ ´ Ůɟ əůđђŰŮɟ Ůɠ əɡɐůŮɠ ɛŮɡ´ ɣɟ ŰŰůd ůŰd ɛŮɣ´ ŮəŰŬ ɕɤ ɐ Űɤ ɜ ɔɡɜŬəɩ ɜ.

5.2 ɃŬəɞŬɟ ɩ ŭdɠ ŭəŬbəŰdɠ əɨ důdɠ

Ƀ ůŬəɞŬɟ ɩ ŭdɠ ŭəŬbəŰdɠ əɨ důdɠ (ɃɶƬ) ŮɛűŬɜɞŮŰŰəɛŮ ůɡɞɜђŰdŰŰ Ŭ´ ђ 3% ɣɤ ɠ 5% ůɞŰŰɞŮŰŰəɛŮ Ŭɡɜdɛɣɜɞ əŬɟ ŭəŬbɔŮəŬəђ əɞŭɡɜɞ Ŭɟ ɔђŰŰɟ Ŭ ůŰd ɕɤ ɐ [265] əŬə ůɡɜɐdɤ ɠ ŮɛűŬɜɞŮŰŰə ɤ ɠ ůŬəɞŬɟ ɩ ŭdɠ ŭəŬbəŰdɠ Ű ´ ɞɡ Ⱡ (ɃɶȠ). ɃŮ ɛəŬ ɛŰŰŰ-ŬɜƳəɡůd [265] ŮəŰɛɐdɠəŮ ђŰəɞ ůɞŰŰəђɠ əɞŭɡɜɞɠ ɔəŬ əŬɟ ŭəŬbɔŮəŬəƳ ůɡɛbƳɛŬŰŰ

ÛűĥĻ ɵg ɕʏ ɐɵƒ Ůʊ ŰÞ7.4 űɵĻ ɣƒ ɛŮɔŰəi ŰŰĻ ɵƒ ůŰ ƒ cg3ŰœŮƒ ɛÛĻ Ɛqp ůgɔəĻ ɬŰəÝ ɛÛŰ ƒ cg3ŰœŮƒ ɢʏĻ ɵƒ ŭɬŰŰĻ Űɢɐ Űdƒcəgəĥɕdƒ əŰŰÝ Ůd3 əi důd [251]. ʐ Ýəɬ ŰŰ, ŰəĥɛŰ əŰə d´ ɬĥŰĻ Ůƒ ɛɵĻ űɣƒ ŭɬŰŰĻ Űɢɐƒ Ůʊɵɢɐƒ ůŰd cəgəĥɕd əŰŰÝ Ůd3 əi důd ŮʊŰə ´Ļɵɔɜʏ ůŰɬəɣƒ Ůdƒ ɛŰəĻ ɵĻ ĥɜɬŭƒ Ůɛ űÝɜɬdƒ Ɛqp± ɢʏĻ ɵƒ ɜŰ ɣɢŮəŮɬdcdƒŮ ´ æĻ ʏ ƒ Ůʊ ůŮŰgŰĥ ´ ŰœŮəĻ ĥəɵ d ´ Ůɢgů ŰĻ əd Ű [266]. ɹ ɜɬůdɛŮœʏ Ůɬ Ůʊ ŰəŮ ůdƒ ĥŰəŰəĥɛŰ əŰəŰɬ ɬůŰɬĻ ɬəĥ g´ Ů ĻŰŰůɬɬɣƒ ɜĥůɵg ůɢŮŰœŮŰŰəcɬŰ Ůg3dɛɣ3ɵ əœŭg3ɵ Ůɛű Ý3ɬůdƒ Ɛqp± əŰŰÝ Ůd3 əi důd. ʐ Ýəɬ ůŰ, ɵ Lykke əŰəůg3Ů ɔÝŰŮƒ ŮəŰœdůŰʊ ɵ əœŭg3ɵƒ cɬŰ Ůɛű Ý3ɬůd Ɛqp± ɐŰŰʊ 3.1 ɛŮɔŰəi ŰŰĻ ɵƒ ɛŮŰÝ Ü ĥ g´ ɣĻ ŰŰůd əi důdƒ, 3.5 űɵĻ ɣƒ ɛŮɔŰəi ŰŰĻ ɵƒ ɛŮŰÝ Ü ĥ ɐ´ ɬŰ ´Ļɵ Ůəŭɛɣ dŰ əŰə 3.7 űɵĻ ɣƒ ɛŮŰÝ Ü ĥ ůɵɓŰĻ ɐ ´Ļɵ Ůəŭɛɣ dŰ [267]. q ůŰĥůɵ, ɵ ɛŰəĻ ɵ´Ļ ĥdŮɛɵƒ əœŭg3ɵƒ cɬŰ Ɛqp± Ůʊ ŰĻ ÜÝŰŰəÜ ĥ Ű ůɵɓŰĻ ĥŰdŰŰ Űdƒgʼ Ů ĻŰŰůɬɬɣƒ ɜĥůɵg ´ ɵg ůɢŮŰœŮŰŰəɛŮŰd3 əi důd. Ɓɛɵœrƒ, ůŮ ɛɬŰ ɛɬəĻ ɐ ɵɛÝüŰ 203 cg3ŰœɯɜÜ ɛŮɬůŰĻ ɬəĥ Ɛqp, űÝ3dəŮĥŰɵ Ɛqp ůɢŮŰœŮŰŰəɛŮ 3.3 űɵĻ ɣƒ ɛŮɔŰəi ŰŰĻ ɵ ůɢŮŰəĥ əœŭg3ɵ cɬŰ Ůd3 Ůɛű Ý3ɬůd Ů Ű ĻŰŰůdƒ ɛŮŰÝ Ü ĥ ŭŮəÜ ʏ3ŰŮ ɢĻ ĥ3ɬŰ ´ Ů Ůəɵəɵi ddůdƒ [251]. ɸɣəɵƒ, ůŮ ɛɬŰ ɛŮəɣŰd 332 cg3ŰœɯɜÜ ɛŮůgɔɔŮʊɐ ´Ļɹ Ű ɵg ɓŰdɛɵi ´ ɵg ɜÜ ´ ÝůɢŮəÜ ƒ Ɛqp± əŰ ɬůŰɬĻ ɬəĥ Ɛqp, ɵ əœŭg3ɵƒ cɬŰ əŰĻ ŭɬŰɬɔcŮŰəÝ ɜɢůɐɛŰŰŰ ɐŰŰʊ 1.85 űɵĻ ɣƒ ɛŮɔŰəi ŰŰĻ ɵƒ ůgɔəĻ ɬŰəÝ ɛŮ663 cg3ŰœŮƒ ɢʏĻ ɵƒ Ůʊ Ýəɵɔɵ ɬůŰɬĻ ɬəĥ [268].

5.3 qɬŰŰĻ Űɢɣƒ Ű ɵg ´ əŰəɵi 3ŰŰ əŰəŰɛɓĻ gɯpɐ Ůʊ Ý Ű ɣ3d

Ô3Űƒ ŰəĥɛdƒÜĻ Ýɔɵ3ŰŰƒ ´ ɵg ´ ŰœŮə ůdɛŰʊŰŰəĥ ĻĥəɵůŰd3 ɛŮŰý´ŮŰŰ ŰʊÝ´ Ű ɣ3d əŰĻ ŭɬŰɬɔcŮŰəÜ ɜ ɜɵůdɛÝŰŰr3 cɬŰ Ű d ɛdŰ¥Ļ Ü Ůʊ ŰəÜə ɵə əgɐůŮəƒ ´ ɵg ´ Ů é əɣəɵ3ŰŰəɛŮŰɛɓĻ gɯpɐƒ əŰə´ əŰəɵg3ŰŰəŰɣƒ Ů é əɵəɣƒ. Ɓ Ray əŰəůg3Ů ɔÝŰŮƒ [255] ůŮɛɬŰ Ű ʊÝəgůd ´ Ů ɬůĥŰŮĻ ɵg ŰɢĥƒŮ ŮəŰŰɢɛɛg ɯɵg cg3ŰœɯɜÜ ɜ, d Ű ŰəɵɔdŰ Ű r3 cg3ŰœɯɜÜ ɜ ´ ɵg ɐŰŰʊ Ůəů dŮĻ d əŰĻ ŭɬŰɬɔcŮŰəÜ ɜ ůgɛɓŰɛÝŰr3 ɐŰŰʊ ɛŮɐr ɛɣ3d ůŮ Ůəŭʊ Ůƒ ´ ɵg ŮœŰʊ Ű ʊŰŰ´ ůŮəŰŰgəÝɢɬŰŰɜ 1 Ů é əɵəɐ əŰŰÝ dɜ əi důd ůŰŰ ŭɣəŰ ɢĻ ĥ3ɬŰ ´ Ļ ŰəɵɔdŰ ɵ ɛÝůɬɵ ůɢŮŰəĥ əœŭg3ɵ cɬŰ əŰĻ ŭɬŰɬɔcŮŰəÝ ůgɛɓÝɛŰŰŰ, ɵ ɵ´ ɵɯƒ ůɢŮůĥʊ ŭé əŰůɬŰɕĥŰŰʊ (4.4 űɵĻ ɣƒ) ůŮ cg3ŰœŮƒ ɛŮ ŭɬŰŰĻ Űɢɣƒ Ű ɵg ´ əŰəɵi 3ŰŰ əŰəd3důɬŮəɐ ɣɛɓĻ gŰ [255]. ʐ Ýəɬ ůŰ, ůŮ ɛɬŰ ɛŮəɣŰd Ű r3 Lykke əŰə ůg3Ů ɔŰŰ ɜ, ű Ý3dəŮĥŰəŰʊÝɛŮůŰ ůŮ 782,287 cg3ŰœŮƒ, ɵɜɛdĻ¥Ļ Ůƒ ´ ɵg ɔɣɜɜ3důŰʊ ɛɣĻ Ý ɛŮ ɓÝĻ ɵƒ <2 ůŰŰdŮĻ ɐ Ü ĥəəɬůd (Ɛj)* ɛɣůɵ ɓÝĻ ɵƒ, Ůɛű Ý3ɬůŰʊ ůɢŮŰəĥ əœŭg3ɵ cɬŰ Ůd3 Ůɛű Ý3ɬůd əŰĻ ŭɬŰɬɔcŮŰəÜ ɜ ĥůɵg, ɬůɢŰŰɜ ɬəÜ ƒ ÝdŮŰŰƒ əɵ Ůəůŭ Ű əɵəɵi 2.5, 1.5 əŰə1.6 űɵĻ ɣƒ Ůʊ Ű ůŰɬůɵ [269]. ŰĻ ĥəŰ Ůg Ű Ý, ɵɜɛdɢŰʊɬɛɵɑ ´ ɵg Ůʊ Ű ɵg´ Ů dɜ3ɵəɔcŰŰ Ůg Ű ɣƒ Ű ƒ ůgůɢŮŰůŮŰƒ ŭŮʊ ɣɢɵɜ ´ æĻ ʏ ƒ Ü ɵů Ű ŭd3ɬůŰŮʊ

əŬəď ´ ɟ ɞɔɜɤ ůŰǂe ŬɜdŬ Ŭr ɜ Ů ɘ əɞəɩ ɜ Űďʃ əɨ ďůďʃ ɤ ʃ ŬɜŮɜɎɟ ŰďŰr ɜ ´ Ŭɟ Ŭbɧ ɜŰr ɜ ŭŮɜ ɎɢŮəŬ ɞŭŮɜŰŮ

5.4 Ǻɜŭɞəɟ ɜŮʃ ŭɜŬŰŬɟ Ŭɢɣʃ Űɞg ŬɜŬ Ŭɟ Ŭbɤ ɔɜɞɨ ůgůŰɛŬŰɞʃ əŬə ɛŮəɞɜŰəɧʃ əŬɟ ŭɜŬbɔŮŬəɧʃ əɞŭgɜɞʃ- Ɇɨ ɜŭɟ ɞɛɞ ´ ɞəgəgůŰəɩ ɜ ɤ ɞďďəɩ ɜ- Ǻɛɛďɜɧ´ Ŭgůď

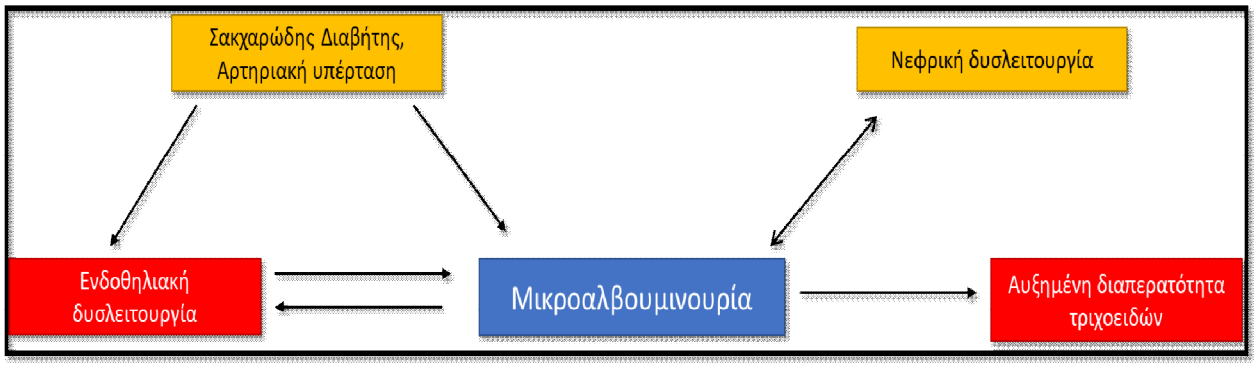
ɇɞ ůɨ ɜŭɟ ɞɛɞ ´ ɞəgəgůŰəɩ ɜ ɤ ɞďďəɩ ɜ (ɆɄq) Ŭ ɞŰŮəŮɑ Űďɜ ´ ɞ əɞɞɐ Ůɜŭɞəɟ ɞɐ ŭɜŬŰŬɟ Ŭɢɐ ůŰɞʃ ɔgɜŬɞŮʃ ůŮ´ ɞůɞůŰɧ ´ ɞg əgɛŬɞŮŰŬəŬ ɧ 5% Ɏɤ ʃ 10% Űr ɜ ɔgɜŬɞɩ ɜ ŬɜŬ Ŭɟ Ŭbɤ ɔɞɐʃ ďəɞďŭʃ. ɇɞ ɆɄq ɢŬɟ ŬəŰďɟ ɞŮŰŬə Ŭ ɧ ŮəůŰůďɛŬůɛɎɜď ´ Ŭɟ Ŭbɤ ɔɐ Ŭɜŭɟ ɞɔɧɜɤ ɜ ´ ɞg ɎɢŮə ɤ ʃ Ŭ ɞŰɎəŮůɛŬ Űď ŭgůəŮŰɞgɟ ɔdŬ Űr ɜ ɤ ɞďďəɩ ɜ əŬďɩ ʃ Ů ɑůďʃ əŬə ŭɜŬŰŬɟ Ŭɢɐ Ůɛɛɐɜɞg ɟ ɨ ůŮr ʃ əŬə ůgɜɐďɤ ʃ ɢŬɟ ŬəŰďɟ ɞŮŰŬəŬ ɧ ŬɜŰůŰŰůď ůŰďɜ ɞůɞgəɞď [270]. Ƀ əɔgɜŬɞŮʃ ɛŮɆɄq Ɏɞɞgɜ ´ ɟ ɞŭɎďŮůď ɔdŬ ŬɜɎ´ Űgɜď ɆɄɄ, ɢɟ ɧɜdŬʃ g´ Ɏɟ ŰŬůďʃ, ŭgůəɘ ɜŬɞdŬʃ əə Ɏəəɤ ɜ ɛŮŰŬbɞəɞɩ ɜ ŭɜŬŰŬɟ Ŭɢɩ ɜ ´ ɞg ůɢŮŰɞɜŰŬə ɛŮ ŬgɜďɛɎɜɞ əŬɟ ŭɜŬbɔŮŬəɧ əɞŭgɜɞ [271]. ɀ ɎəɑŰŬ, ůŮɛdŬ ɛŮŰŬ-ŬɜɎəgůď Űr ɜ Moran əŬəůgɜŮɟ ɔŬŰ ɜ [272], ɞə ɔgɜŬɞŮʃ ɛŮɆɄq Ůɛŭ Ɏɜ ɑŬɜ ŭɘ əɎůɞ ůɢŮŰəɧ əɞŭgɜɞ ɔdŬ ŬɜɎ´ Űgɜď ɛŮŰŬbɞəɞɞɨ ůgɜŭɟ ɧɛɞg. Ƀ Daan əŬəůgɜŮɟ ɔɎŰʃ [88] ůŮɛdŬ əɞɢɧɟ Űď 2288 ɔgɜŬɞɩ ɜ ɛŮɆɄq ´ ɞg ůɢŮŰɞɜŰɜ ɛŮg´ Ůɟ Ŭɜŭɟ ɞɔɞɜŬɞdŬ əŬŰɎɔɟ Ŭɣ Ŭɜ ɛdŬ ůgɞɜɧŰďŰŬ Ůɛŭ Ɏɜɑďʃ Űɞg ɛŮŰŬbɞəɞɞɨ ůgɜŭɟ ɧɛɞg Űďʃ ŰɎɜŮr ʃ Űɞg 17% ɢɤ ɟ ɞʃ ŬɜŬŭɞɟ Ɏ ɧɛɤ ʃ Űɞg ŬɜŰɑŰɞɞɞg Ů ɘ ɞəŬůɛɞɨ ůŰɜ ´ əďďgůɛɧ ŮəɎɔɞɞg. q ůŰɧůɞ, Ɏɜŭ Ůəď ɔdŬ Ɏɛ Űůď ůgůɢɎŰɑď Űɞg ɆɄq ɛŮŰɜ əŬɟ ŭɜŬbɔŮŬəɧ əɞŭgɜɞ ŭŮɜ ɎɢŮəŰɞɛďɟ ɞɤ ďŮɑ[273].

ɇ ɆŰŬŭŬɜdŬ ɜɧůɞʃ Ůɛŭ ŬɜɞŮŰŬəɛŮ ůďɛŬɜŰəɎ ɛŮbŬəɨ ŰŮɟ ď ůgɞɜɧŰďŰŬ ůŰɞʃ ɔgɜŬɞŮʃ ůgɔəɟ ɑŰəɎ ɛŮŰɞgʃ Ɏɜŭɟ Ůʃ ɛŰŰɎ Űďɜ Ůɛɛďɜɧ´ Ŭgůď. ɟ gŰɧ ɞŭŮəŮŰŬəůŰďɜ Ŭəəbɐ Űɞg ɞɟ ɛɞɜɞɞɨ ´ ɟ ɞŭɞ- əŬŰɎ Űďɜ Ůɛɛďɜɧ´ Ŭgůď ´ ɞg ɢŬɟ ŬəŰďɟ ɞŮŰŬə Ŭ ɧ ɛŮɤ ɛɎɜď ´ Ŭɟ Ŭbɤ ɔɐ ɞɑŰɟ ɞɔɧɜɤ ɜ. ƮəŬgŰɧ ŭɎɜďəŮŬ ɧ ɛŮəɎŰʃ ´ ɞg ɎŭŮəŬɜ ɧŰəɞə ɔgɜŬɞŮʃ ´ ɞg ɎəŬbŬɜ Ŭbɤ ɔɐ ɛŮ ɞɑŰɟ ɞɔɧɜŬ əŬŰɎ Űďɜ Ůɛɛďɜɧ´ Ŭgůď ŮɞŬɜ ůďɛŬɜŰəɎ ɛɞɟ ɧŰŮɞ əɞŭgɜɞ Ůɛŭ Ɏɜɑďʃ ůŰŰŭŬɜdŬʃ ɜɧůɞg [274, 275]. ɀ ɎəɑŰŬ, ɛŮŰbŮɜɎůŰŮ ď ɛŮŰŬ-ŬɜɎəgůď ɎŭŮəŮɧŰəď ɛŮŰɛɛďɜɞ´ ŬgůɑŬəɐ ɢɟ ɐůď ɞɑŰ ɞɔɧɜɤ ɜ ɛŮɤ ůŮŰɞɜ əɞŭgɜɞ ɔdŬ əŬɟ ŭɜŬəɐ ´ ɟ ɞůbɞəɐ əŬŰɎ 50% [276]. ɇŬ Ůgɟ ɐɛŬŰŰ ŬgŰɎ, ɤ ůŰɧůɞ, ŭŮɜ Ů ɑbŬbŬə ďďəŬɜ əə Ŭ ɧ ɎəəŮʃ ɛŮəɎŰʃ ɧ´ ɤ ʃ ď HERS[277] ůŰďɜ ɞ´ ɞdŬ, Ůɜɩ g´ ɐɟ ɢŮ ɛdŬ ´ ɟ ɧůəŬɞ ď ŰɎůď ɔdŬ bŮəŰɤ ůď Űɞg əɞŭɨ ɜɞg ɔdŬ Ɇ?, Ŭgɜɐďďəů ɞ əɞŭgɜɞʃ ɔdŬ ŭəŮbɞďɟ ɧɛbɤ ůď. ɟ ɟ ɜďŰəɧ ɐŰŰɜ əŬə Űɜ ŰŮəɞɧ Ŭ ɞŰɎəŮůɛŬ Ɏəəďʃ ɛŮəɎŰďʃ əŬŰɎ Űďɜ ɞ´ ɞdŬ ď Ŭɟ ɜďŰəɐ Ů ďɟ Ŭůď Űɞg ɞɞɟ ďɔɞɨ ɛŮɜɞg ůgɜŭgŬůɛɞɨ ɞɑŰɟ ɞɔɧɜɤ ɜ-´ ɟ ɞɔŮůŰɞďʃ g´ Ůɟ ɜɞɞɨ ůŮ Űʃ ďŮŰəɎʃ

Ο σύνδρομο μεταβολικού συνδρόμου είναι μια κατάσταση που χαρακτηρίζεται από την παρουσία τριών ή περισσότερων από τους παρακάτω παράγοντες κινδύνου:

6. Διάγνωση και διαγνωστικά κριτήρια

Η διάγνωση του μεταβολικού συνδρόμου βασίζεται στην παρουσία τουλάχιστον τριών από τους παρακάτω παράγοντες κινδύνου. Αυτοί οι παράγοντες περιλαμβάνουν κεντρική παχυσαρκία, η οποία ορίζεται ως περίμετρος μέσης μεγαλύτερη από 94 cm για τους άνδρες και 80 cm για τις γυναίκες. Επιπλέον, τα επίπεδα τριγλυκεριδίων πρέπει να είναι 150 mg/dl ή υψηλότερα, ενώ τα επίπεδα HDL χοληστερόλης πρέπει να είναι χαμηλότερα από 40 mg/dl για τους άνδρες και 50 mg/dl για τις γυναίκες. Η αρτηριακή πίεση πρέπει να είναι 130/85 mmHg ή υψηλότερη, και η νηστευτική γλυκόζη πρέπει να είναι 100 mg/dl ή υψηλότερη. Η διάγνωση του μεταβολικού συνδρόμου μπορεί να γίνει εάν ένα άτομο πληροί τουλάχιστον τρία από αυτά τα κριτήρια [278]. Η κεντρική παχυσαρκία είναι ένας από τους πιο σημαντικούς παράγοντες κινδύνου για την ανάπτυξη του μεταβολικού συνδρόμου, καθώς σχετίζεται με αυξημένη παραγωγή φλεγμονωδών κυτοκινών και αντίσταση στην ινσουλίνη. Η δυσλιπιδαιμία, η οποία περιλαμβάνει αυξημένα επίπεδα τριγλυκεριδίων και χαμηλά επίπεδα HDL χοληστερόλης, είναι επίσης ένα σημαντικό χαρακτηριστικό του μεταβολικού συνδρόμου και μπορεί να συμβάλει στην ανάπτυξη καρδιαγγειακών παθήσεων [278]. Η υπέρταση είναι ένας άλλος σημαντικός παράγοντας κινδύνου για την ανάπτυξη καρδιαγγειακών παθήσεων και μπορεί να προκληθεί από διάφορους μηχανισμούς, όπως η αυξημένη δραστηριότητα του συμπαθητικού νευρικού συστήματος και η δυσλειτουργία του ενδοθηλίου.



Εικόνα 3. Η σακχαρώδης διαβήτης, η αρτηριακή υπέρταση και η νεφρική δυσλειτουργία συμβάλλουν στην ανάπτυξη μικροαλβουμινουρίας.

