

Inreased occurrence of proinflammatory IL-17, IL-6 and MCP-1 cytokines, and resistin with overweight-associated polycystic ovarian syndrome, pituitary adenome and obesity

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Background

Adipose tissue acts as a metabolically dynamic endocrine organ secreting several hormones, cytokines, chemokines and growth factors (1). The occurrence of proinflammatory cytokines and chemokines are initiating factors for cardiovascular diseases and atherosclerosis.

Resistin plays a role to induce insulin resistance and inflammation mediated by IL-6 cytokine and MCP-1 chemokine (2).

The presence of proinflammatory cytokines and chemokine was studied in different diseases characterized by high body mass index (BMI >25 kg/m²), insulin resistance and special hormonal-metabolic processes.

Results

1. Figure: Resistin serum levels were significantly higher in obese women compared to control, PCOS and PA women.

2. Figure: Monocyte chemoattractant protein-1 (MCP-1) serum levels were significantly increased in all patient groups compared to healthy controls.

3. Figure: IL-6 serum levels were increased in obese women compared to controls and PCOS women.

4. Figure: IL-17A levels were only higher in PCOS women compared to obese, PA and control women.

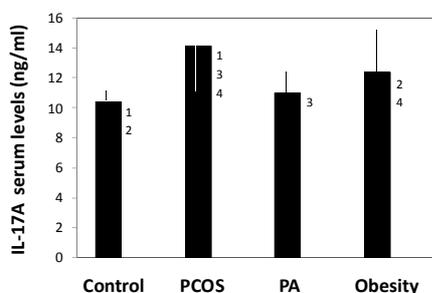


Figure 4 : IL-17A serum levels in studied in 90 women.

Patients and methods

Proinflammatory cytokine, chemokine and resistin serum levels were investigated in 90 fertile women with hormonal-metabolic disturbance and 16 healthy women (Table 1). The studied patient groups were the following: polycystic ovarian syndrome (PCOS), n=28, pituitary adenome (PA), n=9 and obesity (patients with hypertension and/or elevated insulin levels), n=37.

The serum cytokine (IL-17A, IL-6), chemokine (MCP-1) and resistin levels were measured by enzyme linked immunosorbent assay (ELISA).

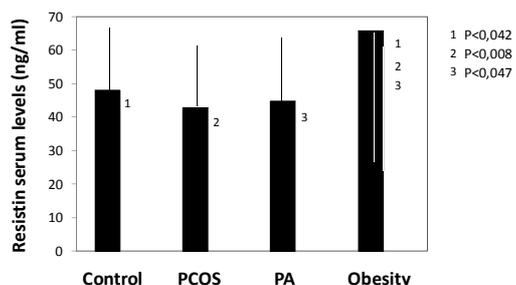


Figure 1 : Resistin serum levels in studied 90 women.

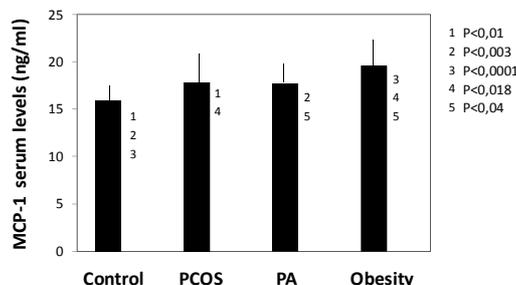


Figure 2 : MCP-1 (monocyte chemoattractant protein-1) serum levels in studied 90 women.

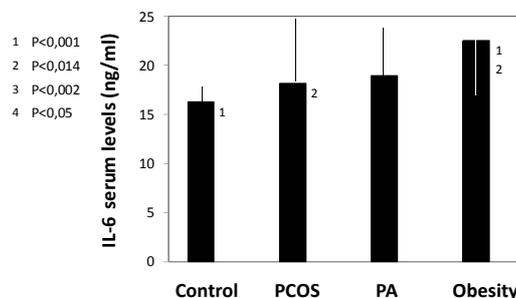


Figure 3 : IL-6 cytokine serum levels in studied 90 women.

Clinical parameters

Parameters	Polycystic ovarian syndrome (PCOS) (n=28)	Pituitary adenome (PA) (n=9)	Obesity (n=71)	Controls (n=16)	P-values
Age (years)	29±6	33±6	37±8	43±5	
BMI* (kg/m ²)	27±7	32±9	29±5	27±5	
resistin (ng/ml)	42,68 ±18,85	44,8 ±22,08	65,86 ±41,76 ^a	48 ±20,45 ^a	^a 0,042
IL-17A (ng/ml)	14,13 ±3,79 ^a	10,99 ±1,75	12,38 ±3,01 ^b	10,44 ±0,54 ^{a,b}	^a 0,001 ^b 0,014
MCP-1** (ng/ml)	17,8 ±2,71 ^a	17,7 ±2,01 ^b	19,55 ±3,03 ^c	15,93 ±0,56 ^{a,b,c}	^a 0,01 ^b 0,003 ^c 0,0001
IL-6 (ng/ml)	18,19 ±6,75	18,96 ±4,82	22,57 ±6,9 ^a	16,32 ±2,29 ^a	^a 0,001

*Body mass index (BMI) **Monocyte chemoattractant protein-1 (MCP-1)

Conclusions

Obesity was associated with increased resistin, MCP-1 and IL-6 serum levels.

Obesity with higher BMI demonstrated an accelerated inflammatory events with high cytokine serum levels contrary to healthy controls.

PCOS was associated with high IL-17A and weakly increased MCP-1 serum levels, but it seems with greater inflammatory processes were not associated (3).

Women with pituitary adenome showed the greatest BMI with weakly initiated inflammatory processes

The results in PCOS women supported the beneficial effect of treatment with vitamin D₃ for decreasing serum IL-17A levels (4).

References

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