

# The comparison of echocardiographic parameters, carotid intima thickness, arterial stiffness and plasma soluble CD40 ligand levels in active and inactive acromegalic patients

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## OBJECTIVES

In acromegalic patients, the increased mortality and morbidity are generally due to cardiovascular, metabolic, respiratory and cerebrovascular diseases, so early diagnosis and treatment of cardiovascular lesions may save lives (1). The aim of this study is to find out the any possible difference in terms of carotid intima media thickness (CIMT), indices of arterial stiffness, soluble CD40 ligand (sCD40L) and some echocardiographic parameters between active and inactive acromegalic patients.

## METHODS

The study involved 26 active acromegalic patients, 24 inactive acromegalic patients and 20 healthy subjects. 47 of 50 acromegalic patients transsphenoidal surgery and 41 of 50 patients somatostatin analogs treatment at least 6 months duration and 9 patients have no treatment after transsphenoidal surgery. CIMT, indices of arterial stiffness, sCD40L and some echocardiographic parameters were compared.

|                | Healthy control (n=20) | All acromegaly (n=50) | p1 value     | AA (n=26)   | CA (n=24)   | p2 value                             |
|----------------|------------------------|-----------------------|--------------|-------------|-------------|--------------------------------------|
| Age (years)    | 47±9                   | 45±11                 | NS           | 45±11       | 43±12       | NS                                   |
| F / M (n)      | 10/10                  | 30/20                 | NS           | 16/10       | 14/10       | NS                                   |
| SBP (mmHg)     | 121±10                 | 128±17                | NS           | 128±14      | 128±20      | NS                                   |
| DBP (mmHg)     | 78±8                   | 79±10                 | NS           | 78±11       | 79±9        | NS                                   |
| GH             | 0,22±0,27              | 2,16±3,06             | <b>0,004</b> | 3,65±3,63   | 0,50±0,29   | AA vs CA: <0,001<br>AA vs HC: <0,001 |
| IGF-1          | 74,8±68,4              | 285±204               | <b>0,000</b> | 381±232     | 178±81      | CA vs HC: 0,024<br>AA vs HC <0,001   |
| Glucose        | 88,5±6,5               | 106,8±30,5            | <b>0,007</b> | 113,1±35,1  | 99,6±22,9   | AA vs HC:0,001                       |
| Insulin        | 7,9±3,5                | 6,6±5,0               | NS           | 6,5±5,0     | 6,8±5,0     | NS                                   |
| HOMA-IR        | 1,74±0,78              | 1,73±1,34             | NS           | 1,80±1,40   | 1,66±1,30   | NS                                   |
| sCD40L         | 2,05±1,16              | 1,73±0,88             | NS           | 1,57±0,66   | 1,90±1,06   | NS                                   |
| CIMT           | 482±71                 | 547±102               | <b>0,008</b> | 542±89      | 552±115     | AA vs HC:0,014<br>CA vs HC:0,029     |
| PWV            | 7,07±0,49              | 8,34±1,79             | <b>0,002</b> | 7,92±1,27   | 8,80±2,16   | AA vs HC: 0,001<br>CA vs HC:<0,001   |
| AIX br         | -34,1±25,2             | -33,2±26,5            | NS           | -33,6±29,0  | -32,7±24,0  | NS                                   |
| AIXao          | 20,8±11,6              | 20,8±13,4             | NS           | 20,6±14,7   | 21,0±12,1   | NS                                   |
| LVM            | 167,3±28               | 198,7±45,2            | <b>0,004</b> | 201±53      | 195±33      | AA vs HC:0,05,<br>CA vs HC:0,21      |
| LVM Index      | 91,4±13,7              | 104,1±22,3            | <b>0,016</b> | 105±25      | 102±18      | AA vs HC:0,016                       |
| EF (%)         | 65,7±4,3               | 62,8±6,7              | NS           | 62,4±6,3    | 63,3±7,3    | NS                                   |
| E/A            | 1,07±0,32              | 1,20±0,38             | NS           | 1,18±0,37   | 1,22±0,9    | NS                                   |
| DOPPTEI        | 0,48±0,04              | 0,56±0,08             | 0,00         | 0,56±0,08   | 0,056±0,08  | AA vs HC:0,000<br>CA vs HC:0,000     |
| e septal (m/s) | 0,097±0,019            | 0,083±0,025           | <b>0,028</b> | 0,082±0,027 | 0,085±0,023 | AA:0,029                             |
| E/e septal     | 8,03±1,62              | 9,26±3,00             | <b>0,075</b> | 9,67±3,4    | 9,03±2,53   | AA:0,046                             |
| LAVI           | 17,9±3,3               | 24,5±6,2              | <b>0,000</b> | 24,8±6,1    | 24,2±6,5    | AA:0,000 CA:0,000                    |

p1value :Acromegaly versus healthy control, p2 value:Between three groups (AA, CA and HC), NS: Not significant  
AA: Active acromegaly, CA: Cure/controlled acromegaly, HC: Healthy control, SBP:Systolic blood pressure, DBP:Diastolic blood pressure, GH:Growth hormone, sCD40L: soluble CD40 ligand, CIMT:Carotis intima media thickness, PWV:Pulse wave velocity, AIXbr:Brachial augmentation index, AIXao:Aortic augmentation index, LVM:Left ventricular mass, EF:Ejection fraction DT:Deceleration time LAVI:Left atrium volume index

## RESULTS

The study showed that CIMT and indices of arterial stiffness were higher in acromegalic group (p=0.008, and p= 0.002, respectively). Left ventricular diastolic dysfunctions were comparable between groups, whereas the left ventricle mass index, DOPPTEI and left atrial diameter were higher, and ejection fraction was lower in acromegalic patients. CIMT, arterial stiffness, sCD40L, and parameters of echocardiography were comparable in patients with active and inactive patients. Clinical, laboratory, vascular and echocardiographic assessment comparisons among acromegaly and healthy control group are shown in Table 1.

## CONCLUSIONS

Getting the disease under control hormonally has shown that the subclinical risk was not decreased and the structure and function of the heart were not change. This can point out that in acromegaly patients the structural and functional damage may be due to long term exposure to excess growth hormone/IGF-1.

## References

1-Colao A, Ferone D, Marzullo P, Lombardi G. Systemic complications of acromegaly: epidemiology, pathogenesis, and management. *Endocr Rev*, 2004. 25(1): p. 102-52.