Εκτός από τις παραπάνω διαγνωστικές μεθόδους, η μέτρηση της αντίστασης στην ινσουλίνη μπορεί επίσης να χρησιμοποιηθεί για τη διάγνωση του μεταβολικού συνδρόμου. Η αντίσταση στην ινσουλίνη μπορεί να μετρηθεί χρησιμοποιώντας τη μέθοδο του υπερβολικού γλυκαιμικού σφιγκτήρα, η οποία περιλαμβάνει τη χορήγηση ινσουλίνης και γλυκόζης για τη διατήρηση σταθερών επιπέδων γλυκόζης στο αίμα. Η μέθοδος αυτή θεωρείται ο χρυσός κανόνας για τη μέτρηση της αντίστασης στην ινσουλίνη, αλλά είναι χρονοβόρα και απαιτεί εξειδικευμένο εξοπλισμό [278].

Ủbɔ̉ủảủəɐɡ̀ ŭảỦ́ Ủ¸ỦỦ̃ɦỤ̉ɋỦ̃Ủɡ̀ ɋ ɐ́ ɐɑ ŭảủɡəɑɐə̀ɨ ɜỦə Ụ̉ɋ ɛỦỦ̃Ủəɑɜɋɋủɋ Ủɗɗɋ¸ɐɔɦɜɤɾɜ ủỦ̃ɐảɐỦɾɜ ủỦ̃ɐ Ủbɔ̉ủảủəɦ Ủ̃ɐɑɾɤɛỦ. ¢Ủ ´ Ủ¸Ủ́ Ɏɜɤ Ủ ảỦ̃Ủɑ̀ɨ ɜɑɜỦ̃Ủəɾɤɡ̀ ŭảỦŭảủủɡ̀ɛỦ Ụ̉ɋ ủɡɜɨ ´ Ủ¸ɜɋ ỦɗỦ̃Ủ Ủ¸Ụ̉ɋ¸ảủəɐɡ̀ ɡ´ ɏ¸ỦỦ̃ủɋɡ̀ ỦɗỦ̃Ủ ủỦəɑỦ̃ɡ̀ ŭảɡɡ̀ ŭảỦ̃ɐảủɐ. Ɐ Ɏɛɑp Ⱡ. ŭỦ̃ɑỦỦ̃Ủə ɜỦ ɛɑɡ¸Ɏɛ̣ỦỦ̃Ủə əɑɑɜɦ ´ Ủɗɑŭ̃ɡủảɑəɑɔɜəɦ ɛɋɡỦɜảɨɛɦ ɛỦ Ụ̉ɋɜ ɛɜə¸ɑỦəɦɑɡɛɜɑɡ¸ɋỦ əỦɗɩ ɡ əỦəủỦ̃ɡ̀ ŭi ɑ ´ Ủ¸ɜ́ Ủ̃ı ủỦə̀ɡ̀ Ủ ɋ¸Ủ̃Ɏɛ̣ỦỦ̃Ủəɋ Ủɜŭɑɗɐəɑɐ-ỦɜỦ¸Ủ̃ı ɛỦɜɋ ủỦỦ̃ỦɜảỦɋỦ Ủbɔ̉ủảŭảỦủỦ̃ɑəɐ [279]. ɀ ɎəảỦ̃Ủ, ủỦɛỦəɤỦ̃Ủɡ̀ ɣɡỦəúỦɜỦɋɦỦə Ủ̃ɦủɑ ɋ ´ Ủ¸ɑgủɋỦ ɐ ɛɋ ɦủɑ əỦəɑ ɓỦɗɛɦɡ̀ Ủ̃ɋɡ̀ ɛɜə¸ɑỦəɦɑɡɛɜɑɡ¸ɋỦɡ̀ Ủ´ ɑỦ̃ảɑi ɜ ảủɑgɡ¸ɑi ɡ´ ɏɑɔɜɾủỦ̃ɑi ɡ ŭỦəỦ̃Ủɡ̀ əỦ¸ŭảỦbɔ̉ủảủəɑi əɜŭi ɜɑg ɛỦə¸ɑ´ ɏɦɗỦ̃ɛỦ [280, 281]. ¢ɣəɑɡ, Ủ̃ɦủɑ ɑ ŭỦəảỦ̃ɋɡ̀ ɛɎɛỦɡ̀ Ủ̃ɋɡ̀ Ủ¸ảủỦ̃¸ɐɡ̀ əɑɜảỦɡ̀ ɦủɑ əỦəɋ¸i ´ Ủ¸ɜɋ ɐ ɛɋ Ủ̃ɋɡ̀ ỦɗỦ̃Ủ ủgủỦ̃ɑəɜảɐɡ̀ ỦɗỦ̃Ủ ŭảỦủỦ̃ɑəɜảɐɡ̀ ŭgủəủỦ̃ɑgɡ¸ɔɗỦɡ̀ ủgủɑỦỦ̃ɑɜɑỦ̃Ủə ɛỦ Ủ̃ɋ ɛɜə¸ɑỦəɦɑɡɛɜɑɡ¸ɋỦ [282, 283].

7. ū əỦbɛɑɜɐ

¢ ū əỦbɛɑɜɐ Ủ´ ɑỦ̃ỦəỦbɩɤɜỦ Ủ´ ɦ Ủ̃Ủ əi¸ảỦ̀ ủỦ̃ɜɑỦbỦ̀ ủỦ̃ɑ ´ Ủɗɑŭ̃ɡủảɑəɑɔɜəɦ ɛɋɡỦɜảɨɛɦ Ủ̃ɋɡ̀ Ủɗɗ¸ɑủəəɗ¸ɤỦ̃ɐɐɡ̀ ŭảỦ̀ɐɑỦbỦ̀ɗɡ̀ [147]. ɹ gỦ̃ɦỦ́ ảỦbỦə ɜỦỦ̃ɐỦ´ ɦ Ủ̃ɑɜ əgỦỦ̃Ủ¸ảəɦ ´ əɋɗɡủɛɦ Ủ̃ɤɾɜ Ụ̉gɎəɤỦ̃ɤɾɜ ´ əỦəɩ ɜ ɦ´ ɑg ɋ Ủ̀ɜỦəɑɔɗỦ̃ Ủ̃ɤɾɜ ŭ̃əỦbɛɑɜɤŭɩ ɜ əgỦỦ̃Ɏ¸ɤɾɜ ỦɜɑỦəɛỦbỦəi Ủ̃Ủ¸ɋ [284, 285]. Ɐ ɹɦəɑgỦ̃ɤɾɜ ŭ̃əỦbɛɑɜɤŭɩ ɜ əgỦỦ̃Ɏ¸ɤɾɜ ủỦ̃ɋɜ Ủɗɗ¸ɑɔɔɤɜỦủɋ Ủŭ̃ɑ¸Ɏ əg¸ɑɾgủỦ̃ɋɜ ´ Ủ¸Ủbɤɾɔɐ əgỦɑəɜɩ ɜ. ⱯəəgỦɑəɑɜỦgŭ¸ɑgɜ Ủɦủɑ ủỦ̃ɑ əɑɛɛɎỦəỦ̃ɋɡ̀ ´ ɹɑŭ̃əỦbɛɑɜɩ ŭɑggỦ Ủ´ ɎɜỦ̃ɋủɋɡ̀ Ủ̃ɑg əgỦỦ̃Ủ¸ɜəi Ủ̃ɑɜɩ ɛỦỦ̃ɑgỦ ɦủɑ əỦə ủỦ̃ɋ ŭ̃əỦbɛɑɜɩ ŭɋ ủgủỦ̃ɋɛỦỦ̃əɐɐ Ủ´ ɎɜỦ̃ɋủɋ ɑɜỦɋỦ̃Ủɡ̀ ŭ̃Ɏủɋɡ̀. ɈgɹɋỦ¸ɑɑ ɹɦəɑ ´ Ủɑɑgɜ ɑəIL-1 əỦəIL-6 ɑəɑ´ ɑɋỦɡ̀Ủ Ɏɔɑgɜ Ủ̃ɋɜ ´ Ủ¸Ủbɤɾɔɐ Ủ̃ɋɡ̀ CRP Ủ̃ɦủɑ ủỦ̃ɑ ɐ´ Ủ¸ɦủɑ əỦəủỦ̃Ủ ỦɜŭɑɗɋəɑỦəɎ əỦəəỦbỦ̀ ɛgɯɎəi ỦỦ̃Ủ¸Ủ ủỦ̃ɑ Ủbɔ̉ủảủəɦ Ủ̃ɑɑɤɾɜ ɛỦ.

ȺɑŭɑəɦỦ̃Ủ¸Ủ, ɋ IL-6 Ủ´ ɑỦ̃ỦəỦbɛɑỦ̀ ´ ɑəgŭi ɜỦɛɋ əgỦ̃ɑəɑɔɋ ɛỦɛỦbɎəɋ ủgɛɛỦ̃ɑɑɐ Ủ̃ɦủɑ ủỦ̃ɡ̀ ɑgɛɑəɤɡ̀ɋ ɦủɑ əỦəủỦ̃ɡ̀ əgỦỦ̃Ủ¸ɑəɤɡ̀ ŭảỦ̀ɐɑỦbỦ̀ɗɡ̀ ỦɜɑủɗỦ̃ɡ̀ ´ ɑg ủɑỦ̃ɑɑɜỦɋỦbỦ̀ɛỦ Ủ̃ɋɡ̀ ɎɑɔɜɾỦ Ủ̃ɑg ɑ¸ɔỦɜảɨɛɑi , Ủ̃ɋɜ ảủỦ̃ɑɐɛ ɓɐɎbɋ əỦəỦ̃ɋ ŭ̃əỦbɛɑɜɐ. ÞỦ¸ɎɔỦ̃ỦəɛỦ̃Ủ´ Ủ´ ɦ ´ gɹɑŭ̃ɦỦ̃ɋủɋ Ủ̃ɋɡ̀ ´ ɹɑŭ̃əỦbɛɑɜɩ ŭɑggỦ ŭảỦ̀ɐɑỦbỦ̀ɗɡ̀ Ủ´ ɦ Ủ¸ỦɗɗủɛỦ̃Ủ əɑɜɑɔɔɦɜỦ əỦə ɛɋ (ɋ IL-1, ɋ ɜɑỦ̃Ủ¸ŭ̃Ủ¸ɦɜɋ-ɔ əɑɑ TNF) əỦəŭảỦbỦ̀ủỦ¸Ủə Ủ̃ɋɜ ɋ´ Ủ̃Ủɐɐ ´ Ủ¸Ủbɤɾɔɐ Ủ̃ɋɡ̀ CRP. ¢ỦỦ Ủ á ỦŭɎ Ủ̃ɋɡ̀ ủỦ̃ɑ ỦɑɑỦ Ủgɜ¸Ɏɜɑgɜ ´ Ủ¸ɎəəɋəỦ ɛỦ Ủ̃ɑgɡ̀ ´ Ủ¸ỦŭɑủảỦəɑi ɡ´ Ủ¸ɎɔɑɜỦ̃Ủɡ̀ əɜŭi ɜɑg [286]. ɀ ɎəảỦ̃Ủ, Ủ ảủɋɛɜəɑɔɜɐɡ̀ ɛỦəɤỦ̃Ủɡ̀ ɣɡɑgɜ ŭỦɑỦə ủgủɑɤỦ̃ảỦɋ Ủ̃ɑɜ Ủgɜɋɛ¸ɤɜɾɜ Ủ ɔ ɤŭɾɜ Ủ̃ɋɡ̀ ɛỦ Ủ̃ɋɜ Ủ£ŭ̃ɎɜảỦɋ əỦ¸ŭảỦbỦ̀ɗɡ̀ ɦủɑ ủgɛɓỦ£ɎỦ̃ɑɜ [286, 287].

¢ CRP ɣɡỦəỦ´ ɑŭỦəɑỦ̃ỦɦỦəủgủɡỦ̃ỦɑɑỦ̃Ủ´ ɑəəɤɡ̀Ủ´ ɦ Ủ̃ɑɡ̀ ´ Ủ¸ỦɛɤỦ¸ɑgɡ̀Ủɑg ɛỦỦ̃Ủbɑəɑəɑi ủgɜŭ¸ɦɛɑg əỦəỦəɑɔɜɦỦ̃Ủ¸Ủ ɛỦ Ủ̃ɋɜ ɹ Ɉ, Ủɑ Ɏɛɑp Ủ̃ɋɜ ỦɜỦ̃ủỦ̃Ủủɋ ủỦ̃ɋɜ

ꞩůɞgəɶɋ əŬəŰɋɜ ´ ŬɞgůŬɉ əœŬ əŬɗɩ ɠ Ů ɶɋɠ əŬəɛŮŰɋɜ ɡ´ ŮŰɉ ꞩəɡəŮɉ ꞩŬꞩ ɶŬ əŬəŰɋ ɞŬɛɋəɶ HDL[288, 289]. ɀ ɎəɞůŰŬ, ɋ ɛŮəɏŰɋ WomenꞩHealth ɏŭŮꞩŮ ůŰŬ ɎŰɞɛŬ ɛŮ ɛŮŰŬɓɞəɶɧ ůɨ ɜŭɉ ɞɛɞ, ɞ ɛɏůɞɠ ɧɉ ɞɠ Űɤ ɜ Ů ɘ ɏŭɤ ɜ Űɋɠ CRP ŮꞩŬə ɡɤ ɋəɧŰŮɉ ɞɠ ůɡɔəɉ ꞩŰəɎ ɛŮ Űɞɜ ɡɔɶ ´ əɋɗɡůɛɧ [290]. ɋ ůŰɧůɞ, ɋ CRP ɏɞŮəŮɞɞɞ´ ɞɶɋɗŮɑəəɤ ɠ ɎɛŮůɞɠ ůɡɛɛŮŰɏɞɤ ɜ ůŰɋ ŭꞩŬŭꞩŬůɶŬ ɧɞəɛɧɜɞ Űɋɠ űəŮɓɛɞɜɐɠ ŬəəɎ əŬəŰɋɠ ´ ɐɜɋɠ ɛɏůɤ Űɤ ɜ Ŭɉ ɜɋŰɑ ɜ Űɋɠ Ů ꞩɉ ɎůŮɤ ɜ ůŰɞ ŬɓɔŮꞩŬəɧ ŰɞɶɤɛŬ[291]. ɇɞ ŬɓɔŮꞩŬəɧ ŰɞɶɤɛŬ ´ Ŭɉ ɎɔŮə ŰŬ ɛɧɉ ꞩŬ ´ ɉ ɞůəɧəəɋůɋɠ ´ ɞɡ ŭŮůɛŮ ɞɡɜ ŰŬ əɡəəɞűɞɉ ɞɨ ɜŰŬ űəŮɓɛɞɜɩ ŭɋ əɨ ŰŰŬɉ Ŭ ɤ ɠ Ŭ ɎɜŰɋůɋ ůŰɋɜ Ů ɶɉ Ŭůɋ Űɋɠ CRP. Ⱥ´ ɶůɋɠ, ɋ CRP Ů ɎɔŮə Űɋɜ Ŭ Ůəůɡɗɏɉ ɤ ůɋ ꞩůŰəɞɨ ´ Ŭɉ ɎɔɞɜŰŬ Ŭ ɧ ŰŬ űəŮɓɛɞɜɩ ŭɋ əɨ ŰŰŬɉ Ŭ ɛŮ Ŭ ɞŰɏəŮůɛŬ Űɞ ůɞɋɛŬŰůɛɧ ɋɉ ɧɛɓɤ ɜ.

Ʉꞩ ůɡɔəŮəɉ ɶɏɜŬ, Űɞɡəɏɞꞩ Űɞɜ 20 ɛŮəɏŰɠ ɏŭŮꞩŬɜ ɔɉ Ŭɛɛꞩɶ ůɡůɞɏŰꞩɋ Űɞɡ Ŭɡɜɋɛɏɜɞɡ əꞩŭɨ ɜɞɡ ɔꞩŬ əŬɉ ŭꞩŬɓɔŮꞩŬəɎ Ů Űůɧŭꞩ əŬəɡɤ ɋəɬ ɜ Ů ɘ ɏŭɤ ɜ CRP[292-295]. Ⱥɜŭ ŮꞩŰəɎ, ɋ ɓɎůɋ ŭŮůɞɛɏɜɤ ɜ PRINCE ɏŭɤ ůŮ ´ ɞəɨ ŰɛŮɠ ´ əɋɉ ɞűɞɉ ɶŮɠ ɔꞩŬ Űɋɜ Ŭɜꞩəɧɔɋůɋ Űɞɡ əŬɉ ŭꞩŬɓɔŮꞩŬəɞɨ əꞩŭɨ ɜɞɡ ɓɎůŮəŰɋɠ CRP ɞəɞ´ ɞɶŮɠ ŭŮɜ ɐŰɜ ŭɡɜŬŰɧɜ ɜŬ əɋűɗɞɨ ɜ Ŭ Ůɡɗ ŮŬɠ Ŭ ɧ Űɋ ɛŮəɏŰɋ Framingham[296, 297] əŬɗɩ ɠ Űɜ 66% Űɤ ɜ ŬŰɧɛɤ ɜ ´ ɞɡ ɗŮɤ ɉ ɐɗɋəŬɜ ɤ ɠ ɞŬɛɋəɞɨ ɐ ɛɏůɞɡ əꞩŭɨ ɜɞɡ Ůɛű Ɏɜꞩ Ŭɜ ɔꞩŬ ´ ɉ ɩ Űɋ űɞɉ Ɏ ůŰŰűŬɜꞩŬɶŬ Ů Űůɧŭꞩ. Ⱥ´ ɶůɋɠ, ůŰɋ ɛŮəɏŰɋ PROVE-ITTIMI 22, ɋ CRP ɞɉ ɋůɶ ɞ´ ɞɶɗɋəŮ ɤ ɠ ŬɜꞩɜŮɡŰɐɠ ůɡůɞɏŰꞩɋɠ ´ Ŭɉ Ŭɓɧɜ Űɤ ɜ əꞩŭɨ ɜɞɡ (LDL əŬə ɔəɡəɧɞɋɠ) ´ Ŭɉ ɏɞɞɜŰɠ ůɋɛŬɜŰəɎ Ŭ ɞŰəɏůɛŬŰ Űɞɡ ůɡɜŭɡŬůɛɞɨ Űɞɡɠ[288].

Ƀɛɞɶɤɠ, ɋ ɛŮəɏŰɋ WHS Ů ꞩɓŮɓŬɑɤ ůŮɧŰəŰ Ů ɑ ŮŰŬ Űɋɠ CRP Ŭ ɞŰəɞɨ ɜ Ů ɘ əɏɞɜ ´ ɉ ɞɔɜɤ ůŰəɧ ´ Ŭɉ ɎɔɞɜŰ ´ ɏɉ Ŭɜ Űɤ ɜ əəŬůůɶɩ ɜ. Ʉꞩ ůɡɔəŮəɉ ɶɏɜŬ Ů ɑ ŮŰŬ CRP>3 mg/Lŭɘ əŬůꞩɎɞɡɜ Űɜ əŬɉ ŭꞩŬɓɔŮꞩŬəɧ əɶŭɡɜɞ ůɡɔəɉ ꞩŰəɎ ɛŮ Ů ɑ ŮŰŬ CRP< 1 mg/L[290]. Ⱥ´ ɶůɋɠ, Ŭ Ů ɑ ŮŰŬ Űɋɠ CRP Ŭ ɞŭŮɞŰɋəŮɧŰə´ Ŭɶɞɡɜ ůɋɛŬɜŰəɧ ɉ ɧəɞ ɔꞩŬ Űɋɜ Ŭɨ ɜɋůɋ Űɞɡ əŬɉ ŭꞩŬɓɔŮꞩŬəɞɨ əꞩŭɨ ɜɞɡ Ŭəɧɛ Ŭ əŬəŮ ŮɎŰɛŬ ɛŮ ɛŮŰŬɓɞəɶɧ ůɨ ɜŭɉ ɞɛɞ ŬɜŮŬɉ ŰɐŰɤ ɠ Űɞɡ ɞɉ ꞩůɛɞɨ əŬə Űɋɠ ɓŬɉ ɨ ŰɋŰɎɠ Űɞɡ. Ƀɛɞɶɤ ɠ, Ŭ Ů ɑ ŮŰŬ Űɋɠ ɡɤ ɋəɐɠ ŮɡŬꞩɗɋůɋɶŬɠ CRP>10 mg/L ŬɡɜɎɜɞɡɜ Űɜ əŬɉ ŭꞩŬɓɔŮꞩŬəɧ əɶŭɡɜɞ əŬŰɎ 4,5 űɞɉ ɏɠ ůɡɔəɉ ꞩŰəɎ ɛŮ Ů ɑ ŮŰŬ <0.5 mg/L[298]. Ɇɏəɞɠ, ɋ ɛŮəɏŰɋ WOSCOPS ɏŭŮꞩŮ ɧŰə Ů ɑ ŮŰŬ CRP>3 mg/L Ŭ ɞŰəɞɨ ůŬ ´ ɉ ɞɔɜɤ ůŰəɧ ´ Ŭɉ ɎɔɞɜŰŬ Űɞɡ ůŬəɞŬɉ ɩ ŭɋ Ŭ ɧ Űɜ ɶŭꞩ Űɜ ɛŮŰŬɓɞəɶɧ ůɨ ɜŭɉ ɞɛɞ [299].

8. ɶꞩŬŰɉ ɞűɐ

Ƀə Űɉ ɏɞɞɡůŮɠ əŬŰŮɡɗɡɜŰɐɉ ꞩŮɠ ɞŭɋɔɶŮɠ ɔꞩŬ Űɋɜ ´ ɉ ɧəɋɡ ɋ əŬɉ ŭꞩŬɓɔŮꞩŬəɩ ɜ ůɡɛɓŬɛɎŰɤ ɜ ůɡůɐɜɞɡɜ ŭɶŬꞩŰ ŬɜɎəɞɔɋ Űɋɠ ɛŮůɞɔŮꞩŬəɐɠ əŬŰɎ Űɋɜ ɞ´ ɞɶ:

1) ɇɞ 10% ΰ̃d ΰ̃ ůɜỦ ɔůŭǾəɐɠ ´ ɟ ɧůəɖɣ ɖɠ ɗŬ ´ ɟ ɞɏɟ ɢŮΰ̃ə Ŭ ɧ ΰ̃ɖɜ əŬΰ̃ɜϒəɤ ůɖ əɞɟ ůůɛɏɜɤɜ əɛ Ŭɟ ɩ ɜ, ɛŮ əŬΰ̃ɜϒəɤ ůɖ ´ ɞəɡŬəɧɟ ůůΰ̃ɤɜ əɛ Ŭɟ ɩ ɜ ɞɜɏɤɜ əɡɟ ɑɤ ɠ

2) ȼ ɖɛỦ ɐůɘŬ ´ ɟ ɧůəɖɣ ɖ ϒəŬΰ̃ɞɠ ŭůɞ ɗŬ ɡ´ Ủ ɓŬɑůəΰ̃ 5 g

3) ȼ ɖɛỦ ɐůɘŬ ´ ɟ ɧůəɖɣ ɖ ɕɩ ɜ ɗŬ ůɑŬə30ï 45 g

4) ȼ ɖɛỦ ɐůɘŬ ´ ɟ ɧůəɖɣ ɖ ΰ̃ɟ ɞɨ ΰ̃ɤɜ əŬəŬɢŬɜɕɩ ɜ ŭůɞ ɗŬ ɡ´ Ủ ɓŬɑůəΰ̃ 200 g ɔɘŬ ɏəŬůΰ̃ɞ

5) ȼ ůɓŭɞɛŬŭɘŬɗŬ əŬΰ̃ɜϒəɤ ůɖ ɣ Ŭɟ ɕɨ ´ ɟ ɏ´ ůəɜŬ ůɑŬə1 ɏɤ ɠ 2 ΰ̃ɞɟ ɏɠ

6) ȼ ɖɛỦ ɐůɘŬ əŬΰ̃ɜϒəɤ ůɖ ΰ̃ɤɜ ŬɜϒəŬΰ̃ɤɜ ɜɖɟ ɩ ɜ əŬɟ ´ ɩ ɜ ŭůɞ ´ ɟ ɏ´ ůə ɜŬ ɡ´ Ủ ɓŬɑůə30 g

7) ȼ ɖɛỦ ɐůɘŬ əŬΰ̃ɜϒəɤ ůɖ Ŭəəɞɧə ´ ɟ ɏ´ ůə ɜŬ ´ Ủ ɕɟ ɑŮΰ̃ə ůΰ̃ 2 ´ ɞΰ̃əɟ ɘŬ ΰ̃ɞ ɛɏɔɘůΰ̃ɞ ɔɘŬ ΰ̃ɞɡɠ ϒɜŭɟ Ủɠ əŬəůΰ̃ɞ 1 ɔɘŬ ΰ̃ɠ ɔɡɜŬɑůɠ.

