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Acromegaly: Diagnostic and Therapeutic Management Challenges in Senegal

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Abstract

Introduction: The management of acromegaly faces significant challenges due to the need for precise diagnosis, individualized treatment strategies, and continuous monitoring. We present two case reports illustrating the diagnostic and therapeutic management difficulties of acromegaly in sub-Saharan Africa. **Case Reports:** Case 1 involved a 65-year-old retired female teacher with a 10-year history of bilateral knee osteoarthritis admitted for hypertension management. Clinical examination revealed typical dysmorphic syndrome and grade II hypertension. Plasma GH and IGF-1 levels were elevated at 17 ng/mL (normal < 4.7) and 544 ng/mL (normal: 32 - 238), respectively. Brain MRI showed no hypothalamic-pituitary abnormalities. Medical treatment with octreotide was proposed but could not be administered due to unavailability and high cost (480,000 CFA francs/month). Case 2 involved a 51-year-old male with a history of somatotroph adenoma resection 10 years prior, presenting with global heart failure and dysmorphic syndrome. GH and IGF-1 levels were 45.18 ng/mL (normal < 4.77) and 615 ng/mL (normal: 32 - 238), respectively. Pituitary MRI revealed a macroadenoma. Somatostatin analogs were financially inaccessible, and the patient died 4 months after presentation. **Conclusion:** These observations highlight two critical areas requiring improvement in acromegaly management strategies in sub-Saharan Africa: first, the use of advanced imaging modalities such as FET-PET/MRI and ^{11}C-methionine PET when conventional MRI is inconclusive; second, improving accessibility to somatostatin analogs and other specialized treatments to prevent irreversible complications.

Keywords

Acromegaly, Pituitary, Somatostatin, Senegal

1. Introduction

Acromegaly is a rare endocrinopathy resulting from excessive growth hormone (GH) secretion, most commonly secondary to a somatotroph pituitary adenoma [1]. The global prevalence is estimated between 40 and 125 cases per million inhabitants, with an annual incidence of 3 to 5 new cases per million [2]. Acromegaly is characterized by an insidious clinical course dominated by progressive morphological changes, cardiovascular complications, metabolic disorders, and articular complications that, without appropriate treatment, can be life-threatening [3]. Diagnosis is based on biological confirmation of GH and IGF-1 hypersecretion associated with pituitary imaging by MRI according to recently updated consensus criteria [4]. In sub-Saharan Africa, epidemiological data remain fragmented, and this pathology is probably underdiagnosed due to the inaccessibility of MRI, hormone assays, and limited awareness of its clinical manifestations among healthcare professionals [5] [6]. The management of acromegaly faces major challenges related to diagnostic limitations, therapeutic inaccessibility, and healthcare organization [7] [8]. The objective of this clinical update is to analyze these specific difficulties through two case observations and propose improvement strategies adapted to local resources in sub-Saharan Africa.

2. Cases Reports

Case 1: A 65-year-old retired female teacher with a 10-year history of bilateral bicompartmental knee osteoarthritis was admitted for management of arterial hypertension. Clinical examination revealed a typical dysmorphic syndrome including coarse facial features, enlargement of hands and feet, and grade II hypertension. Standard laboratory investigations (complete blood count, fasting blood glucose, serum calcium, renal and hepatic function tests) were normal. Plasma GH and IGF-1 levels were 17 ng/mL (normal < 4.7) and 544 ng/mL (normal: 32 - 238), respectively. Other pituitary hormone levels (TSH, ACTH, prolactin, FSH, and LH) were normal. The oral glucose tolerance was not realized. Brain MRI showed no hypothalamic-pituitary abnormalities, warranting investigation for ectopic GH secretion. Whole-body computed tomography and hypophysal MRI were unremarkable. According to current guidelines, medical treatment with monthly octreotide injections was proposed. However, the patient could not receive a single dose of octreotide due to its unavailability in Senegal and its prohibitive cost (480,000 CFA francs/month, equivalent to approximately $800 USD). Three months after the consultation, clinical signs remained stable with a 10% decrease in GH and IGF-1 levels compared to baseline values.

