J. Oral Diag. 2023;08:e20230226.

CASE REPORT

A case report of the diagnosis and management of acromegaly in routine periodontal examination

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Abstract:

Introduction: Acromegaly is a rare endocrine disorder, presenting with orofacial manifestations during its early stages. Timely diagnosis is often not made as these symptoms overlap with other oral diseases. **Objective:** The objective of this case report is to describe an unusual detection of acromegaly in a dental setting and to provide a checklist for referral upon suspicion of acromegaly. **Materials and Methods:** This case report describes the orofacial presentation and management of a 44-year-old Chinese man, initially referred for periodontal management. He presented with Localised stage II Grade A periodontitis, class III malocclusion, mandibular prognathism, and large mandibular interproximal gaps. **Results:** A provisional diagnosis of acromegaly was made, and the patient was referred to the Department of Endocrinology. **Conclusion:** Dental practitioners can pick up patients with undetected acromegaly with early orofacial changes during routine dental visits according to a simple proposed checklist.

Keywords: Acromegaly; diastema; periodontitis; endocrinology.

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Article received on June 7, 2023.
Article accepted on August 21, 2023.

DOI: 10.5935/2525-5711.20230226

INTRODUCTION

Acromegaly is a rare endocrinological disorder attributed to excessive secretion of growth hormone, most associated with an underlying pituitary microadenoma. The tumour leads to an overproduction of insulin-like growth factor 1 (IGF-1) and growth hormone (GH) often affecting middle-aged adults[1]. Due to the insidious nature of acromegaly[2], it is usually undiagnosed for many years, which is already late into the disease progression: Chronically elevated levels of IGF-1 and GH can result in systemic comorbidities, like cardiovascular, cerebrovascular, and pulmonary dysfunction and are also associated with decreased life expectancy. A Swedish epidemiological report reported an association between the duration of diagnostic delay and the number of co-morbidities[3]. Therefore, the early diagnosis and treatment of acromegaly are important in reducing multi-systemic morbidity and mortality[4].

Acromegaly is characterised by post-pubertal skeletal and soft tissue enlargements and broadened extremities. It also presents with orofacial manifestations[5] like widening interdental gaps. This may overlap with pathologic teeth migration (PTM) due to compromised periodontal support, occlusal discrepancies, pathology, and oral habits[6]. PTM is a clinical feature of advanced degrees of periodontitis because of severe clinical attachment loss. Thus, in the absence of classic PTM-associated factors and when systemic changes are observed, the clinician may have a strong clinical index of suspicion towards acromegaly as a differential diagnosis. Orofacial changes associated with acromegaly may thus be recognised during regular dental appointments. To the best of our knowledge, this is the first case report documenting a rare incidence of identifying undiagnosed acromegaly following a routine periodontal assessment.

CASE REPORT

A 44-year-old Chinese male with no prior relevant medical history was referred to the National Dental Centre of Singapore, on 1 November 2021 for periodontal management. His chief complaint was a dull ache in the upper right quadrant and widening gaps between his mandibular incisors. The patient complained of progressive mandibular prognathism over the past 10 years and confirmed that the interdental spacing was not observed prior to this.

Extraoral examination revealed frontal bossing and mandibular prognathism. Intra-oral findings revealed bilateral posterior open bite, reverse overjet, and overbite (Figure 1). Generalised maxillary and