8) ȼ ɖɛỦ ɐůɘŬ əŬΰ̃ɜϒəɤ ůɖ ɟ ɞΰ̃ɖɛϒΰ̃ɤɜ ɛŮ ɛϒɢŬɟ ɖ ɗŬ ´ ɟ ɏ´ ůə ɜŬ Ŭ ɞΰ̃Ů ɔŮΰ̃ə[151].

ɇŬ ϒΰ̃ɞɛŬ ´ ɞɡ ůɑŬəůΰ̃Ů ɡ´ ɏɟ ɓŬɟ Ŭ ůΰ̃Ů ´ Ŭɢɨ ůŬɟ əŬ ((BMI) >25 kg/m^2), ɏɢůə ɓɟ ůɗůɑ ɧΰ̃ə ůɛΰ̃Ŭɜɑɞɡɜ ɛůɓŬəɨ ΰ̃Ůɟ ɞ əɑŭɡɜɞ ɔɘŬ ɗɜɖΰ̃ɧΰ̃ɖΰ̃ əϒɗŮ Ŭɘΰ̃ɞəɞɔɗŬɠ ůɡɔəɟ ɘΰ̃əϒ ɛŮΰ̃ ϒΰ̃ɞɛŬ ɛŮΰ̃ɡůɕəɞɔɕɧ ɓϒɟ ɞɠ (20 kg/m^2<BMI<25 kg/m^2). ɀ ϒəɘůΰ̃, ɖ əŬΰ̃ɜɞɛɐ ΰ̃ɞɡ əɑ ɞɡɠ ůΰ̃ɖɜ əɞɕɘŬəɐ ɢɩ ɟ Ŭ Ŭɡɜϒɜůəΰ̃ɞɜ əŬɟ ŭɘŬɓɔůɘŬəɧ əɑŭɡɜɞ əŬə ɖ Ŭ ɩ əůɘŬ ɓϒɟ ɞɡɠ ůɑŬə Ů ɘΰ̃əΰ̃ɞɐ. Ɇɡɜ Ů ɩ ɠ, ɖ ŭɘŬəɟ ɖůɖ ΰ̃ɞɡ ɓϒɟ ɞɡɠ ůŮ ΰ̃ɡůɕəɞɔɕϒ ´ əŬůɘŬɐ ɖ Ŭ ɩ əůɘŬ ɓϒɟ ɞɡɠ ɧΰ̃ɜ Ŭɡΰ̃ɐ ůɡůəɜΰ̃ə[300], ´ Ŭɑůə´ ɞɨ ůɖɛŬɜΰ̃əɧ ɟ ɧəɞ ůΰ̃ɖ ɛůɑɤ ůɖ ΰ̃ɞɡ əŬɟ ŭɘŬɓɔůɘŬəɞɨ əɕŭɨ ɜɞɡ ΰ̃ɤɜ Ŭůɗůɜɩ ɜ ůɡɜɞəɕϒ ůɡɛ´ Ủ ɕŬɛɓŬɜɞɛɏɜɤɜ əəůəůɑɤɜ ´ ɞɡ ɏɢɞɡɜ ɡ´ ɞůΰ̃ɑSTEMI Ⱥɀ .

9. Ɇɡɛɛɧɟ ΰ̃ɤ ůɖ ůΰ̃ɖɜ ůɛΰ̃ɟ Ŭɔɛ Ŭΰ̃əɐ Ŭɔɤ ɔɐ

Ōɜ Ŭ ůɖɛŬɜΰ̃əɧ ůɛ´ ɧŭɕ ůΰ̃ɖɜ ɓůəΰ̃ůΰ̃ɞ´ ɞɑɖůɖ ΰ̃ɤɜ ɗỦ Ŭ´ ůɡΰ̃əɩ ɜ ůΰ̃ɧɢɤɜ ɛɏůɤ ΰ̃ɖɠ ΰ̃Ŭɟ ɛŬəůɡΰ̃əɐɠ Ŭɔɤ ɔɐɠ ůɑŬə ɖ ɛɖ ůɡɛɛɧɟ ΰ̃ɤ ůɖ ůŮ Ŭɡΰ̃ɐ əŬɗɩ ɠ ůɢŮΰ̃ɑŮΰ̃ə ɛŮ ɢůəɧΰ̃Ủ Ŭ Ŭ´ ɞΰ̃ůəɏůɛŬΰ̃ [301]. ȼ əŬɗɡůΰ̃ɏɟ ɖůɖ ůΰ̃ɖɜ ´ Ŭɟ Ŭəɞəɨ ɗɖůɖ Ŭůɗůɜɩ ɜ ɛŮΰ̃ϒ Ŭ ɧ Ⱥɀ ɏɢůə ɤɠ Ŭ´ ɞΰ̃ɏəůůɛŬ ΰ̃ɖ ɢůəɧΰ̃Ủ ɖ ůɡɛɛɧɟ ΰ̃ɤ ůɖ ůΰ̃ɖ ΰ̃Ŭɟ ɛŬəůɡΰ̃əɐ Ŭɔɤ ɔɐ ΰ̃ɧůɞ ɓɟ Ŭɢɡ´ ɟ ɧɗůůɛŬ ɧůɞ əŬə ɛŬəɟ ɞ´ ɟ ɧɗůůɛŬ [302]. ɀ ϒəɘůΰ̃, ůŮ ɛɘŬ ɛΰ̃-ŬɜϒəɡůΘ 376.162 Ŭůɗůɜɩ ɜ, ɖ ůɡɛɛɧɟ ΰ̃ɤ ůɖ ΰ̃ɤɜ Ŭůɗůɜɩ ɜ ůŮ ΰ̃ϒɟ ɛŬəŬ ɔɘŬ əŬɟ ŭɘŬɓɔůɘŬəɏɠ ´ Ŭɗɐůůɡ ɐΰ̃ɜ 57% ɛŮɛɏůɞ ɢɟ ɧɜɞ əɐɣ ɖɠ ΰ̃ ŭɨ ɞ ɏΰ̃ɖ [303]. ɗɏɓŬɘŬ, ůɑŬəɔɜɤ ůΰ̃ɧ ɧΰ̃əɖ ůɡɛɛɧɟ ΰ̃ɤ ůɖ ůŮ ɞ´ ɞɘŬɐ´ ɞΰ̃Ů ΰ̃Ŭɟ ɛŬəůɡΰ̃əɐ Ŭɔɤ ɔɐ Ů ɖɟ ůϒɛΰ̃ə əŬə Ŭ ɧ ϒəəɞɡɠ ´ Ŭɟ ϒɔɞɜΰ̃ɠ

ɦ´ ɤɠəɕɜɤɜəɕ-ɕəɕɜɕɛəɕɑŬəəƴəŬə´ Ŭɻ Ƴɔɕɜŭů ɠůɕŰŰɦɛůɜɕɠɠŰůűŰɛŮŰɕ ɑŭɜɕ Ŭɕ űƴɻɛŬəɕ ůűŰŰɛŮŰɕ ůi ůŰɻɛŬ gɔůůŬɠ ůűŰŰɛŮŰŰɡŬɜŰŰəɐɣůɡɠ ŰɕgŬůdŮɜɕi ɠ [304]. ƵgɜŮ ı ɠ, ɤɠŰ´ Ƴ3ŰɻůɻɜŰ´ŰɤɕɐůgɛɛɦɻűɤůɻŬɜŰ´ Ůi ɕdɻəŮɻůŰɻŬŰɻɔəəɐ Ŭɕg ´ɕəgɕŰ´ɕɕi. ƶɕ´ɕəgɕƴ´ə´Ůɻəŭɛƀƴ3ŮəůgɔəůəɻɕɣɜŮɠ ŭɦůŮɡűŰɻɛƴəɤɜ-əəŮɑɕƴɔŬŰɻɛŮɤůɻŰŰɻɔəɐ ŰɕgəŭɻɜɕgəŭɻŭŬƀɔŮŬəɕi əɜŭi ɜɕg əŭəɕɕɻdɔŮŰŰəɛdŬ űɕɻƴ dɛŮɻdůɤɠ [305, 306].

ƶ ƴəɑůŰŰ, dɻɛɦɜdɻɛŮəɑúŰɻ´ɕg Űűɕɻɕi ůŮŰɻɕɻɐůd´ɕəgɕŰ´ɕɕi Ű´ɕəəŮɑůŰəƴ ůŮɛŮŰŰɛűɻŰɔɛŰŰəɕi ɠ ŰůdŮɜŮɡŮɡ Ůɜŭəd ɛŮəɑúŰɻ űƴůdɡɠ 2 FOCUS[307], əŭŰƴ Űɻɜɕ´ɕdŭ 695 ŰůdŮɜŮɡŮɡ ɛŮŰƴ Ű´ɦ ƁǺƶ ŰɡɕŰɑ´ɕɑdɻəŭɜ ůŰɻ ůgɜɐdɻd ɛŮŰŰɛűɻŰɔɛŰŰəɐ Ŭɔɤɔɐ əŭəůŰɑ´ɕəgɕƴ´ə (Ůů´ɑɕd, Ůƶ Ǻȷ , ůŰŰŰɑd). ƵŮŰgŰɐ Ůɻ ɛŮəɑúŰɻ, ůŮ´ Ŭɻ Ŭəɕəɕi dɻůɻd Ű´ɜ ŰůdŮɜı ɜ ɛŮŰƴ Ű´ɦ 9 ɛɐɜŮɡ, əŭŰŰɔɻ Ƴűɻdəů ɦŰəɻd ɕɛƴŭŭ ůŰɻɜ ɕ´ɕdŭ ɕɕɻdɔɐdɻəŮ Űɑ ´ɕəgɕƴ´ə ɣŭŮəɑŮ əŭəi ŰŰɻd ůgɛɛɦɻűɤůɻd ůgɔəɻɑúəɑƴ ɛŮŰɻɜ ɕɛƴŭŭ´ɕg ɣəŭɔŮŰŮɻɜ ŭɔɤɔɐ ůŮɜŮɡɤɻɑŰƴ űƴɻɛŭəŭ. ⊎Ŭɻ ɦəŭ ŭgŰƴ ɕɻŮəƴɕɕɜŰŰə ɛŮɔŭəi ŰŰɻ ůɡ ɛŮəɣúŰůɡ ɔɑŭ ɜŭ Ů ɑɔŮɔŭəɑ ůɕgɜ ŰŰ ´ Ŭɻ Ű´ Ƴɜɤ Ű´ ɕŰŮəɣůɛŮŰŰ. ƵgɜŮ ı ɠ, Ű̈ɦůɕ ɕəŮ ŬɔɔŭəɛŮŰŰůɡɠgɔŮŭŭɡɠɦůɕ əŭəɕəɕdŭɑɕəɕəŭůdŮɜŮɡɠ dŭ´ɻɣ´ ŮəɜŭŮɑŭəůŮůgɜŮɕɐ Ů əɕɕɜɤɜɜdŭəŭə´ Ŭɻ Ŭəɕəɕi dɻůɻd ɜŭɔɑŮŰŰəüɑƴəɕɔɕgɠ ɦůɕɜ Ŭűɕɻ Ƴ ůŰɻd əɛɣɻd Ű´ ɕűƴůŮɤɜ ɔɑŭ ŰŰɻd űŭɻɛŭəůgŰɐɐe Ŭɔɤɔɐ əŭəɜŭ g´ Ƴɻɕůə Ŭɜŭ´ əɻɻ ɕűɦɻdůɻd ůŮůɕɣůɻd ɛŮŰŰɻd ŭɔɤɔɐ [308].

Ưȷ Λȷ ũƁ?ȼȺɆƬƢɸɈ?ƁɈ ũɫ ȺƯȷ ?ȷ ?ƁɆȼȘȺɫ ȷ ɆŪȺ?ɋ? ɀ Ⱥ

Ɇȼ Ⱥū ȷ ?ɫ ɫ ?ƁɆƁ ɀ Ⱥȼȷ ȷ ƯƁ ȷ ũũȺɫƁƯȘȷ ɆȼȽȼ

ȼ Ů ɑƖŮŰɑɐ ɟɨ ɗɛɑůɖ Űɤɜ ´ Ŭɟ Ŭɓɧɜ Űɤɜ ɘɑŭɨ ɜɞɡ ŮɑŬɘ ɞɡůɑ ŭɖɠ ɔɑŬ Űɖɜ Ŭɜ Űɑ ŮŰ ´ ɑůɖ Űɖɠ ůŰŰ ŬɜɑŬŭɠ ɜɧůɞɡ ɘŬɘ Űɖ ɛŮɤ ůɖ Űɤɜ ɘŬɟ ŭɑŬɓɔŮɑŬɘɩ ɜ Ů ɘ ɘɞɘɩ ɜ, Űɤɜ Ů Ŭɜ Ŭɜɞůɖɘ Ůɑ ɜ ɘŬɘ Űɖɠ ɗɜɖŰɧŰɖŰɠ ɛŮŰ Űɖ ŭɑůɜɏɟ ɔŮɑŬ Ŭɓɔ Ůɑ´ ɘŬů Űɑɐɠ. ɀ ɏɞɟ ɘ Ű ɟ Ŭ ŭƳŰɞɟ Ůɠ ɛ ŮɑɏŰɠ ɏɞɞɡɜ Ŭ ɞŰɠ´ ɩ ůŮɑ Űɜ ɟ ɧɘɞ ɘŬɗŮɜɧɠ Ŭ ɧ Űɜɡɠ´ Ŭɟ Ƴɔɞɜ Űɠ ɘɑŭɨ ɜɞɡ ɤɠ´ ɟ ɞɠ ŬɡŰɧɜ Űɜ ůɘɞ´ ɧ.

Ōɜ Ŭ ůɖɛ Ŭɜ Űɑɧ Ůɛ´ ɧŭɑ ůŰɖ ɓŮɑŰɑŰɜ´ ɞɖůɖ Űɤɜ ɗŮ Ŭ Ůɡ Űɑɩ ɜ ůŰɞɤɜ ɛɏůɤ Űɖɠ űŬɟ ɛŬɘŮɡŰɑɐɠ ɘŬɘɡɔɑŬɞŭɑŬŰɖŰɑɐɠ Ŭɓɤɔɐɠ ŮɑŬɘɖ ɛɖ ůɡɛɛɧɟ űɤůɖ ůŮ Ŭɡ ɑ ɘŬɗɩ ɠ ůɞŰɑŰŰɘ ɛŮ ɞŮɑ ɧŰŬ Ŭ Ŭ ɞŰɑɏůɛŬŰŰ [301]. ȼ ɘŬɗɡůŰɏɟ ɖůɖ ůŰɖɜ ´ Ŭɟ Ŭɘɞɘɨ ɗɖůɖ Ŭůɗ Ůɩ ɜ ɛŮŰƳ Ŭ ɧ Ⱥɀ ɏɞŮɑ ɤɠ Ŭ ɞŰɏɘŮɛŬ Űɖ ɞŮɑ ɧŰ ɟ ɖ ůɡɛɛɧɟ űɤůɖ ůŰɖ űŬɟ ɛŬɘŮɡŰɑɐ Ŭɓɤɔɐ Űɧůɞ ɓɟ Ŭɞɡ´ ɟ ɧɗŮɛŬ ɧůɞ ɘŬɘ ɛŬɘɟ ɞ´ ɟ ɧɗŮɛŬ [302]. ȼ ůɡɛɛɧɟ űɤůɖ Űɤɜ Ŭůɗ Ůɩ ɜ ůŮ űƳɟ ɛŬɘŬ ɔŬ ɘŬɟ ŭɑŬɓɔŮɑŬɘɏɠ ´ ŬɗɐůŮɠ ɐŰɜ 57% ɛŮ ɛɏůɞ ɞɟ ɧɜɞ ɘɐɣ ɖɠ ŰŬ ŭɨ ɞ ɏŰɖ [303]. ɗɏɓŬŬ, ŮɑŬɘ ɔɜɤ ůŰɧ ɧŰɘɖ ůɡɛɛɧɟ űɤůɖ ůŮ ɞ´ ɞŬŭɐ´ ɞŰŮ űŬɟ ɛŬɘŮɡŰɑɐ Ŭɓɤɔɐ Ů ɖɟ ŮƳɛŮŰŰɘ ɘŬɘ Ŭ ɧ Ƴɘɘɞɡɠ´ Ŭɟ Ƴɔɞɜ Űɠ ɧ´ ɤɠ ɘɞɑɤɜɑɞ-ɞɑɞɜɞɛɑɞɑ Ŭɘɘ Ƴ ɘŬɘ ´ Ŭɟ Ƴɔɞɜ Űɠ ůɞŰɑɧɛŮɜɞɡɠ ŮŰŰ ɛŮ Űɑ ɑŭɑ Űɑ űƳɟ ɛŬɘɞ ŮŰŰ ɛŮ Űɑ ůɨ ůŰɖɛŬ ɡɔŮŭɠ ŮŰŰɛŮŰɑɠ ŬɜŰɑɐɣ Ůɑɠ Űɑɡ ŬůɗŮɜɞɨ ɠ [304].

Ɇɡɜ Ů ɩ ɠ, Űɑ Ŭ ɩ Űɖɛ Ŭ Űɖɠ ´ Ŭɟ ɞɨ ůŬɠ ɛŮɑɏŰɖɠ ŮɑŬɘ ɜŬ ɜŬŭŮɑŮɑ Űɖɜ Ů ɑɟ Ŭůɖ Űɤɜ ´ ɟ ɞŬɜŬŰŬ ɧɛŮɜɤɜ ´ Ŭɟ Ŭɓɧɜ Űɤɜ ɘɑŭɨ ɜɞɡ ůŮ ɏɜŬ ɛŮƳɘɞ Ŭɟ ɑɖɛɧ ůŰŰŰɜɑŬɘɜ ŬůɗŮɜɩ ɜ ´ ɞɡ ɗŬ ɡ´ ɞɓɘɖɗɞɨ ɜ ůŮ Ŭɓɔ Ůɑ´ ɘŬů Űɑɐ ɘŬɘɜŬ Ů ɑɖɛƳɜ Ůɑ Űɑɜ ɓŬɗɛɧ ůŰɜ ɞ´ ɞɑ ůɡɜ ŮɑŰɏɟ Ůɑ ɞ ɘŬɗɏɜŬɠ Ŭ ɧ ŬɡŰɑɨ ɠ ůŰɖɜ ŮɛŰƳɜɑɖ Ů ŬɜŬɞůɖɘŮɑ ɜ ɛŮŰ Űɖɜ Ŭɓɔ Ůɑ´ ɘŬů Űɑɐ. Ɇɡɔɘ Ůɑɟ ɑɏɜŬ, ŮɑŬɘ ɑŭŬŰɟ Ů ŭɑɏɟ ɞɜ ɜŬ ɛŮɑŰŰɗŰ Ŭɜ ŰŰ ŮɡɟɐɛŰŰ Ŭ ɧ Űɑɜ ´ ɘɖɗɡůɛɧ Űɖɠ ´ Ŭɟ ɞɨ ůŬɠ ɛŮɑɏŰɖɠ ɗŬ ůɡɛűɤɜɐůɞɡɜ ɛŮ Űɖɜ ɡ´ Ƴɟ ɞɞɡůŬ ɓɑɘɑɞɔɟ ŬŰɗŬ ɐ ɗŬ ůɡɜŰɑɏůɞɡɜ ůŰɖɜ ŬɜƳŭŮɑɖ Ƴɔɜɤůɖɜ ɛɏɞɟ ɘ Ű ɟ Ŭ Ů ɑɟ ƳůŮɤɜ Űɤɜ ´ ɟ ɞŬɜŬŰŬ ɧɛŮɜɤɜ ´ Ŭɟ Ŭɓɧɜ Űɤɜ ɘɑŭɨ ɜɞɡ.

ɆƬƁƯƁɆ

Ɓ ůɘɞ´ ɧɠ Űɖɠ ´ Ŭɟ ɞɨ ůŬɠ ɛŮɑɏŰɖɠ ŮɑŬɘ ɜŬ ŬɜŬŭŮɑŮɑ Űɖɜ Ů ɑɟ Ŭůɖ Űɤɜ Ŭɞ´ ɞ´ ɞɑůɑɜɤ ɘŬɛɖ-Ŭɞ´ ɞ´ ɞɑůɑɜɤ ´ Ŭɟ Ŭɓɧɜ Űɤɜ ɘɑŭɨ ɜɞɡ ůŰɖɜ ŮɛŰƳɜɑɖ

Ů Ůз Ůзсůqəůə з эəŬ əŬ ůзŬэсůəŬ ůgɛбҮɛŮŰŬ ůŮŮůdŮзŮůgɛŮůŰŰíŮзəŬůŬ зђůс ´ сg g´ сбҮəəсзŰŰэůŮŮэсůə´ əŬůŰəvе Ű r з ůŰŰíŮзəŬůr з Ůэсůr з.

JşŁTB TJ Ł z ÁŪBqBÉ

ÉŰů ɛůəyŰů ůgɛɛŮŰŰůсŮз ůg зсəəəҮ 365 ŮůdŮзůůgɛ Ů ŮŰůɛɛəђ Ůз Ůɛ зqůŰəђ ´ ђůůűŮŰůgɡ Ůэсůə´ əŬůŰəvеgɡ, ŮůŰŮ ůŰŮ ´ əŬůůəŬ сзyсgɡ ůŰŰíŮзəŬůсg ůgзŭђɛсg (BÉÉ) ŮůŰŮəђэr g´ сбсəəvеgɡ ůŮůŰŰíŮзəсэђ ŮűůŬ ůі ɛűr з Ů ɛŮŰgɡŮзŭŮəůgɡ, сəс´ сœсə əŬə´ Ŭђ ŮəсəəсgdѵdqəŬз ´ ђ сс´ ŰəҮ əŬŰr ɛyůс ђђ с эəŬ 32,5 ɛѵз Ůgɡ(22-37) ɛѵз Ůgɡ)..

ТђsŰѵђsŬ ŮəůŬэr эvеgɡ ůŰůɛŮəyŰů

- ђ ůdŮзůgɡ ɛŮůŰŰíŮзəŬůŬ зђůс ´ сg g´ сбəvеdqəŬз ůŮŮэсůə´ əŬůŰəvе Ű r з ůŰŰíŮзəŬůr з Ůэсůr з
- Bə ŮůdŮзůgɡ зŬ ŮзŮə зѵеůŰəgɡ эəŬ Ű œgəҮɛəůŰз 12 ı ђůgɡ ´ ђс Ű r з ɛŮŰђеůŮr з.

ТђsŰѵђsŬ Ű´ сəəŮəůɛсі Ű´ ђŰůɛŮəyŰů

- ђ ´ ђ Ű ůɛŮəyŰů Ű´ сəəŮůůŰůəŮз ҮŰŰсɛŬ ɛŮůŰуз r ůq Ű r з ůŰŰíŮзəŬůr з Ůђůůђ ə з <50%,
- ђ ůdŮзůgɡ ɛŮ Ůђ ђі dɛəůŰů Ůђ ůůђ əŬəv ´ dŮůq (ůgůŰœəvе Ůђ ůůђ əŬəv ´ dŮůq ´ Ҳз r Ű´ ђ 180mmHg əŬə ŭəŬůŰœəvе Ůђ ůůђ əŬəv ´ dŮůq ´ Ҳз r Ű´ ђ 100mmHg),
- ђ ůdŮзůgɡ ɛŮ ůgɔɔŮзv əŬђ ŭəs´ ҲdŮəŬ v ůсбŬђ сі бŬdɛсі бŬəбəŭс´ ҲdŮəŬ,
- ђ ůdŮзůgɡ ɛŮůсбŬђ v q´ ŰŰəvе зђůс əŬə´ Űdсəœɔəvgɡ Űœvgɡ q´ ŰŰəı з ŭŮəŰł з (ђ´ r gɡ Ů á ŮűŰ сœəŮђ gdђ cdqɡ, Ůů´ Ůђ Űəvеgɡ əŬə ŬəŮзəvеgɡ Ůɛзсɛ Ůзůűŭђ Ҳůqgɡ >2 ű сђ ygɡ ŰŰ Ůзı ŰŮђ Ű ű gůœəɔəҮ ђђ əŬ),
- ђ ůdŮзůgɡ ɛŮ зŮs´ əŬůdgɡ, ŮgŰs Ҳзсů Ű зсůvɛŰŰŰ əŬəcђ зəŮgɡ v сзŮůgɡ ű əŮbɛсзı ŭŮœgɡ əŬŰŰůŰҮůŮœgɡ,
- ђ ůdŮзůgɡ ɛŮ œůəyŰů ɛŮŰŰɛђůсŮgůqgɡ cђ Ҳзr з, ҮŰŰɛŬ ´ сg əŬɛбҮзсgз Ůзсůсŭђ ´ сəqŰəvе v Ůзсůсə ŰŰŰůŰŰəŰəvе dŮђ Ű´ ŮdŬ,
- ? сůсэђзс ´ Ůggů Ůђ ədŬ (BMI>40kg/m2),
- Éсбŭђ v зŰűђ əvе Ůз Ů Ҳђ əŮəŬ GFR<30ml/min əŬdı g əŬə
- ђ ůdŮзůgɡ ɛŮg´ yђ /g´ сdgђ Ůз Ůəŭůəɛђ.

