P1750
Paper Poster Session
Microbial pathogenesis and virulence

The role of intramuscular injection of nonsteroidal anti-inflammatory drug (NSAID) in development and severity of deep soft tissue infections in mice

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Background: Soft tissue infection (STI) is a serious problem after im injection. Recent our clinical observation showed that NSAID injection increased the severity of STI and lead to severe sepsis. Our hypothesis is that NSAID injection may have a role on the severity of local infection and spreading of STI. For this reason, STI model in mouse with Group A streptococcus subtype M3(GASM3) was carried out.

Material/methods: Balb-c female mice were used in experimentation. Inoculum dose was estimated as 10^6 cfu /0.1 ml and injected into gluteal muscle. Diclofenac sodium (DS) was choiced and the dose was 20 mg/kg. In-vitro effect of DS on GAS was determined by time-kill studies. The groups are seen in Table 1. After GAS inoculation, mouse was observed for 96 hours and than sacrificed. Blood samples were taken for estimate the level of TNF-alpha and interleukin-6. Culture was performed from heart and lung. Injected leg was extracted. Quantitative culture and histopathological examination were performed. Sepsis was defined if bacterial growth was seen at least in two organs. For the comparison of histopathological findings, an inflammation score was used as from 0 to 4.

Results: In time-kill study, high concentration (40 mg/L) of DS inhibited the bacterial growth until 24h. However, lower concentration (0.4 mg/L) of DS did not affect. Sepsis was observed only in group 1 and 2. The highest inflammation in the muscle tissue was observed in the group 2. Groups 1 and 2 had a higher inflammation score than group 3 and 4 but not significant. Group 4 had statistically significant higher bacterial load than other groups (*p= 0.001*). The mean level of TNF-alpha in the group 1, 2 and 3 was higher than those in group 4. Likewise, group 1, 2 and 3 had higher level of IL-6 than group 4. But differences were not significant between the all groups (Figure 1).

Conclusions: Sepsis was observed only in GAS groups with DS injection. This might be explained by higher inflammation at the local site, invasion of microorganisms to bloodstream and higher proinflammatory cytokines.

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Table 1. Study and work scheme, results of the study

Groups	Before 48th and 24th hours	Time zero	After 24th and 48th hour	Bacterial load, cfu/g, (mean±SD)	Sepsis rate, (%)	Inflammation score, (mean±SD)
Group 1	DS	DS+ GASM3	S	1,28±1,80	36	3,60±0,89
Group 2	S	GASM3+ DS	DS	1,40±1,21	10	3,80±0,42

Group 3	S	DS	DS	0	0	3,50±0,83
Group 4	S	GASM3	S	*5,56±1,53	0	3,30±1,05

DS; diclofenac sodium, S; saline, GASM3; Group A streptococcus subtype M3,
cfu: colony forming unit

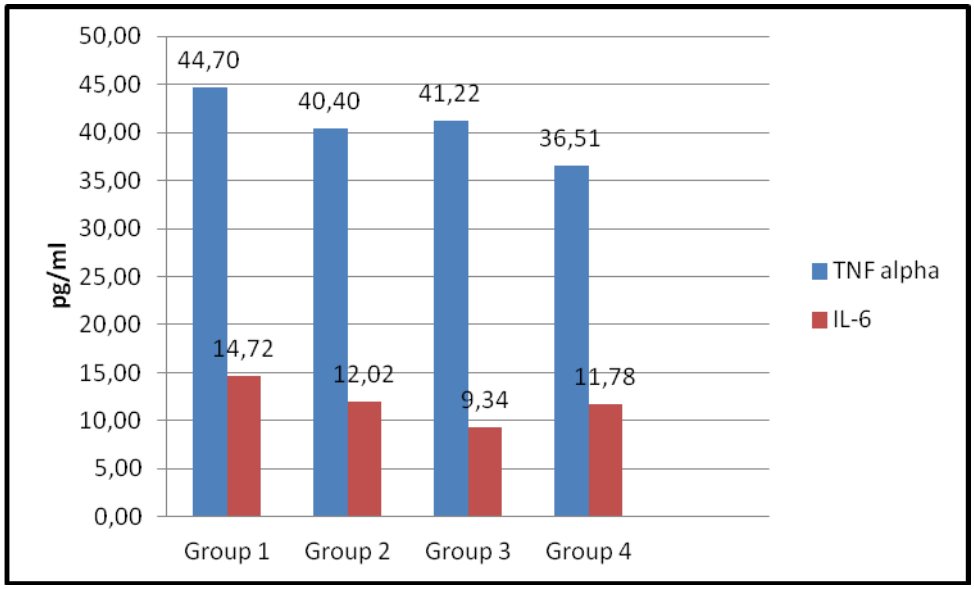

Figure 1. TNF alpha and IL-6 level in serum of study groups