

# Prostatic hyperplasia in acromegaly, a myth or reality: a case–control study

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## Abstract

**Context:** Disorders of the prostate gland are more prevalent in patients with acromegaly. GH–insulin-like growth factor 1 (IGF1) axis plays an additive role in prostatic growth and development.

**Objective:** To correlate the structural and histopathological changes of the prostate and prostatic symptoms with GH/IGF1 in patients with acromegaly.

**Design:** Case–control study, from January 2012 to November 2013.

**Setting:** Tertiary referral centre university hospital in Northern India.

**Patients:** Fifty-three men with acromegaly and 50 healthy men matched for age and BMI.

**Main outcome measures:** International Prostate Symptom Score (IPSS), prostate-specific antigen (PSA) levels, dimensions of the prostate on trans-rectal ultrasonography, parameters on uroflowmetry, and immunopositivity with anti-IGF1 antibody in prostatic tissue biopsies.

**Results:** Despite low serum testosterone levels (8.9 nmol/l vs 14.3 nmol/l, acromegaly vs control), patients with acromegaly had marginally higher IPSS, PSA levels, and grades of enlarged prostate and obstructive features on uroflowmetry compared with controls. Dimensions of the prostate on ultrasonography were also significantly higher in patients. These changes were present irrespective of age, current gonadal status, and disease activity. Evidence of prostatic hyperplasia on biopsy was seen in six of 14 patients (42.8%) who underwent prostatic biopsy while it was absent in the controls. Immunohistochemistry with anti-IGF1 antibody showed moderate positivity in all the 14 patients who underwent biopsy with benign prostatic hyperplasia, compared with mild positivity in 21% of controls. Similarly, 14 control patients with prostatic malignancies showed variable positivity, four patients had strong, two each had mild and moderate positivity, while six were negative.

**Conclusions:** In patients with acromegaly, there is a higher frequency of structural changes in the prostate, along with greater prostatic volume and obstructive features, compared with healthy controls, irrespective of age, gonadal status, and disease activity.

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## Introduction

Acromegaly is caused by the excessive secretion of growth hormone (GH). Testosterone and dihydrotestosterone (DHT) are considered to be the major regulators of prostate growth and function (1, 2). However, in recent years, insulin-like growth factor 1 (IGF1), IGF2, and IGF-binding

proteins (IGFBPs) have been shown to have a pivotal role in the growth and development of prostate in normal physiology as well as in pathological states (3, 4, 5, 6, 7). Both IGF1 and IGF2 have direct mitogenic effects on prostatic epithelial cells and have been implicated in the