

# EFFECTS OF SOMATOSTATIN ANALOGUES ON MUSCLE SYMPATHETIC NERVE ACTIVITY IN ACROMEGALY

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## INTRODUCTION

**Background:** we previously demonstrated a markedly decreased adrenergic tone in newly diagnosed acromegalic patients by direct measurement of muscle sympathetic nerve activity (MSNA), in spite of insulin resistance (Seravalle et al., Clin Endocrinol 77:262, 2012). Our data pointed to a phenomenon mediated by hypoleptinaemia rather than a direct action of the GH-IGF-I system.

**Aim:** It has been shown that centrally administered somatostatin (SS) inhibits peripheral sympathetic outflow in rodents (Rettig et al., Am J Physiol 257:R588, 1989). Based on the above, we elected to study MSNA in acromegalic patients before and during treatment with SS analogues (SSA)

## SUBJECTS

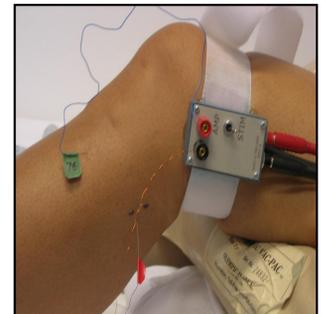
Demographic data of the study population

	NEWLY DIAGNOSED ACROMEGALICS	UNCONTROLLED ACROMEGALICS ON SSA	CONTROLLED ACROMEGALICS ON SSA	CONTROLS
N	24	11	11	17
AGE, yr	45.5 ± 13.02	56.4 ± 17.5	52.4 ± 13.91	49.1 ± 15.6
SEX (F/M)	11/13	6/5	4/7	6/5

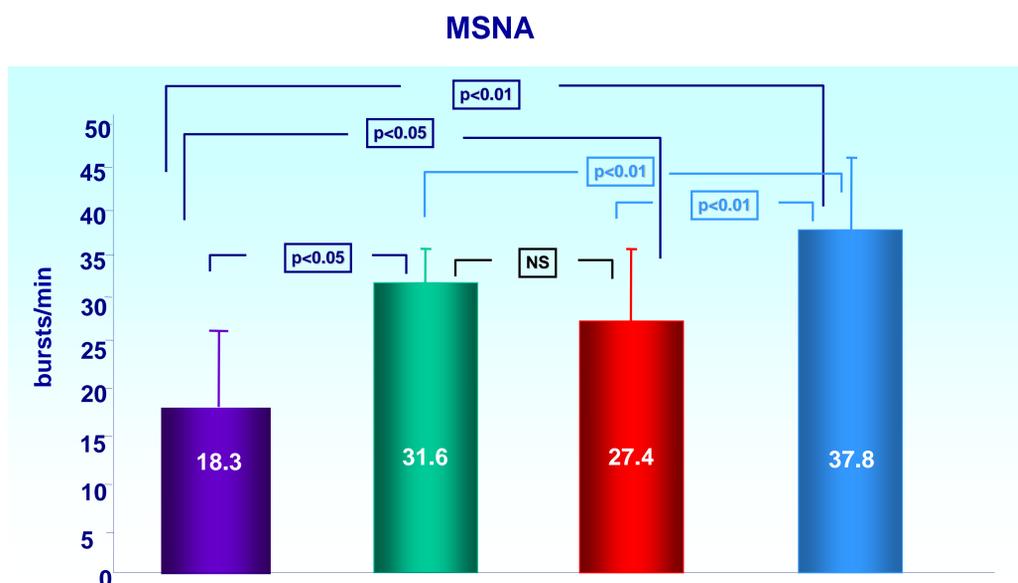
Patients on SSA were considered biochemically controlled if their IGF-I levels were within the age-matched reference range and not controlled if IGF-I levels were over the upper limit of the reference range.