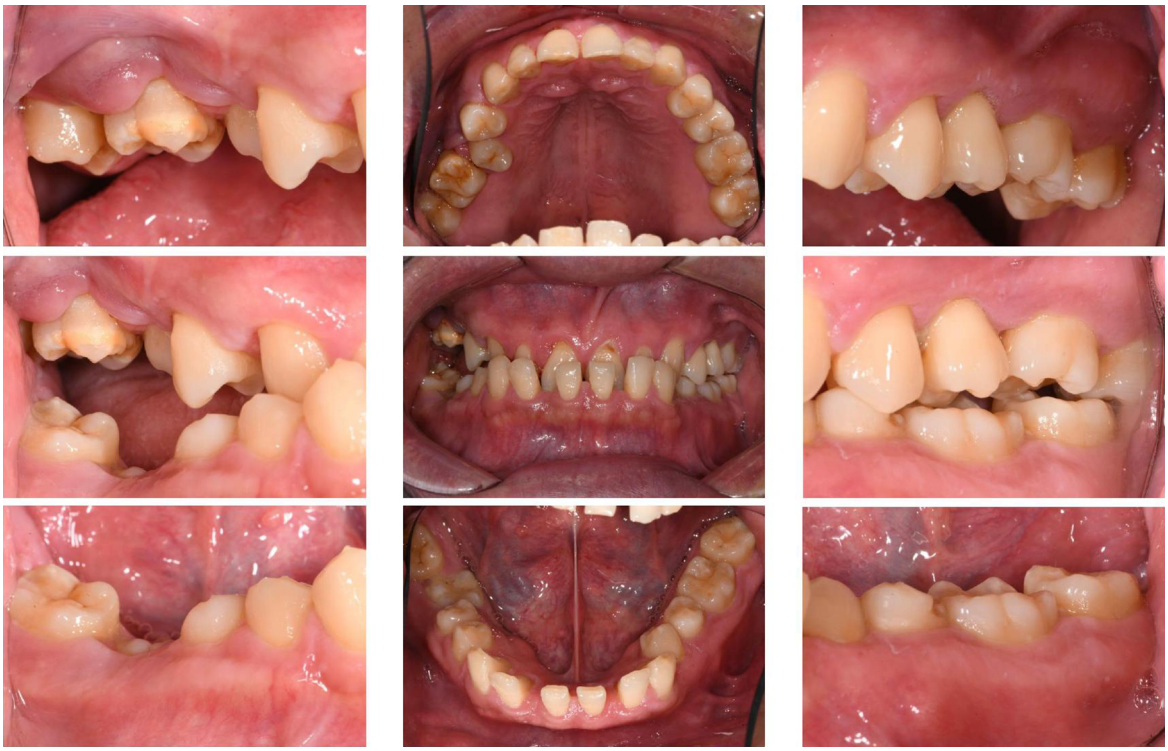

Figure 1. Full mouth intra-oral photographs taken on November 2021, showing class III malocclusion and severe underbite.

mandibular incisors diastemas were also present with poor oral hygiene. He was diagnosed with Localised Stage II Grade A periodontitis. Full mouth periodontal examination revealed probing depths of 5-10 mm, localised to the maxillary and mandibular posterior teeth. Bleeding on probing was 41.07%.

Radiographic findings showed 10% horizontal bone loss with infra-occluded #16, #15 and #46. #36 and #46 presented with hypercementosis (Figure 2).

CASE MANAGEMENT

Based on the patient's complaint of interdental gaps, he was requested to bring his old photos subsequently for comparison with his current orofacial features. The photo taken in 2005 displayed a class I dental malocclusion pattern which is suggestive of a normal class I skeletal relationship. A provisional suspicion of undiagnosed acromegaly was made based on the above intraoral clinical findings and comparison and he was promptly referred to the Singapore General Hospital Department of Endocrinology for further investigations.

The patient's laboratory test findings showed his Somatomedin C, somatotropic test and thyroid panel with elevated IGH-1/GH levels and thyroid-stimulating hormone (TSH). Further blood tests confirmed pre-diabetes, hypogonadism, and hypocortisolism. Magnetic resonance imaging (MRI) of the pituitary fossa confirmed the presence of a microadenoma. A small hypo-enhancing focus of approximately 8x3 mm was seen along the floor of the pituitary fossa, extending slightly to the left. No deviation of the pituitary stalk, invasion of the cavernous sinus, or compression of the optic chiasms or optic nerves was noted. A suprasellar extension was also not observed.

The MRI findings were correlated with the biochemistry findings and a diagnosis of a pituitary microadenoma was made by the endocrinologist. The patient was first managed with pharmacological treatment (Hydrocortisone 10 mg and Carbimazole 10 mg). Subsequent surgical excision of the pituitary tumour (microadenoma) via transsphenoidal approach was performed in June 2022 and the histopathology report confirmed the tumour to be a pluri-hormonal adenoma. Resection of the tumour resulted in the normalisation of IGF-1 and GH, and pharmacological intervention was subsequently discontinued.

To address the patient's periodontal problems, non-surgical periodontal therapy (NSPT) consisting of quadrant root surface debridement was performed under local anaesthesia. Oral hygiene instructions and education was also delivered to the patient. Thereafter, the patient was placed on supportive periodontal therapy.