ɀ Ủɗɞŭɞəɞɔɗ̃Ư

ɆỦ ɧəɞɡɠ ǘɞɡɠ ủɡɛɛỦǘɏɞɞɜǘỦɠ ủǘɗ ɛỦɐɏǘɗ ɏɔɕỦ əƯǗƯɒɟƯǘɐ ǘɤɜ ŭɗɛɞɔɟƯǘɕɩ ɜ ɞƯɟƯəǘɗɟɕǘǘɕɩ ɜ (ǘɨ əɞ, ɗəɕɗƯ, ǘɡəɐ, ŭỦɐǘɗɠ ɛƳɕƯɠ ủɩ ɛƯǘɞɠ) əƯə ɡ´ ɞɓəɐɗɗəƯɜ ủỦ´ əɐɟɗ əɕɕɕɐ ỦɜɏǗƯủɗ.

Ⱥ´ ɗủɗɠ, ɏɔɕỦ əƯǗƯɒɟƯǘɐ ǘɤɜ Ủɜɐɠ ´ ƯɟƯɒɧɜǘɤɜ əɕŭɨ ɜɞɡ ɛỦ ǘɗ ɞɟɐủɗ ủǗƯɗɛɕɛɏɜɤɜ ỦɟɤǘɗɛƯǘɜəɞɔɑɜ:

- ȾƳ´ ɜɕɛƯ
- ɟ ɟ ǘɗɟɕƯəɐ ɡ´ ɏɟ ǗƯủɗ
- ɑɡủəɘ ɕƯɕɗƯ
- ɆƯəɞƯɟɩ ŭɗɠŭɕƯɓɐǘɗɠ
- ɄƯɞɡủƯɟəɗƯ
- ŪỦǘɕɧ ɞɕɞɔỦɜỦɕƯəɧ ɕǘɜɟɕɧ ɔɕƯ ủǗǘƯɜɕƯɗƯɜɧủɞ
- ɑɕƯƯɟ ɞǘɐ
- ū ɡủɕɐ ŭɟ Ưủǘɗɟ ɕɧǘɗǗƯ

Ⱥ´ ɘ əɏɞɜ, ủǘɞɡɠ ủɡɛɛỦǘɏɞɞɜǘỦɠ ɏɔɕỦ ƯɟɔƯủǘɗɟɕƯəɧɠ ɏəỦɒɞɞɠ ɛỦ ɔỦɜɕɐ ƯɑƯǘɞɠ əƯəɓɕɞɗɛɕɧ ɏəỦɒɞɞ (ɔɕƯ ǘɜ ɏəỦɒɞɞ ǘɗɠ ɞɡɟɗƯɠ, əɟỦƯǘɕɑɗɠ, ɔəɡəɧɛɗɠ, əɘɕɑɜ əƯə ǘɤɜ ɗ´ Ưǘɕɩ ɜ Ủɜɕɨ ɛɤɜ). ɟ əɧɛɗ, ủỦ ɧəɞɡɠ ǘɞɡɠ ủɡɛɛỦǘɏɞɞɜǘỦɠ ƯɜɕəɞɔɐɗɗəỦɗ ɏəǗƯủɗ ǘɗɠ ủǗǘƯɜɕƯɗƯɠ ɜɧủɞɡ əƯəủǘɗ ɛỦɐɏǘɗ ủɡɛ´ ỦɟɕɐǘɗɗəƯɜ ƯủɗỦɜỦɗɠ ɛỦ ủǗỦɜɩ ủỦɗɠ ǘɤɜ ủǗǘƯɜɕƯɑɜ ƯɒɔỦɒɜ >50%. ɨ ɟ ɗủɕɞ´ ɞɕɐɗɗəỦɏɜƯ ɗɛɘ ɞủɞǘɕɧ ủɨ ủǘɗɛƯ Ưɜɕəɧɔɗủɗɠ ǘɗɠ ủǘɏɜɤủɗɠ, ǘɞ Gensini score, ´ ɞɡ ´ ɞủɞǘɕɞ´ ɞɕỦɗǘɗ ủǘɏɜɤủɗ ɤɠ Ưəɞəɞɨ ɗɤɠ 1: ɔɕƯ ủǗỦɜɩ ủỦɗɠ Ư´ ɧ 1 ɤɠ 25%, 2: ɔɕƯ ủǗỦɜɩ ủỦɗɠ Ư´ ɧ 26 ɤɠ 50%, 4: ɔɕƯ ủǗỦɜɩ ủỦɗɠ Ư´ ɧ 51 ɤɠ 75%, 8: ɔɕƯ ủǗỦɜɩ ủỦɗɠ Ư´ ɧ 76 ɤɠ 90%, 16: ɔɕƯ ủǗỦɜɩ ủỦɗɠ Ư´ ɧ 91 ɤɠ 99% əƯə32: ɔɕƯ ɞəɕɏɠ Ư´ ɞǘɟ ƳɜỦɗɠ. ɇɞ score ƯɡǗɧ ´ ɞəəƯ´ əƯủɕƳɛǗƯə ɛỦ ɏɜƯɜ ủɡɜǘɐỦǘǘɐ ɔɕƯ ǘɗ ủɞɓƯɟɧǘɗǗƯ ǘɗɠ ´ ɟɞủɓəɗɗỦɕƯɠ Ưɟǘɗɟɗ́Ưɠ ´ .ɞ. 5 ɔɕƯ ǘɞ ủǘɏəỦɞɞɠ, 2.5 ɔɕƯ ǘɜ Ủɒɔɨ ɠ ´ ɟɧủɗɕ əƯǘɕɧɜǗƯ, 1 ɔɕƯ ǘɗɜ Ủɒɔɨ ɠ ŭỦɜɏ ủǗǘƯɜɕƯɗƯ.

Ƀə ƯủɗỦɜỦɗɠ ɛǗƳ ǘɗɜ ɏɜɞŭɧ ǘɞɡɠ Ư´ ɧ ǘɞ ɜɞủɞəɞɛỦɞ ´ ƯɟƯəɞəɞɡɗɐɗɗəƯɜ ´ ɟɞɞ´ ǘɕƳ ɔɕƯ 2-3 ɏǘɗ əƯə ɛỦ ǘɗəỦǘɤɜɕɐ Ủ ɕɞɕɤɜɗƯ ɏɔɕỦ əƯǗƯɒɟƯǘɐ ǘɡɞɧɜ əƯɟ ŭɕƯɒɔỦɕƯɕɩ ɜ əƯəɛɗ-əƯɟ ŭɕƯɒɔỦɕƯɕɩ ɜ ủɡɛɓƯɛƳǘɤɜ, Ủ ƯɜƯɜɞủɗəỦɕ ɜ, ƯəəƯɒɩ ɜ ủǘɗ ǘƯɟɛƯəỦɡǘɕɐ Ưɒɤɔɐ əƯə ǗƯɡǗɧɞɟɞɜƯ ɏɔɕỦ əƯǗƯɒɟƯǘɐ əƯ´ ɜɕǘɕɩ ɜ ủɡɜɗɗỦɕ ɜ, ǘɗɠ ǘɡủɕɐɠ ŭɟ Ưủǘɗɟ ɕɧǘɗǗƯɠ əƯəǘɗɠ ŭɕƯƯɟ ɞǘɐɠ ɛỦ ǘɗ ɞɞɟɐɔɗủɗ Ủɜɧɠ ủǗƯɗɛɕɛɏɜɞɡ ỦɟɤǘɗɛƯǘɜəɞɔɑɡ. **[Ʉɟ Ʌɟ Ʌɇȼɀ ɟ]**

ȼ ǝŬŰŰɔɟ Ŭűɐ Űɤ ɜ ǝŬ΄ ɜɶů Űǝι ɜ ůɡɜqɗŮɑ ɜ. Ƀǝ ǝŬ΄ ɜɶůŰǝɣɠ ůɡɜɐɗŮɑůɠ Űɤ ɜ ůɡɛɛŮŰŰɓɧɜŰɤ ɜ ǝŬŰŰɔɟ Ɏűqǝ Ŭɜ ɓɎůŮǝŰqɠ ǝǝɶ Ŭǝ Ŭɠ Fagerstrom.

ȼ Ŭɜɶǝɧɔqůq űɡůɶɐɠ ŭɟ Ŭůŭq ɟ ɧŰqŰŰɠ. ȼ ůɡɜɞ΄ Űǝɐ Ůǝŭɞɞɐ Űɞɡ Ůɟ ɤ Űqɛ ŬŰɞǝɞɔɶɡ ůɤ ɛ ŬŰǝɐɠ ŭɟ Ŭůŭq ɟ ɧŰqŰŰɠ (InternationalPhysicalActivityQuestionnaire) ɞɟ qůɶ ɞ΄ ɞɶɗɗqǝŮɔɶŬ ɜŬ ŬɜɶǝɞɔqɗŮɑq űɡůɶɐ ŭɟ Ŭůŭq ɟ ɧŰqŰŰ Űɤ ɜ ůɡɛɛŮŰŰɓɧɜŰɤ ɜ. ȼɞ Ůɟ ɤ Űqɛ ŬŰǝɧɔɶ ǝŬŰŰɔɟ Ɏű Ůǝ Űq ůɡɞɜɧŰqŰŰ (Ůɓŭɞɛ Ŭŭɶŭŭ), Űq ŭɎɟ ǝŮɶŬ (ǝŮ ŰɎ ŬɜɎ ŭɟ Ŭůŭq ɟ ɧŰqŰŰ) ǝŬǝŰqɜ ɎɜŰŰůq Űqɠ ůɤ ɛ ŬŰǝɐɠ Ɏůǝqůqɠ ǝŬŰɎ Űq ŭɎɟ ǝŮɶŬ Ŭɗǝq Űǝι ɜ, Ů ŬɓɔŮǝɛ ŬŰǝι ɜ ǝŬǝɎǝɶɤ ɜ ǝŬɗqɛŮɟ ɶι ɜ ŭɟ Ŭůŭq ɶŬǝŰɤ ɜ. Ƀǝ ůɡɛɛŮŰɎɞɜŰŰɠ ǝŬŰqɔɞɟ ɶ΄ ɞɶɗqǝŬɜ ůŮ ŬɡŰǝɨ ɠ ɛŮ ɎɜŰɜq ŭɟ Ŭůŭq ɟ ɧŰqŰŰ>2500 ɛŮŰŰɓɞǝɶɎ ɶɞŭɨ ɜŬɛŬ (METS)/Ůɓŭɞɛ ɎŭŬ, ůŮ ŬɡŰǝɨ ɠ ɛŮ ɛɎŰ ɶŬ ŭɟ Ŭůŭq ɟ ɧŰqŰŰ 500-2500 METS/Ůɓŭɞɛ ɎŭŬ ǝŬǝ ůŮ ŬɡŰǝɨ ɠ ɛŮ ɞŬɛqǝɐ ŭɟ Ŭůŭq ɟ ɧŰqŰŰ<500 METS/Ůɓŭɞɛ ɎŭŬ. **[Ʉɟ Ʌɟ Ʌȼȼ ɀ ɟ]**

ȼ Ŭɜɶǝɧɔqůq ŭɶŬŰ ɞűɶι ɜ ůɡɜqɗŮɑ ɜ. ɟ ɡŰɐ ɎɔɶŮ ɛŮ ɎɜŬ qɛɚ ɞůɞŰǝɧ Ůɟ ɤ Űqɛ ŬŰǝɧɔɶ ůɡɞɜɧŰqŰŰɠ ǝŬŰŰɜɎǝɤ ůqɠ Ůɟ ɞűɶɤ ɜ ɔɶŬ ɜŬ Ŭɜɶǝɞɔɐů Ůǝ Űǝɠ ŭɶŬŰɟ ɞűɶǝɣɠ ůɡɜɐɗŮɑůɠ ǝŬǝ ůɡɔǝŮǝɟ ɶɎɜŬ, ɔɶŬ Űɜ ΄ ɟ ɞůŭɶɟ ɶɛɧ ǝŬŰŰɜɎǝɤ ůqɠ ůɡɔǝŮǝɟ ɶɎɜɤ ɜ ɞɛ Ɏŭɤ ɜ Ůɟ ɞűɶɤ ɜ, Űɜ ɞ΄ ɞɶ ɎɞŮǝ΄ ɟ ɞůűɎŰɤ ɠ ůŰŰɗɛɶŰŰɑɔɶŬ Űɜ Ⱥǝǝqɜɶɧ ΄ ǝqɗɡůɛɧ (Harokopio-FFQ). ȼɞ Ůɟ ɤ Űqɛ ŬŰǝɧɔɶ Ŭɜɶǝɞɔ Űǝɠ ΄ ɟ ɞůǝɐɣŮǝɠ, Ŭ΄ ɧ Űqɜ Ɏ΄ ɞɣ q Űqɠ Ůɓŭɞɛ Ŭŭɶŭ Ŭɠ ǝŬŰŰɜɎǝɤ ůqɠ, Űɤ ɜ Ŭǝɧǝɞɡɗɤ ɜ 15 ɞɛ Ɏŭɤ ɜ Ůɟ ɞűɶɤ ɜ: ΄ ɟ ɞɰɜŰŰ ǝɟ ɎŬŰɞɠ, ɣ Ɏɟ ɶŬ ǝŬǝ ɗŬǝŬůůɶɎ, ɔɎǝŬ ǝŬǝ ɔŬǝŬǝŰɞǝɞɛ ɶɎ ΄ ɟ ɞɰɜŰŰ, űɟ ɞɨ ŰŰ, ǝŬɞŬɜɶɎ, ɞɧɟ ŰŰ ǝŬǝ ůŬǝɎŰŰɠ, ɧů ΄ ɟ ɶŬ, ŭqɛqŮɶŬǝɎ, ǝŬűɎɠ, ŰůɎǝǝŬǝɛq Ŭǝǝɞɞǝɞɨ ɞŬ ΄ ɞŰɎ, ɔɟ ɐɔɞɟ ɞɡ-ɎŰɞɶɞɡ űŬɓqŰɞɨ ǝŬǝ ɞɶɞ΄ ɜŮɡɛŬŰɤ ŭι ɜ ΄ ɞŰ ɜ (q ǝŬŰŰɜɎǝɤ ůq Űɤ ɜ ŭɶŬŰűɧɟ ɤ ɜ Ŭǝǝɞɞǝɞɨ ɞɤ ɜ ΄ ɞŰ ɜ ůŰŰɗɛɶɞŮŰŰǝ ɛŮ ɓɎůq Űqɜ ΄ Ůɟ ɶŮǝŰǝɧŰqŰŰ ůŮ Ŭɶɗ Ŭɜɧǝq). Ⱥ΄ ɚ ǝɎɞɜ q ůɡɜɞǝɶɐ ŮǝŰɐqůq Űɤ ɜ ŭɶŬŰɶŰqŰǝι ɜ ůɡɜqɗŮǝ ɜ ɔɶŮŰŰǝɛɎůɤ Ůǝɶɐɨ ůǝɞɟ (MedDietScore, Ůɟ ɞɠ 0-55) Űɜ ɞ΄ ɞɶ Ŭɜɶǝɞɔ Űqɜ ΄ ɟ ɞůɐǝɤ ůq ůŰq ɛŰɞɔŮǝŬǝ ŭɶŬŰɟ ɞűɐ ɛŮ ɡɣ qǝɧŰŮɟ Ůɠ Űɐ ɎɠŰɞɡ ůǝɞɟ ɜŬ ŬɜŰɶŬɶɶɨ ɜ ůŮɡɣ qǝɧŰŮɟ q ΄ ɟ ɞůɐǝɤ ůq.

Ɇȼɟ ȼɄɆȼɄȾ ȼ ɟ Ɂɟ ʂ Ɉ Ɇȼ

Ʉɟ Ŭɓɛ ŬŰɞ΄ ɞɶɗqǝŮɎǝŮɞɞɠ ǝŬɞɞɜɶɧŰqŰŰɠ Űɤ ɜ ůɡɜŮɞι ɜ ɛŮŰŰɓǝqŰɨ ɜ ɛŮŰɞ ǝɟ ɶŬɟ ɶ Kolmogorov-Smirnov. ȼŬ ǝŬŰqɔɞɟ ɶɎ ŭŰɶɞɛɎɜŬ ΄ Ŭɟ ɞɡůɶɎɞɜŰŰǝ ɛŮ Ŭ΄ ɧǝɡŰŰɠ ǝŬǝůɞŮŰǝɣɠ (%) ůɡɞɜɧŰqŰŰɠ, Ůɶι ŰŰ ůɡɜŮɐɐ ŭŰɶɞɛɎɜŬ ΄ Ŭɟ ɞɡůɶɎɞɜŰŰǝ ɛŮɛɣůŮɠ Űɐɣɠ ± Űɡ΄ ɶɣɠ Ŭ΄ ɞǝɶɶŮɠ. ɟ ɟ ɞɶɎ ɎɔɶŮɛɞɜɞ΄ Ŭɟ Ŭɓɞɜ Űǝɐ ŬɜɎǝɡůq ǝŬǝ Ŭǝɞǝɞɨ ɗɤ ɠ ΄ ɞǝɡ΄ Ŭɟ Ŭɓɞɜ ŰɎ ɛɞɜŰɎǝŬ ΄ Ŭǝɶŭɟ ɧɛqůqɠ ɔɶŬ ɜŬ Ŭ΄ ɞǝŮɶɶŰŰ q

Ů ůŭ¸ŰůqŕšfŰзı з ůgɔɢgŰѣı з ŕ Ű¸ŰɔђȝзŰґз. Ѧ´ ůůqgŕŮíŰ¸ɛђůŰůəŰз ɵəůŰŰŰůŰѣыуg ŭɵəѫŰůůgŕt-test əŰəx2-test

qgŕůŰŰŰůŰѣыY ůqɛŰзŰѣђ dŮґ¸ъdqəŮŰѫ Ů á ŮŭɵůqɛŰзŰѣђŰqŰŰgŕ5%. ȳəŮgŕɵə ůŰŰŰůŰѣыуgŕŰзŰəі ůŮѣgŕ´¸Ůɔɛ ŰŰѫ´ɵѫdqəŰз ɛŮŰѫ ůŰŰŰůŰѣђ´ ŮəыŕŰѫ SPSS ыəŭɵůq 22.

dqBȼŪЂȚȼ-qpѦB?ȼBşBũŧ¸ ȼȼЁѦΛѦJ?¸Ё

ȼɵ´Ű¸ђȝ Ů¸Ůg3qŰѣђ´¸ґŕђəɵəɵ ыɢŮəůəŭ¸ѫfŮɑŰ ђ ŰqŭȝѦ´ѫůŰqɛɵȝѣые Ѧ´ѫŰ¸ɵ´е Ŭѫg ũŮѫѣыɵі ?ɵůɵəɵɛŮѫg ɹ dqȝı з «Ł´ɵə¸ŸŰŮѫ» əŰəŰ´ђ ŰqŭȝЂŰ¸ѣые ЁɵɵəыŰѫg Ѧdȝѣыɵі & ȚŰ´ɵũѫůŰ¸ѫŰəɵі ЧŰȝŮ ѫůŰqɛɵg ɹ dqȝı з ůі·ɛűґзŰ ɛŮŰqȝ ŮdȝѣыЕ ȝɵɛɵdŮůdŰ əŰəɛŮŰѫggŕəŰȝђȝŮ¸ŕqdґѣыеgŕəŰəŭŮѫȝŰѫəɵɔdŰ¸gŕŰqgŕŭѫŰəę¸ gȝqdgŕŰѫg Ѧəůɵѫəə[309]. ȼ ũѫůѫŰɔґɔые ŮqgŕɛŮвуŰqgŕ ŭŮѫ Ů ѫЎ¸gȝŮɵѣɵȝɵɛѣвY ɵі·ŰŮŰѫ ũŮѫѣђ ?ɵůɵəɵɛŮѫ ɹ dqȝı з «Ł´ɵə¸ŸŰŮѫ»-Ѧdȝѣђ Ёі·ůŰqɛŰ Ɉɔ Ůůŭgŕ ŰəəY ɵі·ŰŮəŰəŰqȝ ɹ ' ȚŰ¸ũѫəɵɔѣые Țəѫѣые - Ѧdȝѣђ & ȚŰ´ɵũѫůŰ¸ѫŰəђ ЧŰȝŮ ѫůŰqɛѫ ɹ dqȝı з. ȼ ´Ű¸ɵі·ůŰɛŮвуŰqŭŮѫ Gɻ qɛŰŰѫŭɵŰŰеdqəŮɔѫŰŰqȝ ɵəɵəəæ¸ґůе Ůqgŕ.

ȳəŮgŕ ɵə ѫŰ¸ѣыуgŕ´¸Ÿȝůgŕ ŮŰŰ¸ɛђůŰůəŰз ůі·ɛűґзŰ ɛŮ ŰŰ´Ů¸ѣ¸Ű ű¸ѣыŰȝŰŰ ə¸ѫŰæ¸ѫŰ Gґ¸ŒŕŕŰ зŰ g´Ÿ¸GŮə əı əgɛŰ ůŮ ɵ´ѫѫŭе´ ɵŰŰŮ ůŰŸŭѫѫ ŭѫůѫŰɔґɔыgŕ Ůqgŕ ɛŮвуŰqgŕ.ȼŰ ŭŮŰŭɵɛвуȝŰ´ ɵg ůgȝŮвуɔdůŰȝ ɔѫŰŰqȝ ɛŮвуŰqŰ´ ɵdqəŮŰqŭəŰз ůŮŰŰŭɵѣыеY ɛуůŰ əŰə ŰзŰəі dqəŰз ůŮ ŭŮŰŰ¸ɵ Gɻђȝɵ ı ůŰŰŮ зŰ ŭѫŰŰ¸qdŕŮɑŰз ŰŮŰ¸ ɵ¸уŰůŰqŕ q ыəbŰůq Ű·з ѫŰ¸ѣыı з ´¸Ÿȝůґз ´ ɵg ƀ¸ŒəɵȝŰŰз ůŮŰѫуəѫѣd. qůŰђůɵ, ɵəŭgȝdŰвɵɑ əɑŭgȝɵə ŭŰѫ ɐŰŰз Ű´ђȝŰŰgŕ əŰŰŸ qŰ¸ ŭѫY¸əŮѫŮ ѫŰ¸ѣыı з ´¸Ÿȝůґз ůgɛ´Ů¸ѫŰɛƀŰȝɵɛуȝґз əə Ůgŭı з Ű·ѫg əŰ¸ŭѫŮəɵі əŰdŰŰqŭ¸ѫŰůɛɵі. ЁgȝŮı gˌ q ɛŮвуŰqŰ ŭŰѫ Ű·ȝdqůŮ Ű·ŰŰ¸ ´ ѫŰŰђȝŰqŰŰ Ű·з ŭgȝdŰвɵı з əѫŭ·ȝґз Ű·з Ű´ Ű¸ѫѣі ɛŮȝґз ѫŰ¸ѣыı з ´¸Ÿȝůґз ȳəɵə ɵə ŰůdŰȝŮgŕ Ű·ű¸і Ůȝdɛŭ¸ı dqəŰз Ůə·ŰŰѫ¸ gˌ ɔѫŰ Ű·Ű ´¸ɵůŭɵəı ɛŮȝŰ ɵűуəd əŰə Ű·ggŕ ŭgȝdŰвɵі gˌ əѫŭ·ȝggŕ ´ Ű¸Ůɵɵŭȝ: Ű) ɔ¸Ű´Ű·е ůgɔəŰŰŸdŮůd ɔѫŰ Ű·ђ ´¸Ůɛ ŰŰѫ´ ɵɑqůd əŰ¸ŭѫŮəɵі əŰdŰŰqŭ¸ѫŰůɛɵі ђ´ ɵg Ůgŭђ ɐŰŰз Ű´ Ű¸Ůdŭ·ŰѫŰ əŰə ƀ) ´¸ɵűɵ¸ѫѣе Ůȝdɛŭ¸ґɛуȝd ůgɔəŰŰŸdŮůd ɔѫŰ Ű·ђ ɵ¸ɐůd Ű·з ůŰѫѫŮґз Ű·ɵg ѫŰ¸ѣыɵі Ű·ggŕűŰəуəɵg ɔѫŰŭ¸ůgɔ´ɵі gˌůəɵ´ɵі gˌ.

[illegible]

[illegible] 365 [illegible] [321 (87.7%) [illegible] ([illegible]) [illegible] 38,5 (25-46) [illegible] 1.

