SIGNIFICANCE OF CYTOKINES IN ACUTE APPENDICITIS AND ACUTE MESENTERIC LYMPHADENITIS IN CHILDREN

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AIM

To verify the significance of cytokines serum inflammatory mediators in the diagnosis of acute appendicitis (AAp) and acute mesenteric lymphadenitis (AML).

METHODS

Since 2010 research has been done on 7 to 18 year old children: 8 patients with AAp (Group 1), 6 patients with AML (Group 2), 6 patients with non-inflammatory surgical disease (Control Group 1) and 6 patients with functional gastrointestinal disorder (Control Group 2). Serum levels of EGF, IL-10, IL-12(p70), IL-1β, IL-4, IL-6, IL-8, MCP-1, TNF-α were measured before the surgical intervention and on day 1 and day 3 after the operation (Table 1). Serum levels in the AML group were obtained according to analogous schedule: on the day of admission to hospital and on day 1 and day 3 after the hospitalization (Table 2) while in Control Group 2 it was done only once.

RESULTS

Serum levels of IL-6 and IL-12(p70) showed a significant increase in all samples of patients in the AAp group compared to the control group (mean IL-6: 112.91±139.84 versus controls 11.67±13.65, p=0.022 (Fig.1.,3); mean IL-12(p70): 25.77±49.47 versus controls 4.75±4.29, p=0.049 (Fig.2.,3)). IL-6 and IL-12(p70) of the AML group were no longer statistically different from that of the controls. There was a tendency of increase of IL-4 and MCP-1 in the AAp group compared to the controls (mean IL-4: 22.83±38.97 versus controls 6.78±8.37, p=0.096; mean MCP-1: 453.26±351.16 versus controls 322.64±124.33, p=0.19).

Diagnostic results of cytokines for the AAp group in the time intervals and reference value of the control groups

Serum cytokines	Study group 1 (n=8) 1	2	3	p value	Control groups (n=12)
EGF	216.5±212.5	166.9±200.2	177.2±278.3	NS	79.3±74.4
IL-10	13.35±23.64	4.68±1.6	3.88±1.95	NS	3.31±0.37
IL-17	111.50±192.91	133.54±183.39	121.88±252.90	NS	16.90±14.1
IL-1β	14.77±25.74	20.74±29.92	16.09±26.45	NS	7.96±8.8
IL-4*	22.83±38.97	24.93±33.11	8.38±11.26	**0.096**	6.7±8.37
IL-8	92.50±92.46	83.60±89.25	98.35±141.34	NS	33.41±25.5
MCP-1*	453.26±351.16	291.23±204.04	288.14±168.22	**0.19**	322.64±124.3 3
TNF-α	46.65±82.37	63.54±126.5	48.41±87.1	NS	12.06±3.23

Table 1. **Note.** Data are presented as mean±SD
S = not significant (p≥0.05)
* Tendency of increase of serum cytokines in the AAp group

Diagnostic results of cytokines for the AML group in the time intervals and reference value of the control groups

Serum cytokines	Study group 2 (n=6) 1	2	3	p value	Control groups (n=12)
EGF	126.92±76.75	188.33±173.3 2	221.46±244.0 9	NS	79.3±74.4
IL-10	13.61±25.50	10.66±18.28	8.02±11.8	NS	3.31±0.37
IL-12(p70)	3.2	3.2	3.2	NS	4.75±4.29
IL-17	3.2	3.2	3.2	NS	16.90±14.1
IL-1β	6.27±7.51	9.16±14.61	8.88±13.92	NS	7.96±8.8
IL-4	3.2	3.15±0.1	3.63±1.05	NS	6.7±8.37
IL-6*	3.93±1.14	3.2	3.18±0.04	**0.096**	11.67±13.65
IL-8	27.74±16.93	27.65±15.2	32.12±17.21	NS	33.41±25.5
MCP-1	339.22±108.9 3	317.22±93.99	374.56±87.84	NS	322.64±124.3 3
TNF-α	67.71±138.85	73.57±152.63	77.41±163.34	NS	12.06±3.23

Table 2. **Note.** Data are presented as mean ± SD
NS = not significant (p≥0.05)
* Tendency of increase of serum cytokines in the AML group
Serum levels of IL-12(p70) and IL-17≤3.2ng/ml

Serum levels of IL-6 and IL-12 (p70) in the AAp group according to the dynamics of the time interval.