## METHODS

- Evaluation of GH and IGF-I levels
- Body composition (bioelectrical impedance analysis)
- Direct recording of postganglionic presynaptic sympathetic nerve activity (microneurography, peroneal nerve, MSNA)



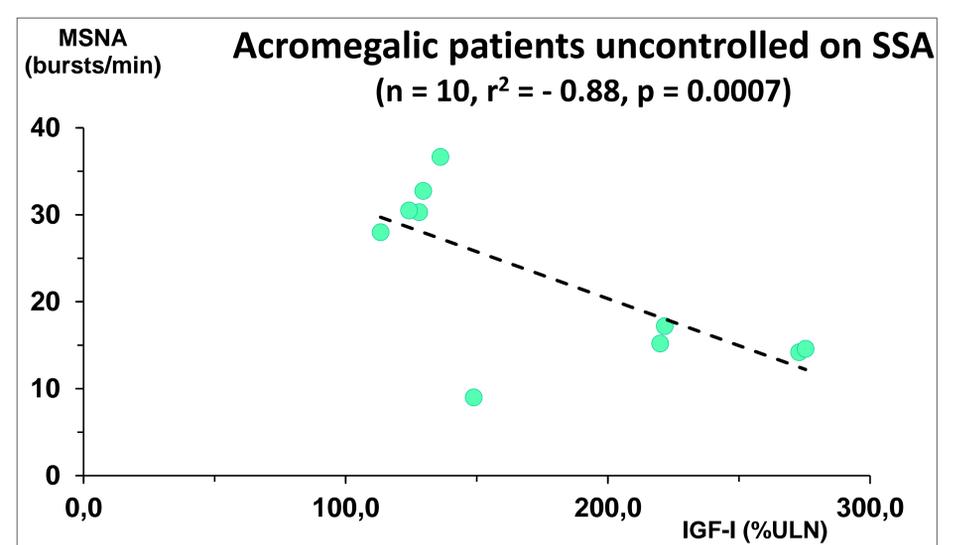
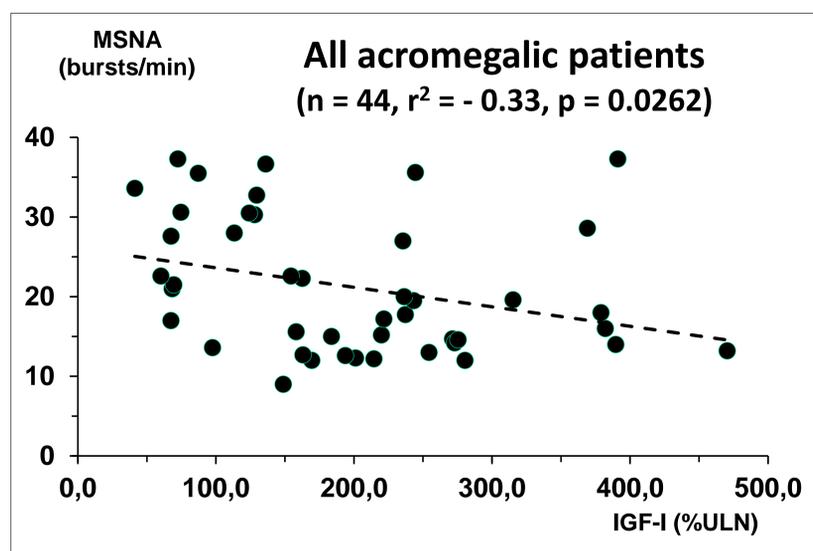
## RESULTS



- Newly diagnosed acromegalics
- Uncontrolled acromegalics on SSA
- Controlled acromegalics on SSA
- Controls

	NEWLY DIAGNOSED ACROMEGALICS	UNCONTROLLED ACROMEGALICS ON SSA	CONTROLLED ACROMEGALICS ON SSA	CONTROLS
IGF-I (% of upper limit)	270.8 ± 90.19	126.8 ± 7.69	71.8 ± 9.02	
Basal GH (mcg/L)	10.9 ± 10.84	1.8 ± 1.45	0.9 ± 0.68	
Extracellular water (L)	19 ± 4.94	20.1 ± 5.65	17.2 ± 2.26	16.9 ± 4.21

No significant correlation was found between MSNA on the one hand and GH and extracellular water on the other hand.



## CONCLUSIONS

- 1) Direct recording of muscle sympathetic nerve activity has confirmed a **marked sympathoinhibition in active acromegaly**.
- 2) The treatment of acromegaly by **SSA administration** appears to be able to reverse, at least in part, the **sympathoinhibition of untreated patients**.
- 3) The negative correlation between IGF-I levels and MSNA in acromegalic patients suggests a role of **IGF-1 as direct inhibitor of sympathetic outflow**.
- 4) Given the lack of correlation between extracellular water and MSNA, the **sympathoinhibition of acromegaly does not seem to be linked to effect of activated baroreceptors**.
- 5) As for the lack of difference in MSNA between controlled and uncontrolled patients, an explanation will likely be provided by studies involving larger series of SSA-treated acromegalic subjects and by the assessment of their circulating leptin.