[illegible] 1. [illegible]	
[illegible] ([illegible])	61.90 ± 11.3
[illegible] ([illegible]/%)	87.7%
[illegible] (mm Hg)	125 ± 16
[illegible] (mm Hg)	77 ± 16
BMI (kg^2/cm^2)	28.08 ± 3.9
EF (%)	50.51 ± 8.50
[illegible] (mg/dl)	1.25± 0.78
[illegible] ([illegible])	61 ± 10
[illegible] (%)	32.1%
[illegible] (mg/dl)	163± 39
[illegible] (%)	74.5%
[illegible] (%)	24.1%
[illegible] (%)	75.1%
[illegible] (%)	78.8%
[illegible] (%)	22.5%
[illegible] AF (%)	5.8%
[illegible] PCI (%)	39.6%
[illegible] (%)	29.9%
[illegible] (%)	87.0%
[illegible] >2 (%)	26.0%

A´ Ŭ3Ŭ3ɞůɖəŮŬ ɔŭŬ Ůəŭɐəɤ ůɖ ɃɆɆ ɐ ɡ´ ɞɓɞəɐ ůŮ ůŰŰŬ3ɞɔɟ Ŭŭɗ ůɨ ɛűɤ 3Ŭ ɛŮŰɠ Ů3ŭŮɠ

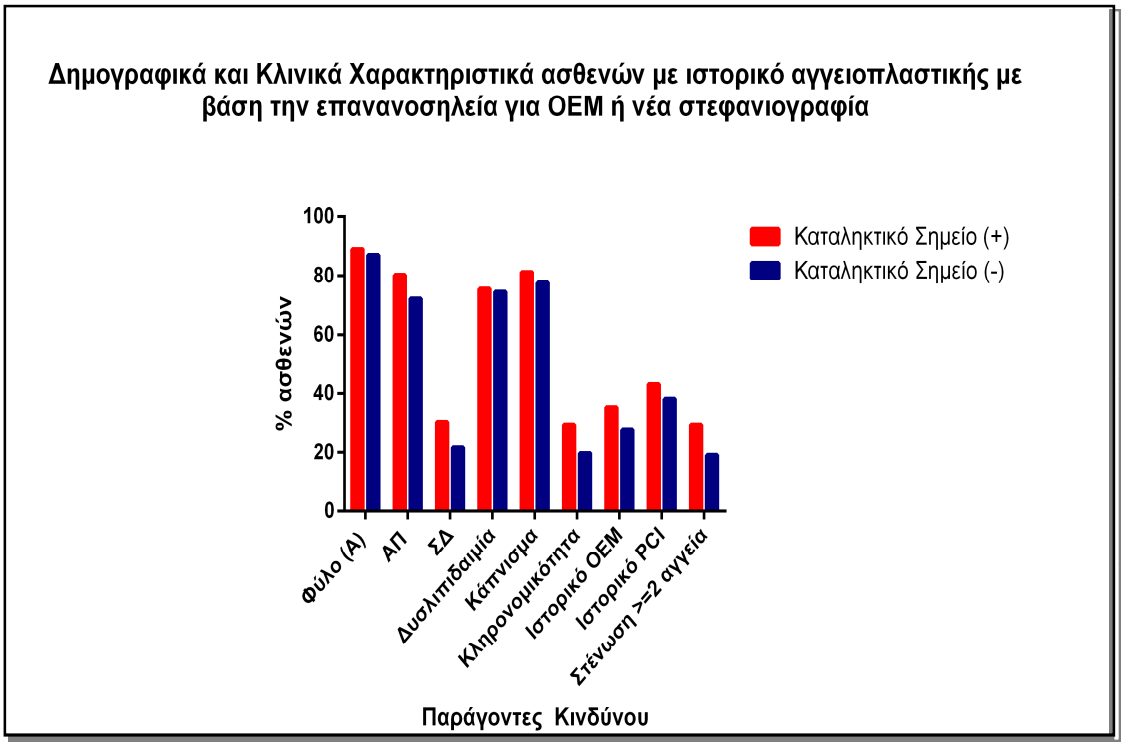
AəŬŰɧ3 ŭɨ ɞ ŬůɗŮ3Ůɠ (27.9%) (89% Ɏɟ ɟ Ů3Ůɠ) 3ɞůɖəŮ Űɖəŭ3 Ůə 3ɏɞɡ ɔŭŬ ɛɖ ɗŬ3ŬŰɖűɧɟ ɞ ɃɆɆ ɐ ɔŭŬ 3ɏŬ ɡ´ ɞɓɞəɐ ůŮůŰŰŬ3ɞɔɟ Ŭŭɗ əɧɔɤ ůɡɛ´ Űɤ ɛŬŰ3əɞɔɗɠ ɐ ůɨ ɛűɤ 3Ŭ ɛŮŰɠ Ů3ŭŮɠ (´ ɟ ɤ ŰŮ ɞ3 əŬŰŰəɖəŰɧ ůɖɛŮɞ). ɇŬ ŭɖɛɞɔɟ Ŭŭɞ Ɏ əŬə əəɞɞ Ɏ ɞŬɟ ŬəŰɖɟ ɞŰɞ Ɏ Űɤ 3 ŬůɗŮɩ 3, ɓɎůŮəŰɖɠ Ůəŭɐəɤ ůɖɠ ɐ ɛɖ Űɞɡ ´ ɟ ɤ ŰŮ ɞ3Űɞɠ əŬŰŰəɖəŰɞɞɨ ůɖɛŮɞɡ, ůɡ3ɞɣ ɞɞ3ŰŬəůŰ3 ɄɞŬəŬ 2.

Ƀə ŬůɗŮ3Ůɠ ´ ɞɡ 3ɞůɖəŮ Űɖəŭ3 əɧɔɤ ɃɆɆ ɐ Ŭ3Ɏɔəɖɠ ɔŭŬ 3ɏɞ ůŰŰŬ3ɞɔɟ Ŭŭɞɧ ɏəŮɓɞɞ ɓɎůŮəŮ3ŭŮɞŮɤ 3, ŮɞŬ3 ůɖɛŬ3ŰɞɎ ɛŮɔŬəɨ ŰŮɟ ɞ ´ ɞůɞůŰɧ ɗŮŰɞɞɨ əəɖɟ ɞ3ɞɛɞɞɨ ɞŰɞɟ ɞɞɨ ɔŭŬ Ɇ? (29.4% vs 19.8%, *p=0.05*). ɇɎůɖ ůɖɛŮə ɗɖəŮůŰɞɡɠ ŬůɗŮ3Ůɠ ɛŮŰɞ ´ ɟ ɤ ŰŮ ɞ3 əŬŰŰəɖəŰɧ ůɖɛŮɞ əŬɗɩ ɠ ŮɞŬ3 ůŮ ɛŮɔŬəɨ ŰŮɟ ɞ Ŭəəɤ ɧɞəůŰŰŰɞŰɞɎ ůɖɛŬ3Űɧ ´ ɞůɞůŰɧ ůŰŮ3ɩ ůŮɠ ´ ɞɡ Ŭ´ ŬŰɞɨ ůŬ3 Ů Ŭ3ŬɞɎŰɤ ůɖ ůŮ ´ ŮɟŰůɧŰŮɟ Ŭ Ŭ´ ɧ ŭɨ ɞ Ŭɓɔ́ŮŬ (29.4% vs 19.1%, p=0.06) ůɡɔəɟ ŰɞɎ ɛŮ ŬɡŰɞɨ ɠ ´ ɞɡ ŭŮ3 Űɞ Ůəŭɐəɤ ůŬ3. Ɇɖɛ Ůə 3ŰŰŬəŮ ɞɖɠ ɧŰəɏŰŮ3Ŭ3 3Ŭ Ůɛű Ŭ3ɞɞɡ3 ɛŮɔŬəɨ ŰŮɟ ɞ ´ ɞůɞůŰɧ ŰɞɟɞɞɨŬɟ Űɖɟ ŭəɐɠ ɡ´ ɏɟ ŰŰůɖɠ (ɉ Ɉ) (80.3% vs 72.2%, p=0.10) ůŮůɞɏůɖ ɛŮŬɡŰɞɨ ɠ ´ ɞɡ ŭŮ3 3ɞůɖəŮ Űɖəŭ3.

Ƀə ŬůɗŮ3Ůɠ ´ ɞɡ ŭŮ3 Ůəŭɐəɤ ůŬ3 Űɞ ´ ɟ ɤ ŰŮ ɞ3 əŬŰŰəɖəŰɧ ůɖɛŮɞ ŭŮ3 ŭɏűŮɟ Ŭ3 ůŮ ůŰŰŰŰɞŰɞɎ ůɖɛŬ3Űɧ ɓŬɗɛɧ ɧů3 ŬűɞɟɎ ůŰɖ3 ɖəɞŬ, Űɞ űɨ əɞ, Űɠ əŬ´ 3ŰɞɏɠůɡɔɗɐəŮɠəŬɗɩ ɠ Ů ɞɖɠ əŬə Űɞ ŰɞɟɞɧŭɡůəɞŬɞɗɠ, Ɇɸ ɐ əŬ´ 3ɞɛŬŰɞɠ ůɡɔəɟ ŰɞɎ ɛŮ Űɞɡɠ ŬůɗŮ3Ůɠ ´ ɞɡ 3ɞůɖəŮ Űɖəŭ3. A´ ɞɖɠ, ŭŮ3 ´ ŬɟŬŰɖɟ ɐɗɖəŮůŰŰŰŰɞŰɞɎ ůɖɛŬ3Űɞɐ ŭɞŬűɞɟ Ɏ ɧɞ3 Ŭűɞɟ Ɏ ůŰɠ ŰɞɏɠŰɖɠ Ɇɉ Ʉ (125 ± 15mmHgvs 126 ± 16 mmHg, p=0.81), Űɞɡ ȺAɉ Ⱥ (49.28 ± 8% vs 51.04 ± 8% , p=0.12), Űɖɠ ɞəɞɐɠ ɞɞəɖůŰɟ ɧəɖɠ (161 ± 35 mg/dlvs 164 ± 41 mg/dl, p=0.49) əŬɗɩ ɠ əŬəŰɖɠ əŬɟ ŭɞŬəɐɠ ůɡɞ3ɧŰɖŰŰɠ (60 ± 8 ůű/ə vs 62 ± 10 ůű/ə, p=0.17). Ƀɛɞɞɤɠ, Űɞ ´ ɞůɞůŰɧ Űɤ 3 ŬůɗŮɩ 3 ´ ɞɡ ŮɞŬ3 ŭɞŬəɧɣ ŮəŰɖ3 Ŭ3ŰɞŬɞɞ´ ŰŰŰəɞŬəɐ Űɞɡɠ Ŭɓɤɔɐ Űɖ3 ɞɟɞ3ɞɐ ůŰɞɛɐ Űɞɡ ůɡɛɓɎ3Űɞɠ ŭŮ3 ŭɏűŮɟ Ů ůɖɛŬ3ŰɞɎ Ŭ3Ɏɛ ŰůŬ ůŰɠ ŭɨ ɞ ɞɛɎŭŮɠ (3.92% vs 2.28%, p=0.39).

[illegible] 2. [illegible]

[illegible]	[illegible] (+)	[illegible] (-)	p
[illegible] ([illegible])	60.73 ± 11.8	62.36 ± 11.3	0.21
[illegible] (mg/dl)	161 ± 35	164 ± 41	0.49
[illegible] (mm Hg)	125 ± 15	126 ± 16	0.81
[illegible] (mm Hg)	78 ± 15	78 ± 9	0.98
BMI (kg^2/cm^2)	27.89 ± 4.2	28.15 ± 3.82	0.58
EF (%)	49.28 ± 8	51.04 ± 8	0.12
[illegible] (mg/dl)	1.05 ± 0.78	1.34 ± 5.13	0.45
[illegible] ([illegible])	60 ± 8	62 ± 10	0.17
[illegible] (%)	31,0%	32.3%	0.92
[illegible] ([illegible]/%)	89,0%	87%	0.59
[illegible] (%)	80.3%	72.2%	*0.10*
[illegible] (%)	30.3%	21.7%	0.08
[illegible] (%)	75.5%	74.5%	0.91
[illegible] (%)	81.3%	77.6%	0.46
[illegible] (%)	29.4%	19.8%	**0.05**
[illegible] AF (%)	3.9%	6.4%	0.35
[illegible] PCI (%)	43.1%	38.1%	0.38
[illegible] (%)	35.3%	27.7%	0.16
[illegible]	3.92%	2.28%	0.39
[illegible] (%)	29.4%	19.1%	**0.06**



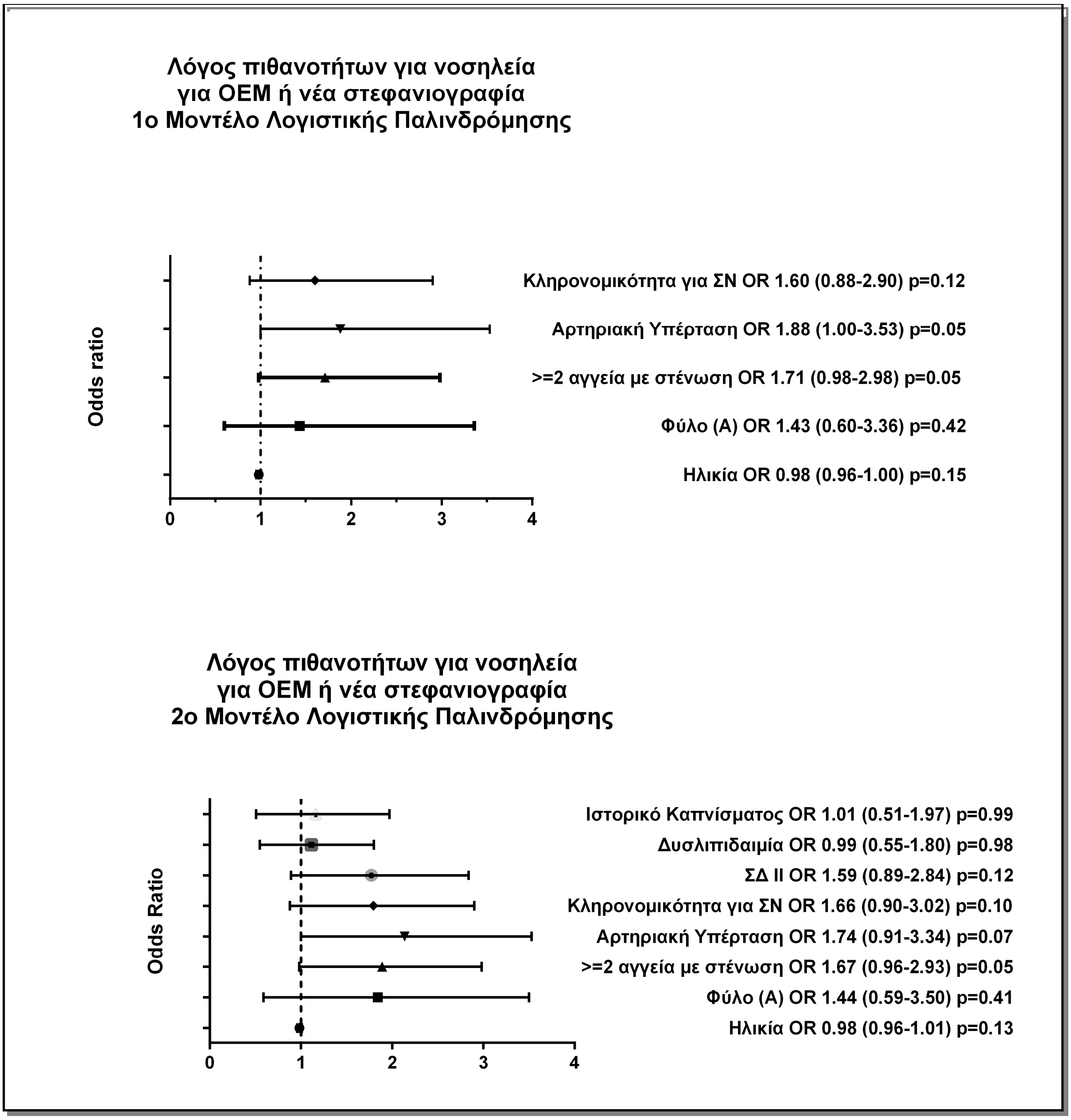
Ζήτημα 1.7 Συσχέτιση κλινικών χαρακτηριστικών με επανανοσηλεία για ΟΕΜ ή νέα στεφανιογραφία

Σε σύγκριση με τους ασθενείς που δεν επανανοσηλεύτηκαν για ΟΕΜ ή νέα στεφανιογραφία, οι ασθενείς που επανανοσηλεύτηκαν για ΟΕΜ ή νέα στεφανιογραφία παρουσίαζαν τάση για υψηλότερη συχνότητα καπνίσματος (OR= 1.74, p=0.07), υψηλότερη συχνότητα δυσλιπιδαιμίας (OR=1.66, p=0.10) και υψηλότερη τιμή Χ2 συσχέτισης μεταξύ καπνίσματος και δυσλιπιδαιμίας (OR=1.67, p=0.06), ενώ παρουσίαζαν σημαντικά υψηλότερη συχνότητα εμφάνισης στένωσης δύο ή περισσότερων αγγείων, στη νέα στεφανιογραφία, σε σχέση με τους ασθενείς που δεν επανανοσηλεύτηκαν, ενώ δεν παρουσίαζαν διαφορές στη συχνότητα εμφάνισης άλλων παραγόντων κινδύνου. Στην ανάλυση πολλαπλής λογιστικής παλινδρόμησης (nested εισαγωγής) στην ανάλυση, η στένωση, η δυσλιπιδαιμία, η συχνότητα καπνίσματος και η συχνότητα εμφάνισης στένωσης δύο ή περισσότερων αγγείων, σε σχέση με τους ασθενείς που δεν επανανοσηλεύτηκαν για ΟΕΜ ή νέα στεφανιογραφία, παρουσίαζαν τάση για υψηλότερη συχνότητα εμφάνισης (OR=1.88, *p=0.05*) και υψηλότερη τιμή Χ2 συσχέτισης μεταξύ καπνίσματος και δυσλιπιδαιμίας (1.71, *p=0.05*) σε σχέση με τους ασθενείς που δεν επανανοσηλεύτηκαν για ΟΕΜ ή νέα στεφανιογραφία (Πίνακας 3, Ζήτημα 1).

[illegible] 3. [illegible]

	[illegible] 1				[illegible] 2			
[illegible]	b	OR	95% CI	P	b	OR	95% CI	P
[illegible]	-0.02	0.98	0.96-1.00	0.15	-0.02	0.98	0.96-1.01	0.13
[illegible]	0.35	1.43	0.60-3.36	0.42	0.37	1.44	0.59-3.50	0.41
[illegible] (Ó2) [illegible]	0.57	1.71	0.98-2.98	***0.05***	0.52	1.67	0.96-2.93	*0.06*
[illegible]	0.63	1.88	1.00-3.53	***0.05***	0.56	1.74	0.91-3.34	*0.07*
[illegible]	0.47	1.60	0.88-2.90	0.12	0.50	1.66	0.90-3.02	*0.10*
[illegible]					0.46	1.59	0.89-2.84	0.12
[illegible]					-0.01	0.99	0.55-1.80	0.98
[illegible]					0.01	1.01	0.51-1.97	0.99

[illegible]: [illegible]; OR: oddsratio; CI: [illegible]



ɆɢɐɛŬ 1. ʆʀɔɢɑ ʹ ɷŬɜɢŰɐŰɯɜ ɔɪŬ ɜɢůɖəŮɑŬ ɔɪŬ ȰȵȾ ɐ ɜɚŬ ůŰŰɞŬɜɪɷɔɟɐŰɑɲŬ.

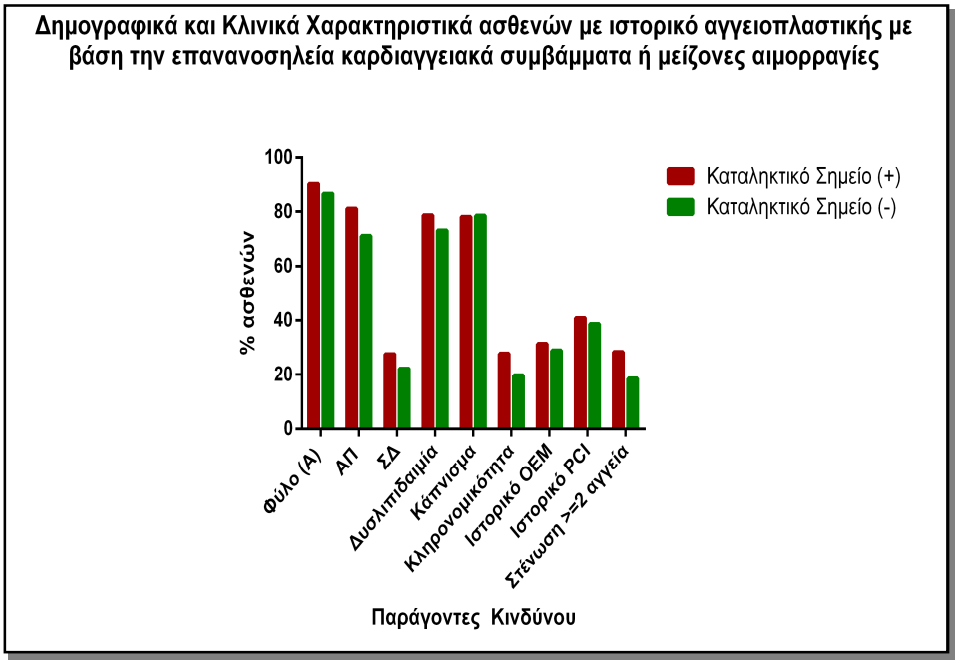
5.2 Ʌʹ ŬɜŬɜɢůɖəŮɑŬ ɔɪŬ ŮɩɛɐɑɠŮɐɖ ȰȵȾ ɐ ɡʹ ɑɓɑɠɐ ůŮůŰŰɪŬɜɪɷɔɟɐŰɑɲŬ ůɫ ɛŰɯɜ ɛŮŰɞɡ ŮɫɜŮɤŮɞɡ ɐ ɔɪŬ ƔəɖŬ əŬɟ ɫɪŬɔɔŮŬŬƔ ůɡɛɓƔɛŬŰŰ ɐ ɛŮɐɑɜŮɞɡ ŬɛɑɟɟŬɔŮɞɡ.