Case 2: A 51-year-old male patient with a history of somatotroph adenoma re-

section 10 years prior was referred by a cardiologist for specialized consultation. Eleven years prior to presentation, he had been incidentally found to have hypertension, pituitary tumor syndrome, and dysmorphic features. At current presentation, he exhibited global heart failure with impaired left ventricular ejection fraction, acromegalic facies, macroglossia, hoarse voice, clubbed fingers, and marked thickening of the palms and soles (Figure 1). Blood GH level was 45.18 ng/mL (normal < 4.77 ng/mL) and IGF-1 was 615 ng/mL (normal: 32 - 238). Pituitary MRI revealed a pituitary macroadenoma (Figure 2).

Figure 1. Dysmorphic facies in a patient monitored for acromegaly (2015).

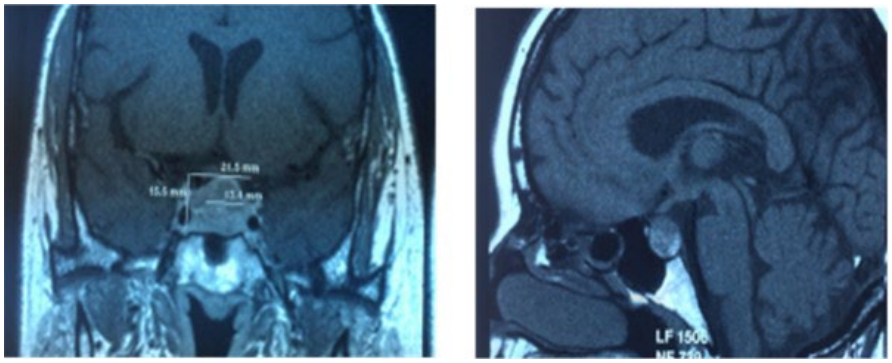

Figure 2. Pituitary macroadenoma (white arrow) in patient followed for acromegaly.

Follow-up MRI could not be performed due to the patient's orthopnea. Somatostatin analogs were financially inaccessible. The patient received symptomatic treatment for heart failure and hypertension but died 4 months after presentation, likely due to cardiac complications.

3. Discussion

Epidemiology and Clinical Presentation

In sub-Saharan Africa, epidemiological data on acromegaly remain limited,

with only sporadic cases and small case series reported in the literature. Famuyiwa *et al.* described six cases in Ibadan, Nigeria [7], while other isolated publications come from Morocco and South Africa [6] [8], suggesting probable underestimation of the true prevalence of this condition in the region. This underdiagnosis reflects limitations in diagnostic capabilities and clinical awareness among healthcare providers. Comprehensive epidemiological studies still need to be developed at regional and continental level. This is most often the result of a lack of knowledge about treatment [4] [7] [8]. The most common clinical manifestations of acromegaly include pituitary tumor syndrome in 60% - 80% of patients, followed by acromegalic features (85% - 95%), arterial hypertension (35% - 50%), diabetes mellitus (25% - 40%), and arthropathy (60% - 70%) [3] [9]. The major biological markers include elevated basal GH (>2.5 ng/mL) and IGF-1 above age- and sex-adjusted normal values, associated with failure of GH suppression (<1 ng/mL) during an oral glucose tolerance test [4].

Diagnostic Challenges

Diagnostic delay represents one of the principal obstacles to optimal management of acromegaly in sub-Saharan Africa. This delay, often exceeding 10 years, is explained by unfamiliarity with clinical manifestations among primary care professionals and inaccessibility of specialized investigations [10] [11]. Technical constraints represent a major challenge, with limited availability of specialized hormone assays and pituitary MRI [6]. Pituitary MRI demonstrates an adenoma in approximately 90% - 95% of cases, with the remaining 5% - 10% corresponding to ectopic secretion or micro-adenomas not visualized on conventional imaging [1]. Our first case exemplifies diagnostic difficulty: despite elevated GH and IGF-1, conventional MRI showed no pituitary abnormality, necessitating exclusion of ectopic GH secretion with whole-body CT imaging. Alternative imaging techniques include ^{11}C-methionine PET-scan for localization of occult adenomas and somatostatin receptor scintigraphy to evaluate receptor expression prior to medical treatment. This test is only available in a limited number of African countries. This can explain the delay and difficulty in diagnosis [4]. Advanced modalities such as FET-PET/MRI demonstrate improved diagnostic accuracy compared to conventional MRI alone and should be considered when standard imaging is inconclusive, particularly in resource-challenged settings where timely diagnosis is crucial for preventing irreversible complications.