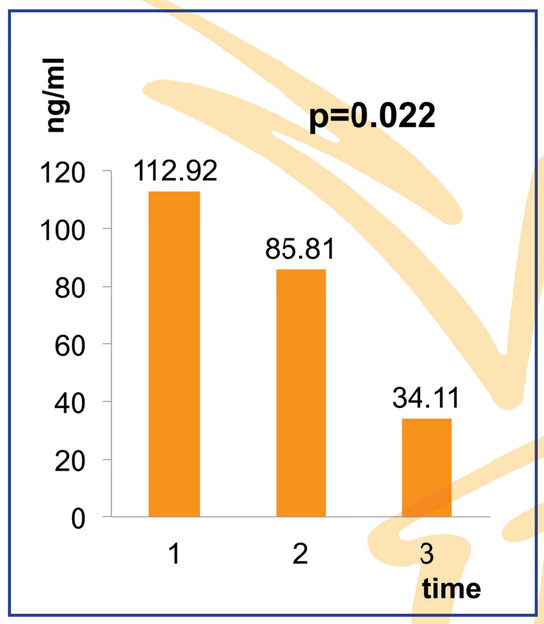

Figure 1.

Mean values of IL-6 and IL-12(p70) in the control groups.

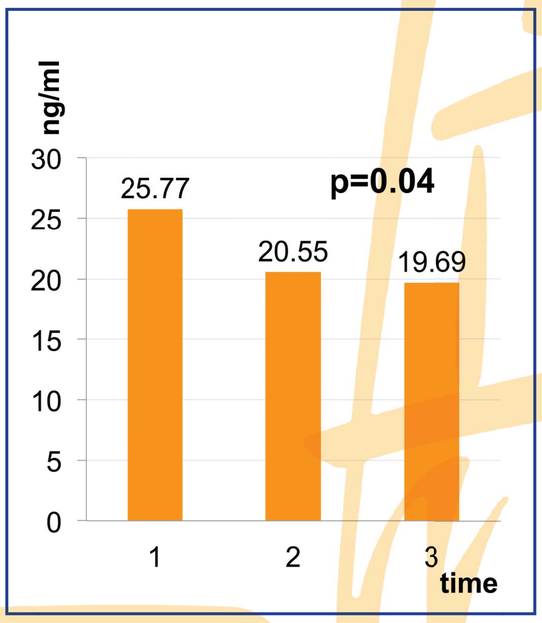

Figure 2.

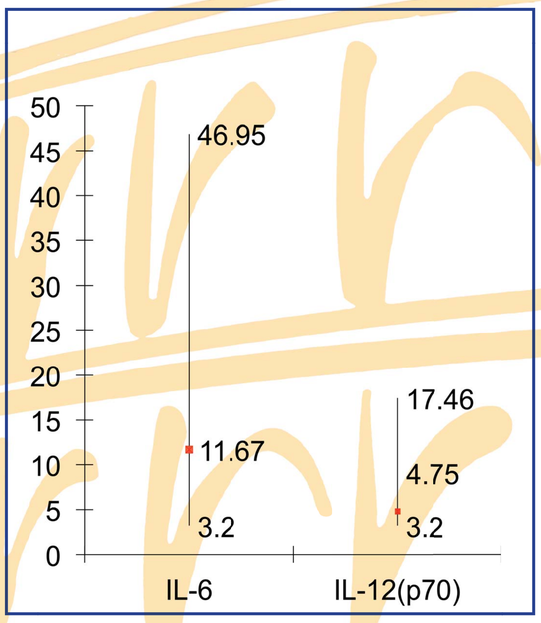

Figure 3.

CONCLUSIONS

IL-6 and IL-12(p70) show a significant increase in the AAp group, while not in the AML group.
IL-4 and MCP-1 show a tendency of increase in the AAp group.

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