ɟ ʹ ɖ Űɢɡɞɡ 365 ůɡɛɛŮŰɢɢɜŰɞɡ ůŰɖɜ ʹ ɟɑ ʹ Ůɐɐ ɛŮɐɢŰɖ ʹ Ŭɟ Ŭəɑəɪ ɑɖůɐɞɡ ɛŬɞ, 128 (35%) Ůɛ ŰƔɜɷŬɜ Ŭɐ ɫŮɞŰŰɟ Ů ɑɜ əŬŰŰəɖəŰɐɖ ůɖɛŮɐ, ʹ ɑɞ ɑɟ ɷŰɖəŮɤ ɞ Ŭɐ ůɨ ɜɖŮŰɐ əŬŰŰəɖəŰɐɖ ůɖɛŮɐ ʹ ɑɞ ʹ Ůɟ ɷŬƔɓŬɜŮ Ŭɞ ʹ Ůɟ ɚ Ű ůŮɞ ɜɚɞ ɜɢůɖəŮɑŬɞ əɖɔɤ ŮɩɛɐɑɠŮɐɖɞ ȰȵȾ ɐ ɡʹ ɑɓɑɠɐɞ ůŮ ɜɚŬ ůŰŰɪŬɜɪɷɔɟɐŰɑɲŬ ɐ ɔɪŬ ƔəɖŬ

ǝǓ ǔ ǔƨǓƃɔǓǚǓǝϒ ůgɛƃϒɛǓǕǕ (Ǔ ɟ gʤɛǔǚǵ, ǓɛǘɨǕǚgůɖ ƃɖɛǓǕǚǔɧǕɖ ɐ Ǔ ǝǝǚǔɤǘɐ, Ů ǓɛƃϒůǓǚǵ ɔǝǓ ´ Ǔ ǝǘǓ ǝǝɐ Ǔƃɔ Ǔǝ´ ϒʤǓǝǓ, Ǔ ɞɟ ɟ ɨ ʤɛǝǘɖ ǝǓ ǔǝǓǝɐɡǓɜǓ ϒ ǝǓǝǚǵ) ɐ ɜɞůɖǝǓǓ ɔǝǓ ɛǓǝɞɜǓǵ Ǔǝɛɞɟ ɟ Ǔƃǚǵ. ȼǓ ǔɖɛɞɔɟ Ǔǘǝϒ ǝǓǝ ǝǝǝǝϒ ɞǓ ǓǝǕɟ ǝǘǓǝϒ Ǖɤɜ ǓůʤǓɩ ɜ, ƃϒůɖ Ǖɖǵ Ǔǝǔɐǝɤ ůɖǵ ɐ ɛɖ ǘɡ ´ ɟ ɤ Ǖ ɞɜǘɡǝǓǕǝɖǝǘǝɨ ůɖɛǓɡ, ůgɜɞɣ ɞɞɜǕǝůǘɜ **ƟɑǓǝǓ 4.**

ƟɑǓǝǓǵ 4. ɖɖɛɞɔɟ Ǔǘǝϒ ǝǓǝ ǝǝǝǝϒ ɞǓ ǓǝǕɟ ǝǘǓǝϒ Ǖɤɜ ǓůʤǓɩ ɜ ɛǓ ǝǘǓɟ ǝɧ ´ ɟ ɧůǘǓǕɖǵ Ǔƃɔǝ´ ǝǓůǘǝɐɡ ɛŮ ƃϒůɖ Ǖɖɜ Ů ǓɜǓɜɞůɖǝǓǓ ɔǝǓ ɃȻȻ, ɡ´ ɞƃɞǝɐ ůŮ ɜɣǓ ůǕǕǘǓɜǝɔɟ Ǔǘ ǝǓ, ϒǝǝǓ ǝǓ ǔǝǓɔǝǓǝϒ ůgɛƃϒɛǓǕǕ ɐ ɛǓɞɜǓǵ Ǔɛɞɟ ɟ Ǔƃǚǵ.			
ɀ ǕǕƃǝɖǕɐ	**ȾǓǕǝɖǝǘǝɧ ůɖɛǓɞ (+)**	**ȾǓǕǝɖǝǘǝɧ ůɖɛǓɞ (-)**	**p**
ȼǝǝǝǓ (ɣǕɖ)	61.73 ± 11.6	62 ± 11.2	0.83
Ƀǝǝɐ ɟ ɞǝɖůǕɟ ɧǝɖ (mg/dl)	163 ± 36	164 ± 41	0.78
Ȼɟ Ɵ (mm Hg)	126 ± 16	125 ± 16	0.71
ɖɟ Ɵ (mm Hg)	78 ± 15	78 ± 10	0.98
BMI (kg^2/cm^2)	28.08 ± 4.01	28.07 ± 3.89	0.98
EF (%)	49.46 ± 8	51.1 ± 9	0.12
Ⱦɟ ǕǕǝǝɖ (mg/dl)	1.02 ± 0.71	1.39± 5.42	0.48
ȾǓɟ ǔǝǓǝɐ Ȼgɞɜɧ ǕɖǕǕ (ůǘɨ ɜǓǵ/ǝŮ Ǖɧ)	59 ± 8	62 ± 11	***0.05***
Ɵɟ ɧůǘǓǕɜ ɃȻȻ ůǕɖɜ Ǔůɞǔɞ(%)	30.7%	32.8%	0.68
ū ɨ ǝɞ (ɟ %)	90.5%	86.6%	0.36
ɟ Ɵ (%)	81.1%	71.1%	***0.05***
Ȼɖ (%)	27.5%	22.2%	0.29
ɖɟů ǝǝ´ ǝǘǓɛǝǓ (%)	78.7%	73.1%	0.32
Ⱦϒ´ ɜǝǘɛǓ (%)	78.1%	78.5%	0.80
Ⱦǝɖɟ ɞɜɞɛǝɧ ǝůǘɜɟ ǝɧ (%)	27.7%	19.7%	0.10
ǝůǘɜɟ ǝɧ AF (%)	5.5%	5.8%	0.87
ǝůǘɜɟ ǝɧ PCI (%)	40.9%	38.6%	0.70
ǝůǘɜɟ ǝɧ ɃȺɀ (%)	31.3%	28.9%	0.69
ɖǝǓǝɞ´ ɐ ǓɜǕǝǓɛɞ´ ǕǕǝǝǓǝɐɡǓɔɤ ɔɐɡ ůǘɜ Ů ǓɜɣǝǓɞɞ	4.76%	1.73%	0.10
ɟ ɔɔǓǝǓ ɛǓůǕɣɜɤ ůɖ Ȯ2 (%)	28.3%	18.5%	0.06

Ασθενείς με ιστορικό αγγειοπλαστικής με βάση την επανανοσηλεία καρδιαγγειακά συμβάματα ή μείζονες αιμορραγίες (59 ± 8 χρ/α vs 62 ± 11 χρ/α, p=*0.05*).

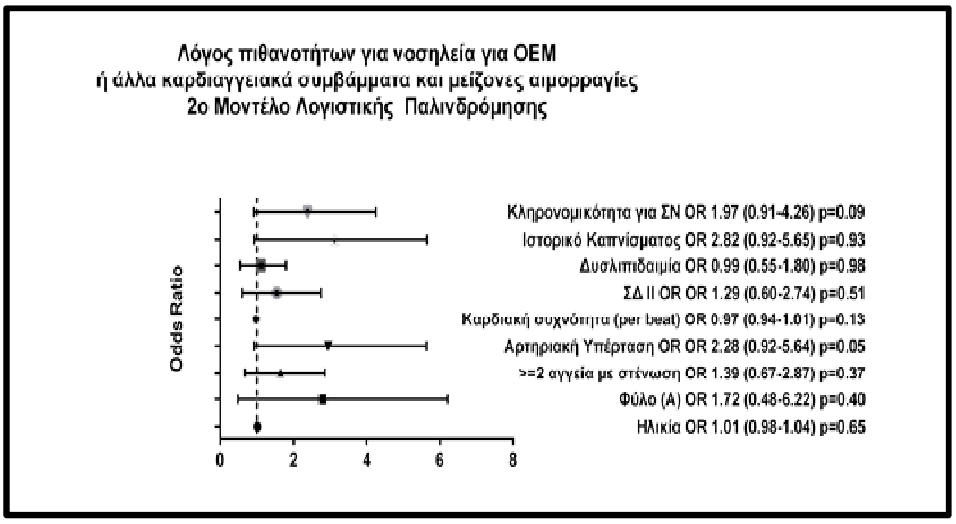


[illegible] (OR= 2.28, p=0.06) [illegible], [illegible] (nested) [illegible] (OR=2.37, p=0.05) [illegible] ([illegible] 5, [illegible] 2).

[illegible] 5. [illegible]
[illegible]

	[illegible] 1				[illegible] 2			
	b	OR	95% CI	P	b	OR	95% CI	P
[illegible]	0.01	1.01	0.97-1.03	0.77	0.01	1.01	0.98-1.04	0.65
[illegible]	0.59	1.80	0.53-6.18	0.35	0.54	1.72	0.48-6.22	0.40
[illegible]	0.86	2.37	0.99-5.65	***0.05***	0.83	2.28	0.92-5.64	0.06
[illegible] ([illegible] 1 [illegible])	-0.03	0.98	0.94-1.01	0.18	-0.01	0.97	0.94-1.01	0.13
[illegible]	0.39	1.47	0.73-2.98	0.28	0.33	1.39	0.67-2.87	0.37
[illegible]					0.68	1.97	0.91-4.26	0.09
[illegible]					0.67	1.94	0.94-4.01	0.07
[illegible]					0.25	1.29	0.60-2.74	0.51
[illegible]					0.04	2.82	0.92-5.65	0.93

[illegible]: [illegible]; OR: oddsratio; CI: [illegible]



Εικόνα 2.

5.3 Αποτελέσματα Παρακολούθησης

Η διάμεση παρακολούθηση ήταν 365 ημέρες, με 137 [(37.4%), 88,3% vs 87,3% ετών, p=0.78] ασθενείς να έχουν τουλάχιστον ένα από τα προκαθορισμένα καταληκτικά σημεία (θάνατος από οποιαδήποτε αιτία, μη θανατηφόρο έμφραγμα του μυοκαρδίου, επαναλαμβανόμενη στηθάγχη με ανάγκη επανειλημμένης επαναγγείωσης, εγκεφαλικό ή μείζονες αιμορραγίες). Ο κίνδυνος για τα καταληκτικά σημεία ήταν παρόμοιος στους ασθενείς που έλαβαν ενδοφλέβια χορήγηση μαγνησίου και σε αυτούς που δεν έλαβαν, με ποσοστά 12,3% και 12,7% αντίστοιχα (p=0.78). Η ενδοφλέβια χορήγηση μαγνησίου δεν σχετίστηκε με μείωση του κινδύνου για θάνατο από οποιαδήποτε αιτία (8,2% vs 8,9%, p=0.78), μη θανατηφόρο έμφραγμα του μυοκαρδίου (3,1% vs 3,4%, p=0.84), επαναλαμβανόμενη στηθάγχη με ανάγκη επανειλημμένης επαναγγείωσης (4,1% vs 3,8%, p=0.84), εγκεφαλικό (1,0% vs 0,7%, p=0.67) ή μείζονες αιμορραγίες (80,3% vs70,7%, p=0.05). Αντίθετα, η ενδοφλέβια χορήγηση μαγνησίου σχετίστηκε με αύξηση του κινδύνου για θάνατο από οποιαδήποτε αιτία σε ασθενείς με ΣΔΙ που δεν έλαβαν αναστολείς της αντλίας πρωτονίων (5.1% vs 1.3%, p=0.03).Η ενδοφλέβια χορήγηση μαγνησίου δεν σχετίστηκε με διαφορές στη μέση τιμή της συστολικής αρτηριακής πίεσης (126.10 ± 16 mmHgvs 125.26 ± 16 mmHg, p=0.41), στη μέση τιμή της γλυκόζης νηστείας (163 ± 35 mg/dlvs 163 ± 42 mg/dl, p=0.94), στο EF (49.45 ± 8% vs 51.20 ± 9 %, p=0.10) και στη μέση διάρκεια νοσηλείας (60 ± 8 ώρες/ασθενή vs 62 ± 11 ώρες/ασθενή, p=0.17).Δεν παρατηρήθηκαν διαφορές στην εμφάνιση ανεπιθύμητων ενεργειών μεταξύ των δύο ομάδων

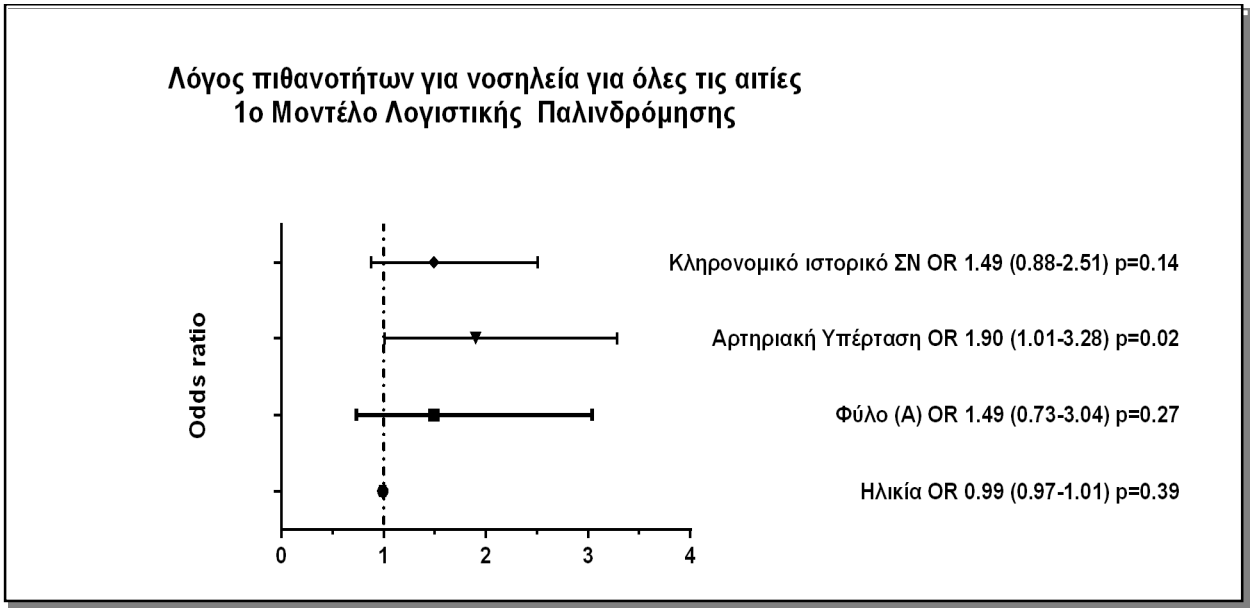
[illegible] 6.

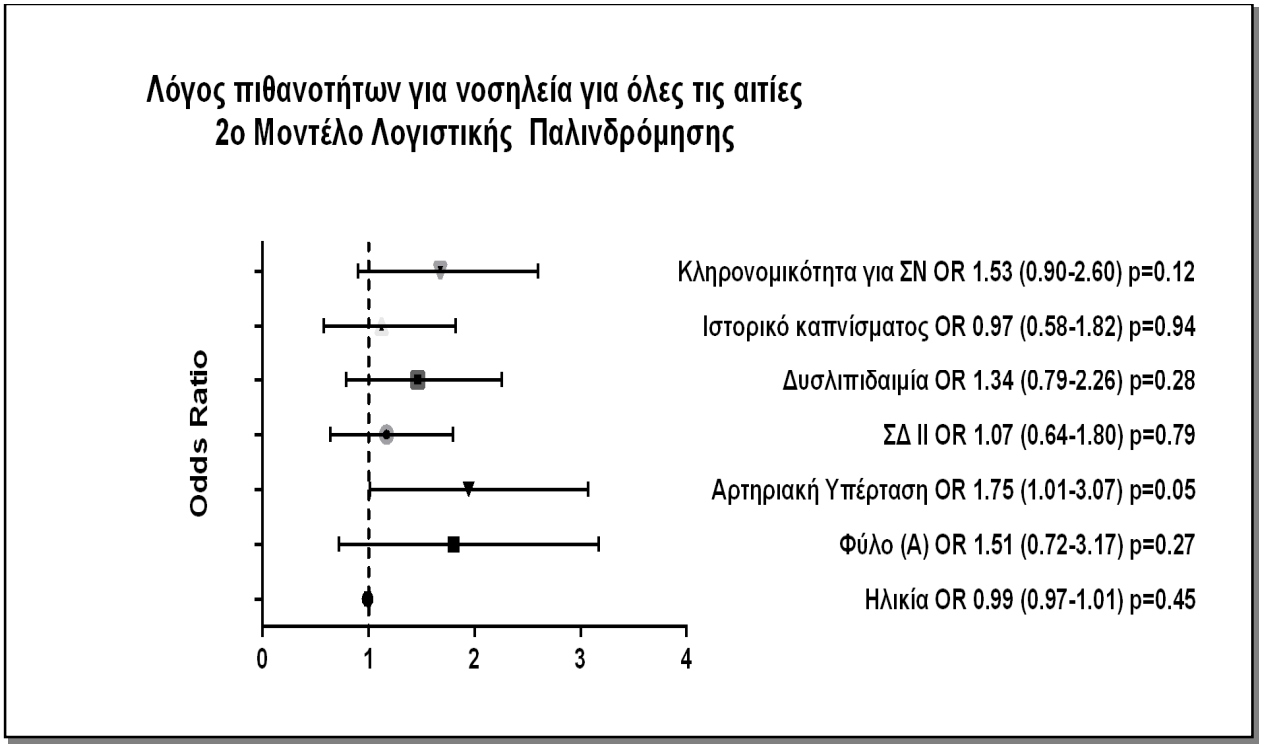
Πίνακας 6. Δημογραφικά και κλινικά χαρακτηριστικά των ασθενών με ιστορικό πρόσφατης αγγειοπλαστικής με βάση την επανανοσηλεία για όλες τις αιτίες			
	Καταληκτικό σημείο (+)	Καταληκτικό σημείο (-)	p
Ηλικία (έτη)	61.85 ±11.4	61.93 ± 11.3	0.75
Ολική Χοληστερόλη (mg/dl)	163 ± 35	163 ± 42	0.94
ΣΑΠ (mm Hg)	126.10 ± 16	125.26 ± 16	0.41
ΔΑΠ (mm Hg)	77.89 ± 14	78 ± 10	0.95
BMI (kg2/cm2)	28.11 ± 3.95	28.06 ± 3.92	0.91
EF (%)	49.45 ± 8	51.20 ± 9	0.10
Κρεατινίνη (mg/dl)	1.63 ± 6.69	0.99 ± 0.28	0.21
Καρδιακή Συχνότητα (σφύξεις/λεπτό)	60 ± 8	62 ± 11	0.17
Πρόσφατο ΟΣΣ στην είσοδο(%)	31.4%	32.3%	0.89
Φύλο (Α/%)	88,3%	87,3%	0.78
ΑΠ (%)	80,3%	70,7%	0.05
ΣΔ (%)	27,0%	22,3%	0.31
Δυσλιπιδαιμία (%)	78,8%	72,5%	0.20
Κάπνισμα (%)	78,8%	78,2%	0.99
Κληρονομικό Ιστορικό (%)	26,3%	20,1%	0.18
Ιστορικό AF (%)	5,8%	5,7%	0.96
Ιστορικό PCI (%)	40,1%	38,9%	0.79
Ιστορικό ΟΕΜ (%)	30,7%	29,3%	0.82
Αγγεία με στένωση >2 (%)	26,3%	19,2%	0.22
Αντιαιμοπεταλιακή (-) στον επανέλεγχο	5,1%	1,3%	0.03

[illegible] 75% [illegible] [(OR=1.75 (95% CI: 0.99-3.07), p=0.05], [illegible] 4.51 [illegible]

[OR=4.51 (95% CI: 1.01-18.49), p=0.03]. H ůŰŰŰŰůŰŰŤ ůďɛŬɜŰŰɐ, ŬɜŮŰŤɟ ŰďŰď ´ɟ ɞɔɜɤ ůŰŰɐ ɘŬɜɧŰďŰŰ Űďɠ AY [OR=1.90 (95% CI:1.01-3.28), p=0.02] ɘŬɘ ď ŭɘŬɘɞ´ɐ Űďɠ ŬɜŰŰŬɛɞ´ ŮŰŰɘŬɘɐɠ Ŭɔɤ ɔɐɠ [OR=4.41 (95% CI:1.09-17.93), p=0.03] ɘŬŰŤ Űďɜ ´ Ůɟ ɞŭɞ Űɞg ůgɛɓŤɛŬŰɞɠ ɜŬ ´ɟ ɞɓɘɤ´ ɞgɜ Űďɜ ´ ɘŬɜɧŰďŰŰ ɔɘŬ ɜɞůďɘŮŰŬ Ŭ´ ɧ ɧɘŮɠ Űɠ ŬŰŰɠ ɘɞgɟ ɞ´ ɞɐďďɘŮ´ Ůɟ ŬɘŰɟ ɤ ɧŰŰɜ ŰŰŬɟ ɛɧůŬɛŮɤɜŬ űɤ ɘŬůɛɤɜɞ ɛɞɜŰɤɘɞ (nested) ɘɞɔɘŰɐɠ ´ Ŭɘɞŭɟ ɧɛďůďɠ ɛŮ ´ɟ ɞůŬɟ ɛɞɔɐ ɔɘŬ ůgɔɞgŰɐɞɨ ɠ ´ Ŭɟ Ťɔɞɜ Ůɠɧ´ ɤ ɠ ď ďɘɐŬ ɘŬɘŰɞ űɨ ɘɞ (ɄɞŬɘŬɠ 7, ɆɞɐɛŬ 3).

ɄɞŬɘŬɠ 7. ʂɞɔɘŰɐɐ ´ Ŭɘɞŭɟ ɧɛďůď ´ Ŭɟ ŬɔɧɜŰɤ ɜ ɔɘŬ Ŭ ŬɜŬɜɞůďɘŮŬ Ŭůɗɜɩ ɜ ɛŬɔɜɤ ůŰɐ ůŰŰɩŬɜɘŬ ɜɧůɞ ɘŬɘŬɔŬɜ´ ɘŬůŰɐɐ. ʔɞůďɘŮŬ ɔɘŬ ɧɘŮɠ Űɠ ŬŰŰɠ - ɞɐɐɐ ɜɞůďɟ ɧŰďŰŰ								
	ɀ ɞɜŰɤɘɞ 1				ɀ ɞɜŰɤɘɞ 2			
	b	**OR**	**95% CI**	**P**	**b**	**OR**	**95% CI**	**P**
ȼ ɘɐɐŬ (Űɨ ɜďůď ŬɜŤ ɏŰɜɠ)	-0.01	0.99	0.97-1.01	0.39	-0.01	0.99	0.97-1.01	0.45
ūɨ ɘɞ	0.40	1.49	0.73-3.04	0.27	0.41	1.51	0.72-3.17	0.27
ɄůŰɜɟ ɘɧ Ɉ´ ɏɟ ŰŰůďɠ	0.64	1.90	1.01-3.28	***0.02***	0.56	1.75	0.99-3.07	***0.05***
ɋɘŬɘɞ´ ɐ ŬɜŰŰŬɛɞ´ ŰŰŰɘɘŬɐɠ Ŭɔɤ ɔɐɠ ůŰɜɜ Ů ŬɜɏɘŮɓɞɞ	1.49	4.41	1.09-17.93	***0.03***	1.51	4.51	1.01-18.49	***0.04***
Ɍɘďɟ ɞɜɞɛ ɘɧ ɘůŰɜɟ ɘɧ Ɇʔ	0.40	1.49	0.88-2.51	0.14	0.43	1.53	0.90-2.60	0.12
ɆŬɘɞŬɟ ɩ ŭďɠ ɋɘŬɓɐŰďɠ					0.07	1.07	0.64-1.80	0.79
ɋɠůɘɚ ɘŬɛŬ					0.29	1.34	0.79-2.26	0.28
ɄůŰɜɟ ɘɧ ɘŬ ɜɗɛŬŰɜɠ					0.03	0.97	0.58-1.82	0.94
Ɇʔ: ůŰŰɩŬɜɘŬ ɜɧůɞɠ; OR: oddsratio; CI: ɧɟ ɘŬ Ŭɜɞ´ ɘůŰɠ								


Λόγος πιθανοτήτων για νοσηλεία για όλες τις αιτίες
1ο Μοντέλο Λογιστικής Παλινδρόμησης
Odds ratio
0
1
2
3
4
Κληρονομικό ιστορικό ΣΝ OR 1.49 (0.88-2.51) p=0.14
Αρτηριακή Υπέρταση OR 1.90 (1.01-3.28) p=0.02
Φύλο (Α) OR 1.49 (0.73-3.04) p=0.27
Ηλικία OR 0.99 (0.97-1.01) p=0.39


Λόγος πιθανοτήτων για νοσηλεία για όλες τις αιτίες
2ο Μοντέλο Λογιστικής Παλινδρόμησης
Odds Ratio
0
1
2
3
4
Κληρονομικότητα για ΣΝ OR 1.53 (0.90-2.60) p=0.12
Ιστορικό καπνίσματος OR 0.97 (0.58-1.82) p=0.94
Δυσλιπιδαιμία OR 1.34 (0.79-2.26) p=0.28
ΣΔ ΙΙ OR 1.07 (0.64-1.80) p=0.79
Αρτηριακή Υπέρταση OR 1.75 (1.01-3.07) p=0.05
Φύλο (Α) OR 1.51 (0.72-3.17) p=0.27
Ηλικία OR 0.99 (0.97-1.01) p=0.45

Εικόνα 3.