Therapeutic Limitations

On the therapeutic level, transsphenoidal pituitary surgery remains the first-line treatment with remission rates of 70% - 80% in centers of excellence but remains largely inaccessible in sub-Saharan Africa [4] [12]. The availability of adequate neurosurgical facilities, imaging support, and perioperative care is severely limited in the region. Somatostatin analogs are financially inaccessible, with monthly costs of approximately 480,000 CFA francs ($800 USD), placing them far beyond reach of the majority of patients and healthcare systems [13] [14]. Medical alternatives such as dopamine agonists (cabergoline) offer a less expensive option but

demonstrate lower efficacy. Newer therapeutic agents, including GH receptor antagonists and combination therapies, are completely absent from the African market [15] [16]. These therapeutic limitations expose patients to severe and potentially irreversible complications. Cardiovascular complications constitute the leading cause of morbidity and mortality in acromegaly [3] [17], as illustrated by Case 2, where the patient developed global heart failure and died from cardiac decompensation. Metabolic and articular complications significantly impair quality of life [9]. Without appropriate treatment, acromegaly is associated with a 2 - 3 times excess mortality compared to the general population [18] [19].

Barriers to Optimal Care

The cases presented highlight multiple intersecting barriers to care: delayed diagnosis due to limited clinical awareness, inaccessibility of diagnostic imaging and hormone assays, financial constraints preventing access to expensive medications, and lack of specialized surgical services. These barriers are common across sub-Saharan Africa and reflect broader health system challenges including inadequate healthcare infrastructure, limited specialized training, and competing resource priorities.

Proposed Solutions

Improving acromegaly management in sub-Saharan Africa requires a comprehensive, multi-faceted approach:

- **Professional Development:** Targeted training programs for healthcare professionals addressing acromegaly's clinical manifestations and diagnostic criteria are essential to reduce diagnostic delay.
- **Technical Infrastructure:** Development of specialized laboratories for hormone assays and expansion of MRI capacity in reference centers should be prioritized. Where unavailable, regional centers of excellence should be established to serve as diagnostic hubs.
- **Therapeutic Accessibility:** Negotiation of preferential pricing for somatostatin analogs and integration into national health insurance schemes could improve medication accessibility. Generic formulations and cost-sharing programs warrant exploration.
- **Diagnostic Innovation:** In settings where conventional MRI is unavailable or inconclusive, cooperation with international centers for remote imaging consultation or telemedicine diagnostic support may improve diagnostic accuracy.
- **Regional Coordination:** The rarity of acromegaly justifies a coordinated regional approach [20], including establishment of diagnostic and therapeutic networks across countries, shared protocols, and capacity-building initiatives.

4. Conclusion

Acromegaly in sub-Saharan Africa exemplifies the challenges of managing rare diseases within a context of limited resources. Diagnostic delay, therapeutic inaccessibility, and absence of specialized organization expose patients to preventable complications and excess mortality. The two cases reported here underscore par-

ticular difficulties related to exploration of atypical forms without visible pituitary abnormality and the financial inaccessibility of specialized treatments. Improving this situation requires an integrated approach combining professional training, strengthening of technical infrastructure, improved access to specialized treatments, and regional coordination of efforts. These strategies, adapted to local realities, could significantly improve the prognosis of acromegalic patients in sub-Saharan Africa and serve as a model for managing other rare diseases in the region.

Ethical Aspects

This publication complied with ethical and professional standards, in particular the protection of patient identity and their approval regarding the use of images for educational purposes.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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