The Association Between Adenoma Size Classification and the Hormone Hypersecretion in Acromegaly

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INTRODUCTION

- Acromegaly is a chronic disease caused by growth hormone (GH) oversecretion, which anabolic actions are amplified through insulin-like growth factor (IGF-1) secreted by the liver.
- Pituitary macroadenoma is found in mostly of acromegaly patients, but the secretion pattern of GH and insulin-like growth factor 1 (IGF-1) and the natural history of somatotropinomas are heterogeneous.
- The objective of the present study was to evaluate the relationship between tumor size, GH and IGF-1 levels in patients diagnosed with acromegaly.

METHODS

Study Design and Subject

- A cross-sectional, observational, descriptive study was carried out in acromegaly patients (n=25) attending our Neuroendocrinology Outpatient Clinic at the local university hospital.

Variables Analyzed at Diagnosis

- Patients' anthropometric data, biochemical investigations, adenoma size by MRI, basal GH and IGF-1 blood levels (chemiluminescent immunometric assays) were obtained at diagnosis;
- IGF-1 relative to the upper limit of the normal range (IGF-1_ULN) and the mean standard deviation scores (IGF-1_SDS) were calculated for each patient.

Statistical Analysis

- ROC curves analysis were performed to determine the discriminative ability of GH, IGF-1, IGF-1_ULN or IGF-1_SDS in predicting the presence of a GH-secreting macroadenoma (≥ 10 mm).
- The results were expressed as sensitivity (S) and specificity (Sp).

RESULTS

Table 1: Characteristics of 25 patients somatotropinoma carrier assisted at Neuroendocrinology Outpatient Clinic from HC/UEL

Variables	Mean±SD	Patients
Age (years)	46,04±17,13	23
Male/female	8/17	25
IGF-1 level (ng/ml)	882,36±396,29	23
IGF-1_ULN	3,40±1,55	23
IGF-1_SDS	5,04±2,30	23
GH level (ng/ml)	16,55±14,32	23
Glycaemia (mg/dl)	124,35±36,96	23
Tumor size (mm)	18,86±10,77	22

ULN: upper limit of the normal range
SDS: mean standard deviation scores

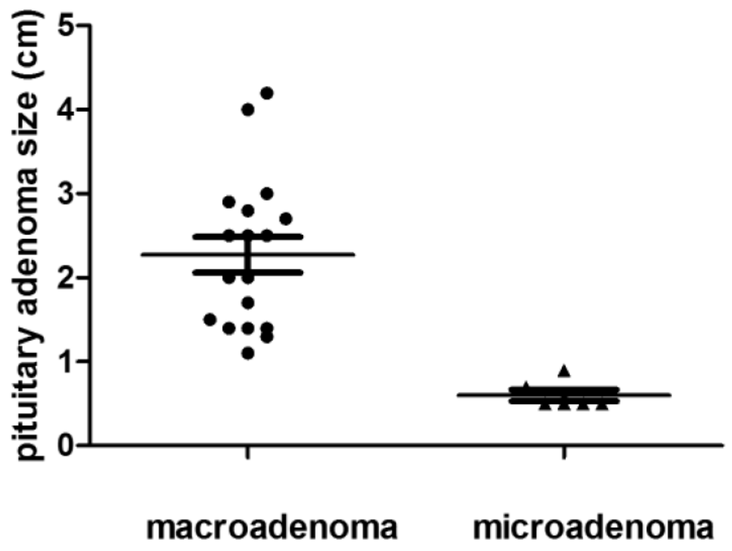

Figure 1: Quantity of individuals with acromegaly (76%), according to pituitary adenoma size; n=24

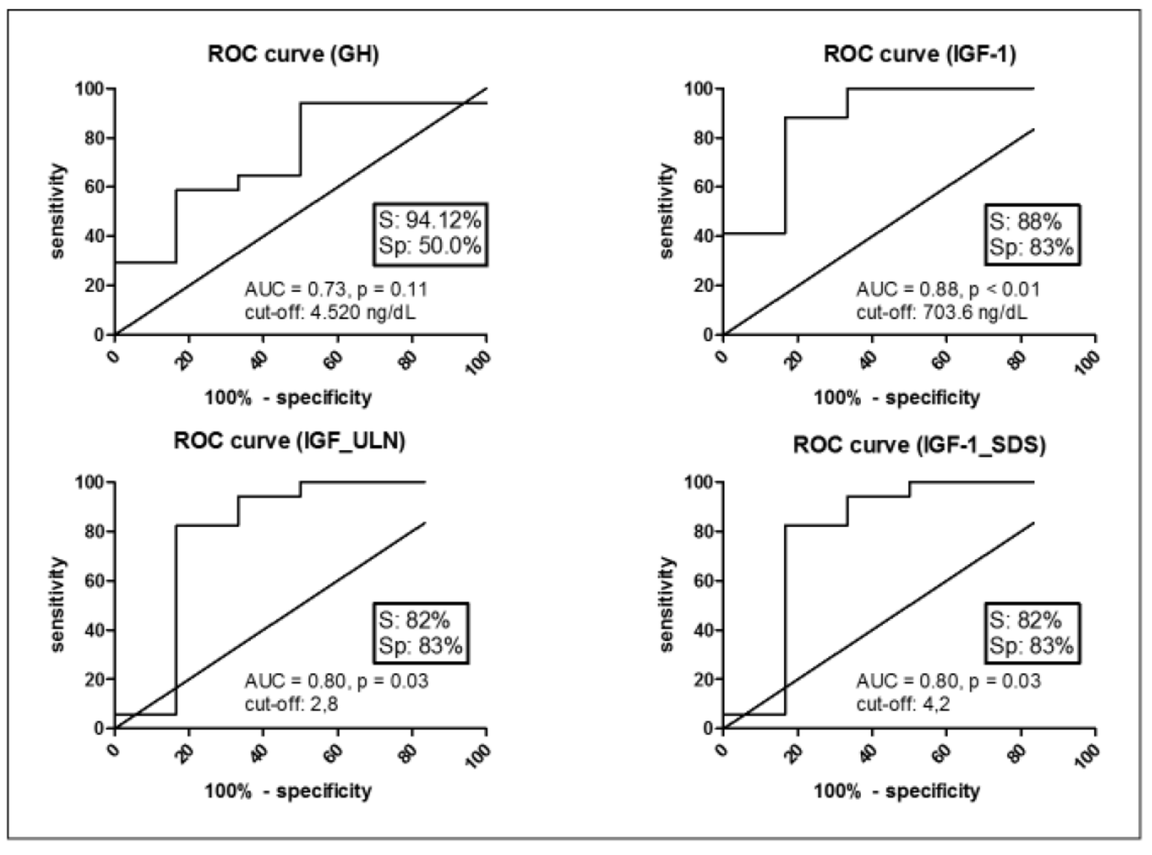

Figure 2: ROC curves for GH, IGF-1, IGF-1_ULN and IGF-1_SDS to identify the presence of macroadenomas.

- The most specific cut-off value for IGF-1 to discriminate between micro and macroadenomas was 1681 ng/ml (Sp=100%).

CONCLUSION

- The basal GH level did not discriminate adenoma sizes, while IGF-1 values were able to indicate the presence of macroadenoma.
- The absolute IGF-1 blood concentration was more effective than relative values.

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