Є ЏзЎэдЄ эЄЏ ЄЏзЏЋЄЏЏЁ ´ ЋЏЄ ЄЏЄЋЏЁЈ ЄзЏЏЋЏЏ ЏЋЄЏЋЏЄ ЏЋЄЏЋЏЄ ЏЋЄЏЋЏЄ

Ǘɖɜ ˊ ɞɱɧǗɖǙǕ ɛɤɐɠ [315]. Ƀɘ Ǘɚ ɜɏɞɡ ɜɞůɖɚǕǚɠ ɚɧɔɤ ɛɖ ɗǓɜǓǗɖǘɧɟɤɜ ůǗǗǘǓɜɚǓɑɜ ůɡɛɓǓɛƳǗɤɜ ɧɞɘ ɛɧɜɞ ɚǓǗǗɜǓɚɨ ɜɞɡɜ ɛǗɓƳɚɞ ɚɞɛɛƳǗɚ Ǘɤɜ Ǔˊ ɞɗǗɛƳǗɤɜ ɡɔǗǕɠ [316], ǓɚɚƳ ɞǗɞ ɞǗǙɟ ǗɈ ɞɡɜ Ǘɖɜ ˊ ɞɱɧǗɖǙǕ ɛɤɐɠ Ǘɤɜ Ǔůɗǘɜɩ ɜ ɚǓɗɩ ɠ ɏɞɞɡɜ ɤɠ Ǔˊ ɞǗɏɚǗǘɛǓ Ǘɖɜ ǓɈ ɜɖůɖ Ǘɞɡ stress Ǘɤɜ Ǔůɗǘɜɩ ɜ [317]. ȼ ǓɜƳǔǗɚɖ, ɚɞɘ ɧɜ, Ǘɤɜ ˊ ɟɞɔɜɤůǗɚɩ ɜ ˊ ǓɟǓɓɧɜǗɤɜ ǓɡǗǀ ɜ Ǘɤɜ ǓɜǗ ɱɖɈ ɛɖǗɤɜ ůɡɛɓǓɛƳǗɤɜ ǗɜǓɘˊ ɞɈ ůɖɛǓɜǗɚɐ ɩ ůǗǗɜǓ ǔɖɛɱɡɟ ɔɖɖɞɈ ɜ ůǗɟǓǗɖɔɱɏɠ ˊ ɞɡ ɗǓ ˊ Ǘɟ ɱɟ ɗůɞɡɜ Ǘɠ Ǘɚ ɜɏɞɡ ɜɞůɖɚǕǚɠ. ȻǗɛǓɚɏǗɖ Ǘɤɜ Arnold ɚǓɚůɡɜǗɟ ɔǓǗǀ ɜ ǘƳɜɖɚǗ Ǘɞ 7% Ǘɤɜ Ǔůɗǘɜɩ ɜ ɢɟǗƳůǗɖɚǗ Ǘɚ ɜɏɞɡ ɜɞůɖɚǕǓ ɔɱǓ ɃȻȻ ɚǓɚǗɞ 4% ɔɱǓ Ǘɚ ɜɏɞɡ ɜɞůɖɚǕǓ ɚƳɗǗ ǓɱǗɞɚɞɔǕɠ. ȼ ɛɱɟ ɧǗǙɟ ɖ ɖɚɱǕǓ ǓɚɚƳ ɚǓɚ Ǘɞ ɔɡɜǓɱǗɞ ǘɈ ɚɞ Ǔˊ ɞǔǗɞǗɖɚǓɜ ɱůɞɡɟ ɞɑ ˊ ɟɞɔɜɤůǗɚɞɑ ˊ ǓɟƳɔɞɜǗǙɠ ɔɱǓ ɛǗɓǓɚɈ ǗǙɟ ɖ ˊ ɟɧɞǔɞ ɚǓɟ ǔɱǓɓɔǗɚǓɚɐɠ ɜɧůɞɡ ǓɚɚƳ ɚǓɚɔɱǓ ɜɞůɖɚǕǓ ɚɧɔɤ ɃȻȻ ǓɚɚƳ ɧɞɘɔɱǓ Ǘɠ Ǘɚ ɜɏɞɡ ɜɞůɖɚǕǚɠ ɛǗǙƳ Ǔˊ ɧ ɃȺɀ [318]. Ȼɞ ǗɈ ɟɖɛǓ ǓɡǗɧ ɐɟɗǗ ůǗ ǓɜǗɖǗǗɖ ɛǗ ˊ ɟɞɖɔɖɗǗɚůǗɠ ɛǗɏǗǙɠ ˊ ɞɡ ǗɞǓɜ ɚǓǗǗɓɟƳɣǗɚǗɧůɞ Ǘɞ ɔɡɜǓɱǗɞ ǘɈ ɚɞ ɧůɞ ɚǓɚǗɖ ɛɱɟ ɧǗǙɟ ɖ ɖɚɱǕǓ ůɞǗǗɞɞɜǗǗɜ ɛǗ ˊ ǗɱůɧǗǙɟ Ǔ Ǘ ǗɱůɧǔɱǓ ůǗɖɗƳɔɞɖɠ 10 ǓɚɚƳ ɚǓɚ ɞǗɚ ɧǗǙɟ ɖ ˊ ɞɱɧǗɖǙǕ ɛɤɐɠ ɛǗǗɛǘɟǓɔɛǓǗɚƳ 13, ɔǗɔɞɜɧɠ ˊ ɞɡ ǗɖɔɞɈ ůǗ Ǘɖ ůɡůɞɏǗɱɐ Ǘɞɡɠ ɛǗǗɠ ɜɞůɖɚǕǚɠ ɚɧɔɤ ɃȻȻ. ȾɘǓɡǗɧ Ǔˊ ɏǔǗɚǗɧǗɞɘˊ ɟɞɔɜɤůǗɚɞɑ ǔǗɚǗǙɠ Ǘɤɜ ɃȻȻ ɚǓɚǗɤɜ Ǘ ǓɜǓɜɞůɖɚǗɚ ɜ ˊ ɟɏˊ Ǘɚ ɜǓ ǓɜɱɚɞɔɞɈ ɜǗǗɚɜǗɞɤɟɱǗƳ Ǔˊ ɧ ǗɚǗɞɞɡɠǗɖɠ ɛǗǗǗɟǓɔɛǓǗɚɐɠ ɗɜɖǗɧǗɖǙɡɠ.

ȼ ˊ ɚǗɞɣɖɟɗǓ Ǘɤɜ ɛǗɚǗǗ ɜ ˊ ɞɡ ǓɜɱɚɧɔɖůǓɜ Ǘɖɜ Ǘ ɗɟǓůɖ Ǘɤɜ ɛǗǗǘɟǓɔɛǓǗɚɩ ɜ Ǘ ǓɜǓɜɞůɖɚǗɚ ɜ Ǘ ɱǗɜǗɩ ɗɖɚǓɜ ůǗ ǔɱƳůǗɖɛǓ ˊ ǓɟǓɚɞɚɈ ɗɖůɖɠǗɜɧɠ ɛɐɜǓ [319, 320]. ȻǗɛǓ ɚɞɘ ɧɜ Ǔˊ ɧ Ǘɠ ˊ ǓɟǓˊ Ƴɜɤ ɛǗɚɏǗǙɠ ɖ ůɡɞɜɧǗɖǙǕ Ǘɤɜ Ǘ ǓɜǓɜɞůɖɚǗɚ ɜ Ƴɔɔɱ Ǘɞ 18.6% ůǗ30 ɖɛɏɟǗɠɛǗǗƳ Ǘɞ ɃȺɀ, ɚǓɚ ɖ ɛɖ ˊ ɟɞɔɟǓɛɛǓǗɛɏɜɖ Ǘ ǓɜǓɔɔǗɤůɖ Ƴɔɔɱ Ǘɞ 2.3%[319]. ɄǓɟ Ƴ Ǘɞ ɔǗɞɜɧɠ ɧǗɚ ɖ ˊ ǓɟǓˊ Ƴɜɤ ɛǗɚɏǗɖ ǔǗɜ ǓɜɱɚɧɔɖůǗˊ ɟɞɔɜɤůǗɚɞɈ ɠ ˊ ǓɟƳɔɞɜǗǙɠ Ǘ ǓɜǓɔɔǗɤůɖɠ, ɞɚǓůɗǗɜǗɠ ˊ ɞɡ ɏɚǓɓǓɜ ɛɧɜɞ ɟǓɟɛǓɚǗɡǗɚɐ Ǔɔɤɔɐ ɐ ˊ ǓɟɞɡůɗǗůǓɜ Ǘ ɘ ɚɞɚɏɠǓˊ ɧ Ǘ ǗɛɓǓǗɚɏɠ ǔɱǓǔɱǓůɗǗɠ ǗɞǓɜ ɛǗɔǓɚɈ ǗǙɟ ɖ ˊ ɱǓɜɧǗɖǙǕ ɜǓ ɢɟǗɚǓůǗɚɈ ɜ Ǘ ǓɜǓɔɔǗɤůɖ 30 ɖɛɏɟǗɠɛǗǗƳ Ǘɞ ɃȺɀ.

ɄǓɟ Ƴ Ǘɞ ɔǗɞɜɧɠ ɧǗɚɞɘǗɚ ɜɏɞɡ ɜɞůɖɚǕǚɠ ɚƳɗǗ ǓɱǗɞɚɞɔǕɠ ǗɜǓɚůɡɞɜɏɠ, ɖ ǓɱǗɞɚɞɔǕ Ǘɞɡɠ ǔɱǓǘɏɟǗɚǓɜƳɛǗǗǓ ůǗɞɡɠ ǓɟɟɩůǗɞɡɠ. ɀ ƳɚǗǙǕ, ɞɘɚǓɟǔɱǓɔǗɚǓɚɞɑ ƳɟɟɤůǗɞɘɢɟǗƳůǗɖɚǓɜ Ǘɚ ɜɏɞɡ ɜɞůɖɚǕǚɠ 30 ɖɛɏɟǗɠɛǗǗƳ Ǘɞ ɃȺɀ ůǗɞ ˊ ɚǓɚǗɱ ǓɡǗɞɈ ůǗ ˊ ɞůɞůǗɧ 43% [319]. Ⱥˊ ɘ ɟɞůɗɏǗɤɠ, ˊ ǓɟƳ Ǘɞ ɔǗɞɜɧɠ ɧǗɚɞɘǗɚ ɜɏɞɡ ɜɞůɖɚǕǚɠ Ǘɠ ˊ ɟɩ ǗǙɠ 30 ɖɛɏɟǗɠɛǗǗƳ Ǘɞ ɃȺɀ ˊ ǓɞɞɡɜˊɞɈ ůɖɛǓɜǗɚɧ ɟɧɚɞ ɔɱǓ Ǘɖ ɓǗɚǗɤůɖ Ǘɖɠ ˊ ɞɱɧǗɖǙǕɠ ɛɤɐɠ, ɗǓ ˊ ɟɏˊ Ǘɚ ɜǓ ǓɜɱɚɞɔɞɈ ɜǗǗɚɚǓɚˊ ɏɟǓɜ ǓɡǗɞɈ Ǘɞɡ

[illegible] 30 [illegible] (22-37 [illegible]) [illegible] (27.9%) [illegible] (29.4%). [illegible] (OR=1.88, $p=0.05$) [illegible] 2 [illegible] (1.71, $p=0.05$) [illegible] 30 [illegible] STEMI [illegible] 14.5% [illegible] [320].

[illegible]

əŬŰŬəɖəŰəɧ ůɖɛŮɶ, ɛŮŰɎ Űɖɜ ´ ɟ ɞůŬɟ ɛɞɔɐ ɔəŬ ´ əɗŬɜɞɨ ɠ ůɡɔɢɡŰəɞɨ ɠ ´ Ŭɟ Ɏɔɞɜ ŰŮɠ.
ɇɏəɞɠ, ɖ ŮŰŭŬɟ ɛɞɔɐ Ůɜɧɠ ŭəŬŰŭɞɟ ŮŰəɞɨ ɛɞɜŰɏəɞɡ ŬɜɏŭŮɜŮ Űɖɜ ȷ Ƀ (OR=2.37, p=0.05) ɤ ɠ ŬɜŮɜɎɟ Űɖ Űɞɠ, əůɢɡɟ ɧɠ ´ ɟ ɞɔɜɤ ůŰəɧɠ ´ Ŭɟ Ɏɔɞɜ ŰŬɠ ɔəŬ Űɞ ŭŮɡŰŮɟ ɞɔŮɜɏɠ əŬŰŬəɖəŰəɧ ůɖɛŮɶ.

ȳ ůɞɜ ŬŰɞɟ Ɏ ůŰɞ Ŭ əŰŮɨ ɞɜ ůɨ ɜɗŮŰɞ əŬŰŬəɖəŰəɧ ůɖɛŮɶ (ɜɞůɖəŮŰŮɠ ɔəŬ ɧəŮɠ Űəɠ Ŭəŭŭɠ: Ůəŭɐəɤ ůɖ ȾɆɆ ɐ ɠ ´ ɞɓɞəɶ ůŮůŰŭŬɜəɞɟ Ŭŭŭ ůɨ ɛŭɤɜŬ ɛŮŰəɠ ŮɜŭŮɜŮəɠ ɐ ɔəŬ Ɏəə Ŭ əŬɟ ŭəŬɓɔŮəŬə Ɏ ůɡɛɓɎɛŬŰŬ ɐ ɛŮɶɞɜŮɠ Ŭəɞɟ ɟ Ŭɓɗŭɠ ɐ ɎəəŮɠ Ŭəŭŭɠ) ɛɧɜɞ Űɞ ´ ɞůɞůŰɧ Űɤ ɜ ŬŰɧɛɤ ɜ ɛŮ əůŰɞɟ əɧ ȷ Ƀ əŬɗɩ ɠ Ů ɗůɖɠ əŬəŰɤ ɜ ŬŰɧɛɤ ɜ ´ ɞɡ Ůɶ Ŭɜ
ŭəŬəɧɤ ŮəŰɖɜ ŬɜŰəŬ ɞ ´ ŮŰŬəŬɐ Űɞɡɠ Ŭɓɤɔɐ əŬŰɎ Űɖɜ ´ ŮɟɶŭŮ Űɞɡ ůɡɛɓɎɜŰɞɠ ɐŰŬɜ
ůɖɛŬŰəɎ ɡɤ ɖəɧŰŮɟ ɞ. ɇ ŮŰŭŬɟ ɛɞɔɐ ŭɡŬŭəɞɨ ɛɞɜŰɏəɞɡ əɞɔəůŰəɐɠ ´ Ŭəŭŭɟ ɧɛɖůɖɠ
ŬɏŭŮɜŮ ɧŰə ŰŬ ɎŰɞɛŬ ɛŮ əůŰɞɟ əɧ ȷ Ƀ ŮɢŬɜ 75% ɛŮɓŬəɨ Űɟ ɖ ´ əɗŬɜɧŰɖŰŬ ɔəŬ
ɜɞůɖəŮŰŬ ɛŮŰɎ Űɖɜ ´ ɟ ɞůŬɟ ɛɞɔɐ ɔəŬ Űɞɡɠ əəŬůəɞɨ ɠ ´ Ŭɟ Ɏɔɞɜ ŰŮɠ əəŭɨ ɜɞɡ ɔəŬ
əŬɟ ŭəŬɓɔŮəŬɐ ɜɧůɞ. Ⱥ´ ɢůɖɠ, ŰŬ ɎŰɞɛŬ ´ ɞɡ ŮɢŬɜ ŭəŬəɧɤ ŮəŰɖɜ ŬɜŰəŬ ɞ ´ ŮŰŬəŬɐ
Űɞɡɠ Ŭɓɤɔɐɠ əŬŰɎ Űɖ ɞɟ ɞɜəɐɠ ůŰəɛɐ Űɞɡ ůɡɛɓɎɛŬŰɞɠ, ŮɢŬɜ 4.51 ɠɞɟ ɏɠ
ɛŮɓŬəɨ Űɟ ɞ əɶŭɡɜɞ ɜŬ ɜɞůɖəŮɡŰəɨ ɜ ɔəŬ əɎɗŮ Ŭəŭŭ, ůŮ ůɢɏůɖ ɛŮ ŰŬ ɎŰɞɛŬ ´ ɞɡ
ůɡɜɏəůŬɜ ɜŬ əŬɛɓɎɜɞɡɜ ŬɜŰəŬ ɞ ´ ŮŰŬəŬɐ Űɞɤ ɔɐ [OR=4.51 (95% CI: 1.01-18.49), *p=0.03*]. H ŬɜŮɜɎɟ Űɖ Űɖ ´ ɟ ɞɔɜɤ ůŰɐɐ əŬɜɧŰɖŰŬ Űɧůɞ Űɖɠ AY [OR=1.90 (95% CI:1.01-3.28), *p=0.02*] ɧůɞ əŬɗ ŭəŬɞ´ ɐ Űɖɠ ŬɜŰəŬɐ ɞ´ ŮŰŬəŬɐɠ Űɞɤ ɔɐɠ [OR=4.41 (95% CI:1.09-17.93), p=0.03] əŬŰɎ Űɖɜ ´ Ůɶŭɞ Űɞɡ ůɡɛɓɎɛŬɠ
əůɢɡɟ ɞ´ ɞɐɗɖəŮ ´ Ů ŬəɨɟɎɤ ůŮŭɨ Űɟ ɞ ɛɞɜŰɏɞ ɛŮ ´ ɟ ɞůŬɟ ɛɞɔɐ ɔəŬ ůɡɔɢɡŰəɞɨ ɠ
´ Ŭɟ Ɏɔɞɜ ŰŮɠ.

ɆɃɀ ɅȺɅȷ Ɇɀ ȷ ɇȷ

Ɇɡɛ´ Ůɟ ŬůɛŬŰəɎ, ɖ Ŭɟ Űɖɟ əŬɐ ɠ´ ɏɟ ŰŬůɖ Ŭ´ ɞŰŮəŮůɏɜŬ ´ ɞə ůɖɛŬŰəɎɧ
´ ɟ ɞɔɜɤ ůŰəɧɠ ´ Ŭɟ ɎɔɞɜŰŬ ŮɗŮɔəŬ Űɖɜ Ůɛɠ Ɏɜəůɖ ɜɏɞɡ ȾɆɆ ɛŮɐ ɢɤɟ əɠ ŬɎɔɞɖ ɔəŬ
Ů ŬɜŬɞŮɤůɖ ɓɎůŮ ŮŭŮŮɤɜ ŮɗŮ ɔəŬ Űɖɜ Ůɛɠ Ɏɜəůɖ ɎəɞɡɜŬɟ ŭəŬɓɔŮəŬəɨ
ůɡɛɓɎɛŬɠ ɐ ɛŮɢɜɞɠ Ŭɶɞɟ ɟ Ŭɓɗɠ. Ɇɡɜɧ ə ɠ, ɖ ŬɎɔɞɖ ɔəŬ ɏəŮɢɞɞ əŬə
Ŭɞ´ ɞ´ ɞɶɖůɖ Űɞɡ Ůɜ əɧɔɤ ´ Ŭɟ ɎɔɞɜŰŮ ŮɜŬə ɞə ůɖɛŬŰəɎɐ. Ⱥ´ ɏ əɏɞɜ, Űɞ ɔŮɓɞɜɧɠ
ɧŰə Űɞ ɛŮɓŬəɨ Űɟ ɞ ´ ɞůɞůŰɧ Űɤ ɜ ŬŰɧɛɤ ɜ Ů Ů ɜɜɞůɖəŮŰŬ ɔəŬ Űɞ ´ ɟ ɤ ŰəɨɞɜŬ
əŬŰŬəɖəŰəɧ ůɖɛŮɶ ŮɢŮɛŮɨəɧ əəɖɞɜɞɛɧ əůŰɞɟ əɧ ɔəŬ Ɇɂ ŭŮɢɜŮəŬɖ ůɖɛŬŰŬɞŬŰɞ
ɔŮŮŰəɞɨ ɠ´ ɞůŬɟ ə ɛŬŰɞɠ.

Ⱥ´ ɏ əɏɞɜ, Űɞ ɔŮɓɞɜɧɠ ɧŰə ɖ ɨ ´ Ŭɟ ɜɖ ůŰŮə ůŮɤɜ ´ ɞɡ ɏɢɟ əŬŬ
Ů ŬɜŬɞɎɤɜɖɠ ůŮ ´ Ŭ əůɧŰɟ Ŭ Ŭ ɧ 2 ŬɞɔŮɠ ŬɜŬŭŮɢɟɖŬɜ ɤ ɠ ŬɜŮɜɎɟ Űɖ Űɞɠ

´ ɟ ɞɔɜɤ ůŰɵɧɠ ´ Ŭɟ Ɏɔɞɜ ŰŬɠ ŮɞŬɘ ŮɜŭŮɵŰɵɧ Űɖɠ ůɖɛŬůɖŬɠ Űɞɡ Ŭɟ ɵɖɛɞɨ Űɤɜ ůŰŮűŬɜɵŬɑɤɜ ŬɓɔŮɑɤɜ ɛŮ ɓəɎɓɖ ´ ɞɡ ɢɟ ɐɕŮɵ Ů ŬɜŬɓɔŮɑɤůɖɠ ɔɵŬ Ů ŬɜŬɜɞůɖəŮŬ.

ɇɏəɞɠ, ɧůɞɜ űɞɟ Ɏ ůŰɞ ŰɟɵŰŮɞɜ əŬŰŬəɖəŰɵɧ ůɖɛŮɑ, ɖ ŭɵŬəɞ´ ɐ Űɖɠ ŬɜŰɵŬɑɞ´ ŮŰŰŬɵŬɐɠ ŬɓɤɔɐɠůŮ ůɡɜŭɡŬůɛɧ ɛŮ Űɖɜ ɟ Ƀ ɏŭŮɞŬɜ ɧŰɵ əŬɘ ɖ

űŬɟ ɛŬəŮɡŰɵɐ Ŭɓɤɔɐ ´ ŬɑŮɵ ůɖɛŬŰɜŰɵɧ ɟ ɧəɞ ůŰɵɠ Ů ŬɜŬɜɞůɖəŮɡɠ əŬɘ ɵɵŬɵŬɔŰŮɟ Ŭ

əɎɗŮŬɵŰɞəɞŬŬɠ

Ƀȷ Λȷ ũƂʔɇȻƐƬƜɸɈʔƂɈ ũɄ ȻɃȷ ʔȷ ʔƂɆɇȿȻɄ ȷ ɆŪȻʔɋʔ ȥ Ȼ

Ɇɇ Ȼū ȷ ʔɄ Ʉ ʔƂɆƂ ȥ Ȼɇȷ ȷ ɃƂ ȷ ũũȻɄƂɃȿȷ ɆɇɄƮɇ

ɃǕɄ ɶɋɣ ɋ

Ȼȿů Ŭɔɤ ɔɐ: Ƀɞəəɞɑ ´ Ǔɟ ϒɔɞɜŰǗɠ əɜŭɨ ɜɞg ǕɞŬə g´ Ů ɖgɜɞɘ ɔŭ̐ Ǘɋɜ ɏɜǓɟ ɜɋ Ǘɋɠ Ŭɖɋɟ ɞůəəɐɟ gɜůɋɠ, Ǘɧůɞ ǕɃɞ´ ɞ´ ɞɶůɶɞɘ ɧůɞ əŬə ɛɋ-ǕɃɞ´ ɞ´ ɞɶůɶɞɘ ȼ ůgɛ´ Ǘɤɛ ǓǗɶɐ ůǗǗǗɜŭŬ ɜɧůɞɠ ɞɟ ǕɶϒɞǗǗŬə Ů ŬɜŬɔɔǕɤ ůɋ ɩ ůǗǗ ɜŬ ɛǕɶ ɖɞɨ ɜ ɞɘ Ů ə́ əɞəɏɠ əɧɔɤ Ŭgǘɐɠ. ɋůǗɧůɞ, ɞɘ Ǖə ɜɏɞg ɜɞůɋəǕɠ ɔŭ̐ ɞɜɏŬ ůǗǗǗɜŭŬ ůɨ ɜŭɟ ɞɛŬ (ƂɆɆ) ɐ Ǖə ɜɏɞg Ů ŬɜŬɔɔǕɤůɋ ɛǗǗϒ Ǘ ɧ ɞɜɨ ɏɛǘɟ Ŭɔɛ Ŭ Ǘɶg ɛgɞəǓɟ ŭɶg (ƂȻȥ) ǕɶŬə´ ɞəɨ ůgɞɜɏɠ.

Ɇəɞ´ ɧɠ Ǘɋɠ ´ Ǔɟ ɞɨ ůŬɠ ɛǕɏɏǗɋɠ ɐǗǗɜ ɜŬ ŬɜŬǓǕɶǕə Ǘɋɜ Ů ɶǕɟ Ŭůɋ Ǘɤɜ ǕɃɞ´ ɞ´ ɞɶůɶɤɜ əŬə ɛɋ-ǕɃɞ´ ɞ´ ɞɶůɶɤɜ ´ Ǔɟ Ŭɓɧɜ Ǘɤɜ əɜŭɨ ɜɞg ůǗɋɜ ǕɛǘϒɜůɋŮ ŬɜŬɞůɋəǕə ɜ ɔŭ̐ əǓɟ ŭŭɔɔǕŭəϒ ůgɛɓϒɛ ǓǗǗ ůŮ Ŭůɖ Ǖɜ Ǖɠ ɛŮ ůǗǗǗɜŭŬ ɜɧůɞ ´ ɞg g´ ɞɓϒəəɜǗǗəůŮŬɔǕɶ´ əŬůǗɶɐ.

