The immune cell profiling in acromegalic patients. Preliminary results from a case-control study

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Introduction

The GH/IGF1 axis has long been supposed to play a role in immune modulation, mainly affecting lymphocytes and monocytes. However, little is known about the distribution and function of circulating immune cells in acromegaly. We designed a prospective case-control study in order to evaluate the peripheral blood mononuclear cells (PBMCs) subpopulations in acromegalic patients.

Material and Methods

14 acromegalic patients –ACRO- (8F, 6M), with active disease (only 4 uncontrolled) on medical treatment (somatostatin analogs, pegvisomant, dopamine agonist), and 16 healthy sex-, age- and BMI- matched controls (CTRL) were enrolled (Table 1). Anthropometric, metabolic, and hormonal parameters were recorded along with full quantification of PBMCs evaluated by flow cytometry. Data are expressed as mean (SD) or median (interquartile range) and statistical analysis were performed with parametric and non-parametric tests, as appropriate.

Results

Compared with CTRL, ACRO showed higher levels of glucose (p=0.001), HbA1c (p=0.026), and GH (p=0.019) and a higher prevalence of hypertension (p=0.046).

Table 1. General characteristics of study population

	ACRO (n=14)	CTRL (n=16)	P value
Age, y	51.1 ± 17.2	51.6 ± 16.5	0.929
Sex, F/M, n	8/6	11/5	0.707
BMI, kg/m^2	25.6 (22.4-29.7)	23.8 (22.8-24.9)	0.194
Smoker, n	7/14	4/16	0.257
Disease duration, y	7.5 (1-44)	-	-
Neurosurgery	13	-	-
SSAs	11	-	-
PEG, n	3	-	-
SSAs + DA, n	4	-	-
Hypertension, n	7/14	2/16	*0.046*
Diabetes Mellitus, n	4/14	1/16	0.157
Dyslipidemia, n	6/14	3/16	0.236

Immune profile

Significant differences in monocytes number and subpopulations were observed (Fig.1), with a decreased total monocytes count (cells/μL) [128.0 (51.0-243.0) vs 339 (280.2-414.6), p<0.001], a lower percentage of classical monocytes, % [83.6 (79.1-88.0) vs 87.8 (84.9-91.3), p=0.023] and intermediate monocytes, % [2.4 (0.3-4.4) vs 7.3 (5.5-10.4) p<0.001] and higher percentage of non-classical monocytes, % [11.3 (10.4-14.3) vs 1.7 (1.0-3.3), p<0.001], as compared with CTRL. ACRO also showed a decreased total number of NK (cells/μL) [121.6 (62.0-261.3) vs 333.7 (253.4-485.4), p<0.001] with a lower percentage of NK CD56bright, % [3.44 (1.5-5.7) vs 7.8 (6.9-10.2), p=0.001] and a higher percentage of NK CD56dim, % [97.1 (93.5-97.8) vs 91.3 (88.2-92.8), p=0.003] than CTRL. No differences in lymphocytes were found between the two groups.

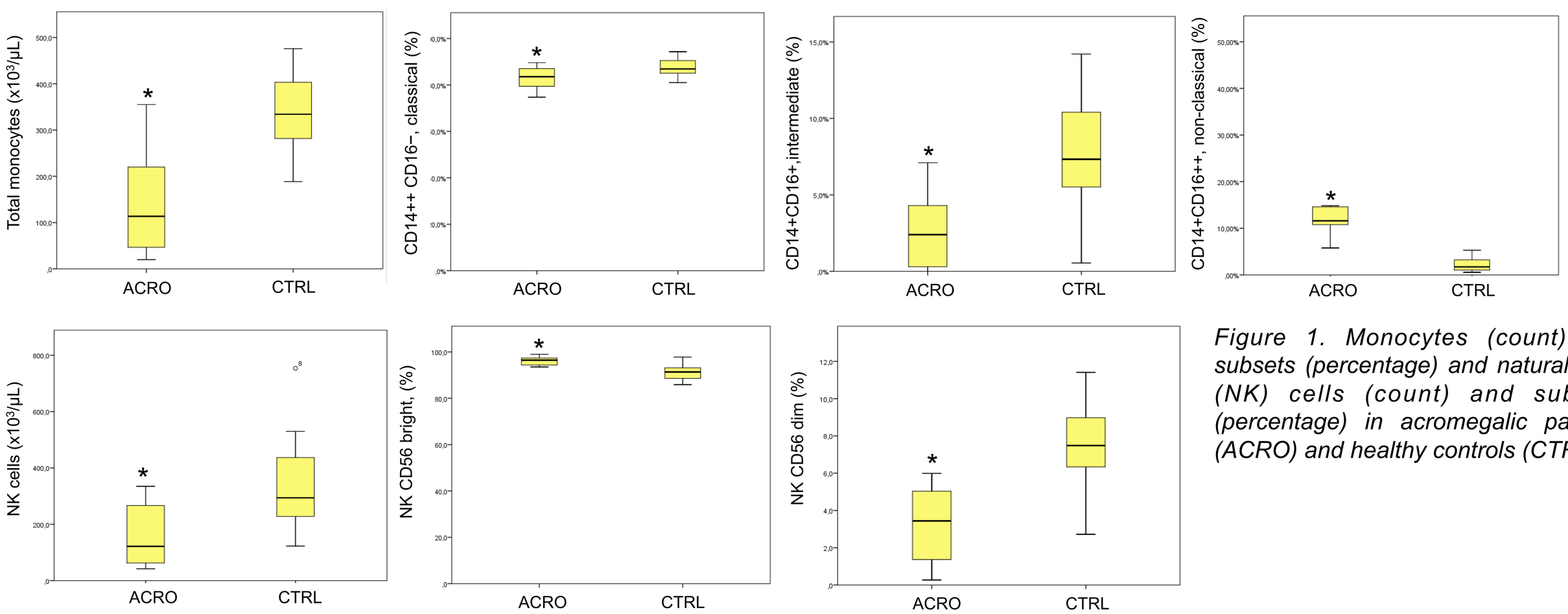

Figure 1. Monocytes (count) and subsets (percentage) and natural killer (NK) cells (count) and subsets (percentage) in acromegalic patients (ACRO) and healthy controls (CTRL)

Discussion

These preliminary results showed that active ACRO on medical treatment have a shift in monocyte subpopulations with a higher proportion of non-classical (anti-inflammatory) subset and a reduced total number of NK cells with an increase of the more naturally cytotoxic subset, supporting the role of GH/IGF1 axis in the modulation of the innate immunity.

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The author has declared no conflict of interest.