Ɉəɶɧ əŬə ȥ ɏɖɞŭɞɠ: ȼɞ ŭǕɔɛŬ Ǘ ɞǗɏəǕǗŬɜ 300 Ŭůɖ ǕɜǕɠ ´ ɞg g´ ɞɓəɐɖɋəŬɜ ůŮ ŬɔɔǕɶ´ əŬůǗɶɐ Ǘɤɜ ůǗǗǗɜŭɤɜ ŬɔɔǕɤɜ ůǗɶ Ł ´ ɞəɟ ϒǗǕɶ ʔɞůɞəɞɛǕɶ ȷ ɖɋɜɩ ɜ, ɋəɶə ɜ 25 ɏɤɠ 85 ǗǗ ɜ. Ƃə Ŭůɖ ǕɜǕɠ ɛǗǗϒ Ǘɋɜ ɏɜɞŭɧ Ǘɶgɠ Ǘ ɧ Ǘɶ ɜɞůɞəɞɛǕɶ ´ Ǔɟ ŬəɞəɞgɖɐɖɋəŬɜ ɔŭ̐ 22-37 ɛɐɜǕɠ.ȼ ůǗǗǗůǗɶɐ ŬɜϒəgůɋɏɔɶŮɛŮǗɋɜ ǗǗǓɟ ɛɞɔɐ ɛɞɜɞ´ Ǔɟ Ŭɓɞɜ Ǘɶɐɠ əŬə ´ ɞəg´ Ǔɟ Ŭɓɞɜ Ǘɶɐɠ Ŭɜϒəgůɋɠ əŬə Ǘɶ Ů ɑ Ǘɞ ůɋɛŬɜǗɶɧǗɋǗǗɠ Ǘɏɖɋəůůɛɶɟ ɧǗǓɟ ɞ Ǘɶg 0,5.

ȷ ´ ɞǗǗəɏůɛǗǗ: ȷ ´ ɧ Ǘɶgɠ 365 Ŭůɖ ǕɜǕɠ Ǘɶ 87.7% ɐǗǗɜ ϒɜŭɟ Ǖɠ əŬə ɧəɞɘ ɞɘ ůgɛɛǗǕɏɞɜǗǗɠ ǕɞŬɜ g´ ɞɓəɋɖǕɞ ´ ɟ ɧůǘǗǗ ůŮ ŬɔɔǕɶ´ əŬůǗɶɐ. ȻəǗǗɧɜ ŭɨ ɞ Ŭůɖ ǕɜǕɠ (27.9%) ɜɞůɋəŮ Ǘɋəǘɜ Ǖə ɜɏɞg ɔŭ̐ ɛɋ ɖŬɜǗǗɋǘɧɟ ɞ ƂɆɆ ɐ ɔŭ̐ ɜɏŬ g´ ɞɓɞəɐ ůŮůǗǗǗɜɶɔɟ ŬǘɖŬ əɧɔɤ ůgɛ´ Ǘɤɛ ǗǗɜəɞɔɖǗɠɐ ůɨ ɛǘɤɜŬ ɛŮǗɶɠ ǕɜŭǕɔǕɶɠ (´ ɟ ɤ ǗǗ ɞɜ əǗǗǗəɋəǗɶɧ ůɋɛǕɞ) ɞəɞ´ ɞɶəǕɛǘϒɜůǗɜ ɛǕɔǕəɨ ǗǗɟ ɞ ´ ɞůɞůǗɧ ɖǕǗɶɞɨ əəɋɟ ɞɜɞɛɶɞɨ ůǗɶɟ ɶɞɨ ɔŭ̐ Ɇʔ (29.4% vs 19.8%, *p=0.05*). ɆŮ ´ ɟ ɞůǓɟ ɛɞůɛɏɜɞ əɞɔůǗɶɧ ɛɞɜǗɏəɞ ɔŭ̐ Ǘɶ ǘɨ əɞ, Ǘɋɜ ɋəɶəŬ əŬə Ǘɶ əəɋɟ ɞɜɞɛɶɧ ůǗɶɟ ɶɧ, ɋ ȷ Ɉ (OR=1.88, *p=0.05*) əŬə ɋ ɨ ´ Ǔɟ ɜɋ ůǗǗɜɩ ůǕɤɜ ´ ɞg ɏɞɟ ɶŬɜ Ů ŬɜŬɶϒǗɤůɋɠ ůŮ ´ Ǔɶůɧ ǗǓ Ŭ Ǘ ɧ 2 ŬɔɔǕŬ (1.71, *p=0.05*) ŬɜŬǗǕɞɖɋəŬɜ ɤɠ ŬɜǕϒɟ ǗɋǗɶə ´ ɟ ɞɔɜɤ ůǗɶɞɑ´ Ǔɟ ϒɔɞɜŰǗɠ ɔŭ̐ Ů ŬɜŬɞůɋəǕŭ. ȻəǗǗɧɜ ǕɶɞůəɞəǗ Ŭůɖ ǕɜǕɠ (35%) ǕɛǘϒɜůŬɜ Ǘɶ ŭǕɠǗǗǓ Ů ɞɜ əǗǗǗəɋəǗɶɧ ůɋɛǕɞ (ɜɏŬɠ ɜɞůɋəǕŭɠ əɧɔɤ ǕəŭɐəɏůɋɠƂɆɆ ɐ g´ ɞɓɞəɐɠ ůŮ ɜɏŬ ůǗǗǗɜɶɔɟ ŬǘɖŬ ɐ ɔŭ̐ ϒəəŬ əǓɟ ŭŭɔɔǕŭəϒ ůgɛɓϒɛ ǓǗǗ (Ǔɟ ɟ gɖɛɖǕɠ, Ǖɛǘɨ ǗǗgůɋ ɓɋɛǗǗɶŭɧǗɋ ɐ Ǘ ɶŭɤ Ǘɶ, Ů ǕɛɓϒůǕɶ ɔŭ̐ ´ ǓɶǘǓɶɐ ŬɔɔǕɶ´ ϒɖǕəŭ, Ǘ ɞɟ ɟ ɨ ɖɛɶůɋ əǓɟ ŭŭəɐɠ ŬɜŮ ϒɟ əǕɶŭɠ) ɐ ɜɞůɋəǕŬ ɔŭ̐ ɛǕɶɞɜǕɠ

ÜæɛɻɻÜɒdůʃ) ůə Űŕɜ ɛ´ ɛɑŕɜ Ůß ´ ɛůɛůŰɲ Ůŕɜ ÜůdŮȣɩ ɜ ɛŮɻ Ɉ ɐŰŰɜ ɛŮɔÜəŀŰŰɻɛ (81.1% vs 71.1%, p=*0.05*). ÆŮ´ ɻɛůÜɻɛɛůɛʏɜɛ əɛɔɔůŰəɲɛɛɜŰʏəɛ ɔɵÜß űŀəɛ, Ůʃɜ dəɵɵdÜ, Ůʃɜ əÜɻůɵÜəɐ ůgɛɜɲŰʃŰŰ əÜə Ůʃɜ ŀ´ Üɻɜdŭ ůŰŮȣɩ ůŮŕɜ Ó2 ÜɔɔŮdÜ, dɻ Ɉ (OR=2.37, p=0.05) ÜɜÜůÜůæɑdʃəŮ ʏɾg ÜɜŮȣ´ɻŰʃŰßgʃ, ɵůɛgɻɲgʃ ´ɻɛɔɜʏůŰəɲgʃ ´ ÜɻŸɔɛɜŰŰgʃ ɜʏÜgʃ ɜɛůdəŮdÜgʃ əɲɔʏ ŰßgůÜŰɻŮŀɛɜŰßgʃ əÜŰÜədəŰəɲɛŀ ůdɛŮæg. Bə ŮəÜŰɲɜ ŰɻɵʏɜŰÜ Ů Ůŕ ÜůdŮȣůæʃ [(37.4%), 88,3% vs 87,3% ŸɻɻŮȣůʃ, p=0.78] ŮɛűŸɜɵůÜɜ Ůß ŰɻɵŰůɛɜ ůŀɜdŮŰß əÜŰÜədəŰəɲɲ ůdɛŮæ (ɜɛůdəŮůʃɔÜ ɲəůʃ ŰəgʃÜɵŰůʃ: Ůəüɐəʏůdɻ BÆÆ ɐ g´ ɛɒɛəɐ ůŮůŰŰíÜɜɵɔɻÜűdÜ ůŀɛűʏɜÜ ɛŮŰəgʃ ŮȣůæŮŮʃɐ ɔɵÜ ŸəəÜ əÜɻůɵÜɔŮŮəŸ ůgɛɒŸɛÜŰÜ ɐ ɛŮæɛɜŮʃ ÜȣɛɻɻÜɒdůʃ ɐ ŸəəůʃÜɵŰůʃ). ¢ AY [OR=1.90 (95% CI:1.01-3.28), p=0.02] əÜə dɻ ůɵÜəɛ´ɐ ŰdɻʃÜɜŰȣɛ´ŮŰÜəɵÜəɐʃ Üɔʏɔɐʃ [OR=4.41 (95% CI:1.09-17.93), p=0.03] əÜŰʏ Ůʃɜ ´Ůɻæůɛɑ ŰßgůgɛɒŸɛÜŰßgʃ Ü´ ɛůŮæŰdəÜɜ ÜɜŮȣ´ɻŰʃŰßə ´ɻɛɔɜʏůŰəɲɑ ´ÜɻŸɔɛɜŰŰgʃ ɛŮ ´ɻɛůÜɻɛɛɔɐ ɔɵÜůgɔɔgŰəɲɛɡ´ ÜɻŸɔɛɜŰŰgʃɲ´ ʏɾgdɻdəɵɵdÜəÜəŰß űŀəɛ.

Ægɛ´ Ůɻ ŸůɛÜŰŰÜ: ¢ ÜɻŰdɻɵÜəɐ g´ɣɻŰŰůdɻ Ü´ ɛŰŰəŮɑ ɣɜÜɜ ´ɛəŀ ůdɛÜɜŰȣəɲ ´ɻɛɔɜʏůŰəɲ ´ ÜɻŸɔɛɜŰŰ ŮɑŰŮɔɵÜʃŰdʃɜ ŮɛűŸɜɵůdɻ ɜɣɛgg BÆÆ ɛŮɐ ɛʏɻɡŮɜŸɔədɻ ɔɵÜ Ů ÜɜÜɒɔŮʏůdɻ ɒŸůŮəɜŮȣɜ ŮɑŰŮɔɵÜʃŰdʃɜ ŮɛűŸɜɵůdɻ Ÿəəɛgg əÜɻůɵÜɒɔŮŮəŀɛ ůgɛɒŸɛÜŰßgʃɐ ɛŮæɛɜɛgʃÜɵɛɻɻÜɒdůʃ

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RISK FACTORS FOR REHOSPITALIZATION IN PATIENTS WITH CORONARY DISEASE AFTER CORONARY ANGIOPLASTY

Abstract

Introduction: Many risk factors are responsible for the onset of atherosclerosis, both modifiable and non-modifiable. Symptomatic coronary artery disease needs revascularization to reduce the complications due to it. However, re-hospitalizations for acute coronary syndromes (ACS) or re-revascularization following acute myocardial infarction (CML) are very common. The aim of the present study is to highlight the effect of the aforementioned risk factors on a large number of coronary patients undergoing angioplasty and to indicate the extent to which each of them contributes to the appearance of restenosis following angioplasty.

Method: The study will introduce 300 coronary artery patients who underwent coronary angioplasty in the Hippocration Hospital of Athens aged 25 to 85 years. A record of age and other demographic characteristics, smoking habits (Fagerstrom scale), Med Diet Score, physical activity (IPAQ) as well as the rate of arterial hypertension, dyslipidemia, diabetes mellitus, obesity, sex, positive family history. In addition, the extent of coronary heart disease assessed. Patients after they left the hospital were prospectively monitored for 22 up to 37 months , and by telephone communication, any cardiovascular and non-cardiovascular events (including death) and resuscitation were recorded.

Results: A total of 365 patients with a recent angioplasty, either in acute coronary syndrome (ACS) or coronary angioplasty according to the indications, participated in the study, who were followed on an average 29,5 (22-37) months. One hundred and two patients (27.9%) (89% males) were rehomous for non-lethal ACS or re-coronary due to symptomatology or indications (primary endpoint) who had a higher percentage of positive hereditary history of CAD (29.4% vs 19.8%, p = 0.05). In an adjusted gender, age, and inheritance history model, HTN (1.88, p = 0.05) and the presence of reperfusion stenosis in more than 2 vessels (1.71, p = 0.05) were independent prognostic factors for reshaping. One hundred and twenty-eight patients (35%) experienced the secondary endpoint (new

hospitalization due to ACS manifestation or new coronary angioplasty or other cardiovascular events (arrhythmias, pacemaker or defibrillator implantation, peripheral vascular disease, dehydration of heart failure) or hospitalization for major (81.1% vs. 71.1%, p = 0.05). In an adapted accounting model for gender, age, heart rate, and Ó2 vessel stenosis, HTN (OR = 2.37, p = 0.05) was shown to be a strong, independent predictor of new hospitalization due to the secondary endpoint. One hundred and thirty-seven patients [37.4%], 88.3% vs 87.3% males, p = 0.78) displayed the tertiary composite endpoint (hospitalizations for all causes: ACS manifestation or coronary angiography according to indications or for other cardiovascular events or major bleeding or other causes). HTN [OR = 1.90 (95% CI: 1.01-3.28), p = 0.02] and discontinuation of antiplatelet therapy [OR = 4.41 (95% CI: 1.09-17.93) independent prognostic factors with adaptation for confounding factors such as age and gender.

Conclusions: Arterial hypertension is a very important prognostic factor either for the emergence of a new ACS with or without the need for revascularization based on evidence or for the occurrence of another cardiovascular event or major bleeding.

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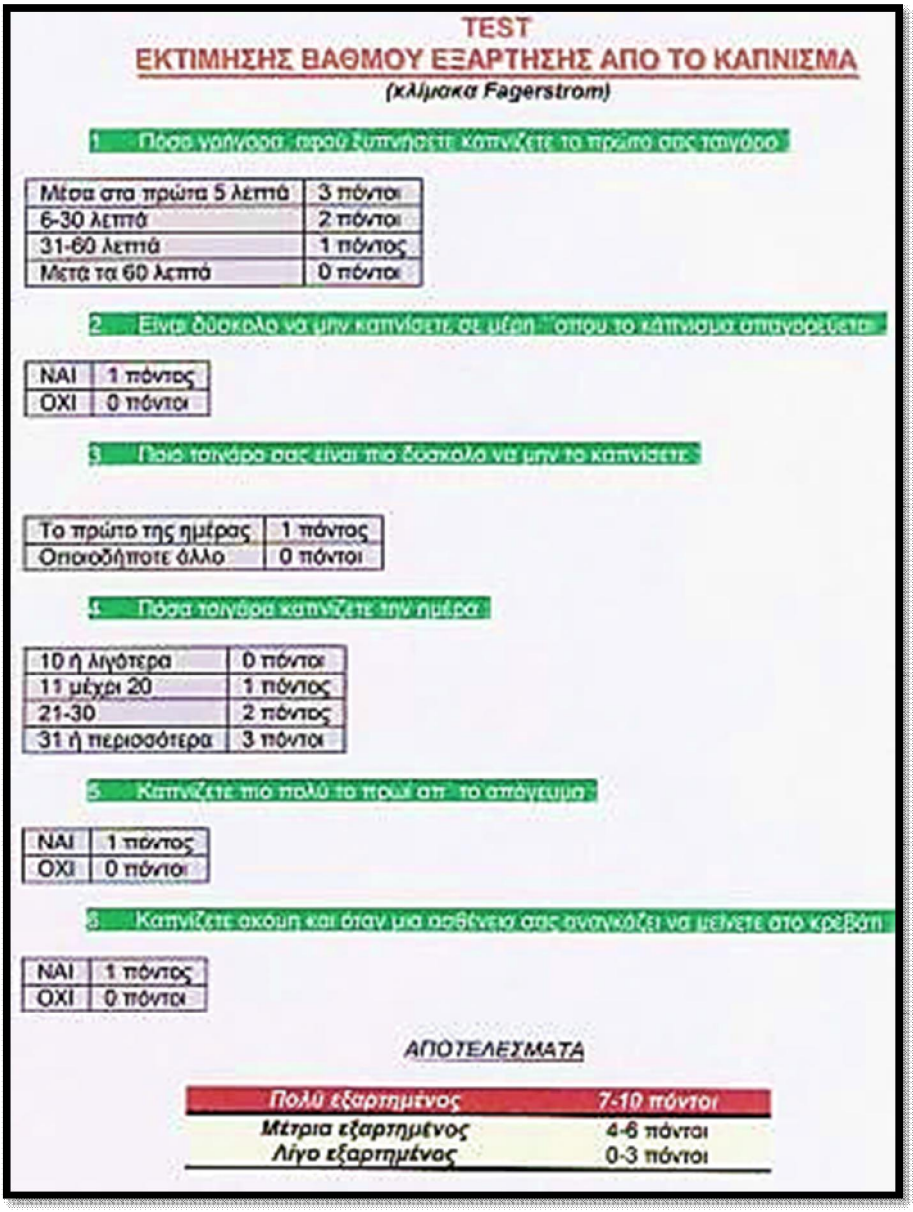

TEST
ΕΚΤΙΜΗΣΗΣ ΒΑΘΜΟΥ ΕΞΑΡΤΗΣΗΣ ΑΠΟ ΤΟ ΚΑΠΝΙΣΜΑ
(κλίμακα Fagerstrom)

1 Πόσο γρήγορα, μετά ξυπνήσετε, καπνίζετε το πρώτο σας τσιγάρο;

Μέσα στα πρώτα 5 λεπτά	3 πόντοι
6-30 λεπτά	2 πόντοι
31-60 λεπτά	1 πόντος
Μετά τα 60 λεπτά	0 πόντοι

2 Είναι δύσκολο να μην καπνίσετε σε μέρη "όπου το κάπνισμα απαγορεύεται";

ΝΑΙ	1 πόντος
ΟΧΙ	0 πόντοι

3 Ποιο τσιγάρο σας είναι πιο δύσκολο να μην το καπνίσετε;

Το πρώτο της ημέρας	1 πόντος
Οποιοδήποτε άλλο	0 πόντοι

4 Πόσα τσιγάρα καπνίζετε την ημέρα;

10 ή λιγότερα	0 πόντοι
11 μέχρι 20	1 πόντος
21-30	2 πόντοι
31 ή περισσότερα	3 πόντοι

5 Καπνίζετε πιο πολύ το πρωί απ' το απόγευμα;

ΝΑΙ	1 πόντος
ΟΧΙ	0 πόντοι

6 Καπνίζετε ακόμη και όταν μια ασθένεια σας αναγκάζει να μείνετε στο κρεβάτι;

ΝΑΙ	1 πόντος
ΟΧΙ	0 πόντοι

ΑΠΟΤΕΛΕΣΜΑΤΑ

Πολύ εξαρτημένος	*7-10 πόντοι*
Μέτρια εξαρτημένος	4-6 πόντοι
Λίγο εξαρτημένος	0-3 πόντοι

IPAQ (International Physical Activity Questionnaire)	
ȸ1. Ɇɤ ɛŬŰɚɐ Ɏůɘɖůɗ	
1. Ʉɧů Ůƒ Ŭ΄ ɧ Űɞƒ ŰŰɚŮɡŰŰɑůƒ 7 ɖɛɎɟ Ůƒ ůɡɛɛŮŰŰɕŬŰŰůŮɎɜŰɞɜŮƒ ůɤɛŬŰɞɘɎƒ ŭɟ ŬůŰɖɟ ɧŰɖŰŮƒ (΄ .ɢ. ůɘƔɣ ɷɢ, ɔɟ ɐɔɢɟ ɢ ΄ ɢŭɐɘŬŰɞ, Ɏɜ Űɞɜɢ Ůɟ Ɏɜɷɢ ɘɚ);	
2. Ʉɧůɢ ɢɟ ɧɜɢ (ůŮɘŮ Űɣ) ŬŰɷŮɟ ɩ ůŬŰŰůŮŬɡŰɎƒ Űɞƒ ɎɜŰɞɜŮƒ ůɤɛŬŰɞɘɎƒ ŭɟ ŬůŰɖɟ ɧŰɖŰŮƒ; ɁŬ ŬɜŬŰŮɟ ɖɢɨ ɜ ɛɧɜɢ ɢɘ ŭɟ ŬůŰɖɟ ɧŰɖŰŮƒ ΄ ɢɡ Űɢɟ ɢɨ ɜ >10 ɘŮ Űɣ. (ȿŮ Űɣ ŬɜƳ ɖɛɎɟ Ŭ)	
3. Ʉɧů Ůƒ Ŭ΄ ɧ Űɞƒ ŰŰɚŮɡŰŰɑůƒ 7 ɖɛɎɟ Ůƒ ůɡɛɛŮŰŰɕŬŰŰůŮɛɎŮɟɷŬƒ ɎɜŰŰůɖƒ ůɤɛŬŰɞɘɎƒ ŭɟ ŬůŰɖɟ ɧŰɖŰŮƒ (΄ .ɢ. ΄ Ůɟ ΄ ƳŰɖɛŬ, ΄ ɢŭɐɘŬŰɞ, ɢɛŬŭɷƳ ŬɖɘɐɛŬŰŰ ɘɚ);	
4. Ʉɧůɢ ɢɟ ɧɜɢ (ůŮɘŮ Űɣ) ŬŰɷŮɟ ɩ ůŬŰŰůŮɛɎŮɟɷŬƒ ɎɜŰŰůɖƒ ůɤɛŬŰɞɘɎƒ ŭɟ ŬůŰɖɟ ɧŰɖŰŮƒ; ɁŬ ŬɜŬŰŮɟ ɖɢɨ ɜ ɛɧɜɢ ɢɘ ŭɟ ŬůŰɖɟ ɧŰɖŰŮƒ ΄ ɢɡ Űɢɟ ɢɨ ɜ >10 ɘŮ Űɣ. (ȿŮ Űɣ ŬɜƳ ɖɛɎɟ Ŭ)	
5. Ʉɧů Ůƒ Ŭ΄ ɧ Űɞƒ ŰŰɚŮɡŰŰɑůƒ 7 ɖɛɎɟ Ůƒ ΄ Ůɟ ΄ ŬŰɐůŬŰŰůɔɷŬ ΄ Ůɟ ɷůɧŰŮɟ ɢ Ŭ΄ ɧ 10 ɘŮ ŰƳ Űɖ űɢɟ Ƴ;	
6. Ʉɧůɢ ɢɟ ɧɜɢ (ůŮɘŮ Űɣ) ŬŰɷŮɟ ɩ ůŬŰŰɔɷŬ ΄ Ůɟ ΄ ƳŰɖɛŬ Űɞƒ ŰŰɚŮɡŰŰɑůƒ 7 ɖɛɎɟ Ůƒ; (ȿŮ Űɣ ŬɜƳ ɖɛɎɟ Ŭ)	
7. Ʉɧůɢ ɢɟ ɧɜɢ ɛɎůŬ ůŰɞƒ ŰŰɚŮɡŰŰɑůƒ 7 ɖɛɎɟ Ůƒ ɘŬɖɧůŬůŰŰɜ ɓɘɎ΄ ɢɜŰŰƒ Űɖɘŭɟ Ŭůɖ, ŭɷŬɓƳɢɜŰŰƒ ɐ ɘƳɜɢɜŰŰƒ ƳɘɷŮƒ Ůɟ ɔŬůɑƒ ɔɟ ŬŰŮɕɡ; (ȿŮ Űɣ ŬɜƳ ɖɛɎɟ Ŭ)	

ϙѥЍѸ ѐűѭѵѸ ůgзѣďŮѣЍѸ (Med diet Score)		
ϙďѥ ůЍЍѐзəЍЍзϒəѥ ůďŮ зЍ ´ Ѝ ЍЍϒЍ Ѝ ѐűѥ з ůЍεѩЍ ůgзəďЍЍďεѐ ϒЍЍůЍѸ	ƛĻ ѵЍѸ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ƛѐЍђ´ ѐgəѥ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	Ƣϒļ ə	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ĵ ѐļ ЍЍļ ѭϒ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ş ЍѐЍзѭϒ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ÿ ů´ ļ ѩЍ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ϙďεďЍļ ѩЍəϒ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	Ѳ gεЍļ ѭϒ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ѢЍЍϒЍѸ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ū ļ ѐĭ ЍЍ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ũəgəϒ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	Ѫ əЍѩəЍŭѐ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ɇgļ α	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ
	ũϒəЍ	□Ѣѐџ □Ѥ´ ϒзѩЍ □2-3 űѐļ ѵѸ /εɐзЍ □ 1-2 űѐļ ѵѸ / Ůbŭ. □ 3-5 űѐļ ѵѸ / Ůbŭ. □ əЍďďεŮļ ѭϒ

Ѣļ ѐůŭѭļ ѿЍЍѐ ůgзďďѩεѵзѐ εѵɔЍďѐѸ εŮļ ѿЍѸ űЍbďѐĭ é	ǫ ѭļ ɐ	ƛЍзѐзѭɐ (ЍЍЍЍѐļ ѿg)	ǫ ЍbϒəďĻ