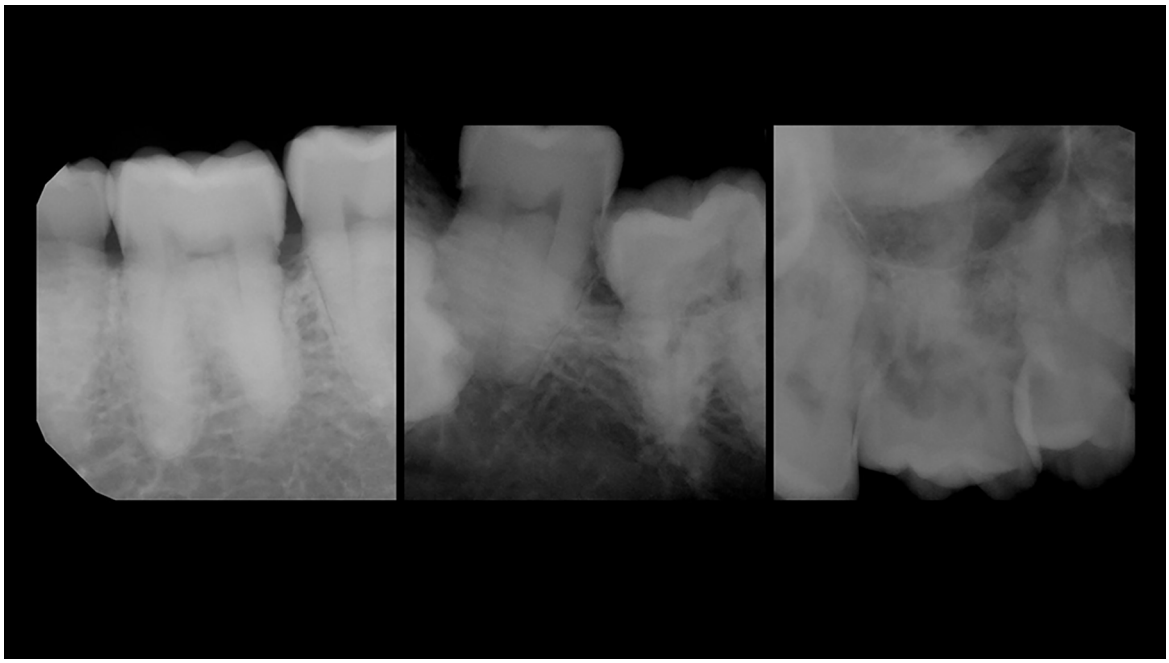

Figure 2. Peri-apical radiographs taken on November 1, 2021 showing hypercementosis and infraocclusion.

CLINICAL OUTCOMES

The patient had 3 monthly reviews with the endocrinologist for clinical monitoring post-operatively.

After NSPT was completed, the posterior teeth had residual probing depths likely attributed to his thick gingiva phenotype and submerged #16, #15 and #46.

DISCUSSION

This report illustrates a case of undiagnosed acromegaly first suspected in a dental setting during a referral for periodontal management[6]. Acromegaly is characterised by changes in facial and dental features[7], where widening interdental gaps is a common presentation. Hypercementosis has also been reported as a feature[5]. Acromegalics exhibit post-pubertal skeletal and soft tissue enlargements, broadened extremities, and stubby fingers, complicated by multi-systemic comorbidities. Post-pubertal mandibular growth is also reported in 22-24% of patients, resulting in a Class III dental and skeletal profile[5]. Both mandibular prognathism and macroglossia[5] contribute to dental malocclusion, which affects the patient's overall function and aesthetics[8]. A diagnostic tool for acromegaly, ACROSCORE[2], currently includes diastemas in teeth as the only oral manifestation.

A survey showed almost a third of acromegalics reported more frequent dental visits with 9.8% of them noticing dental changes. Despite more frequent dental visits, the attending dentists did not suspect acromegaly among these patients who were much later diagnosed by other healthcare providers[9]. The similarities between dental-associated PTM and early manifestations of acromegaly pose challenges in the early detection and management of this condition. In a questionnaire study which included general dentists and orthodontists, the latter were better able to detect the enlargement in the Sella turcica in the radiographs compared to the general dentists. Hence, it was proposed that orthodontists might be better poised to detect acromegaly as compared to general dentists[10]. However, general dentists are often the first point of contact for patients. Therefore, increased awareness among dental clinicians may improve the likelihood of early diagnosis, with early recognition of the disease and appropriate medical referral.

As such, we propose a flowchart and checklist to help general dentists with timely referrals of suspected acromegaly (Figure 3 and Table 1).

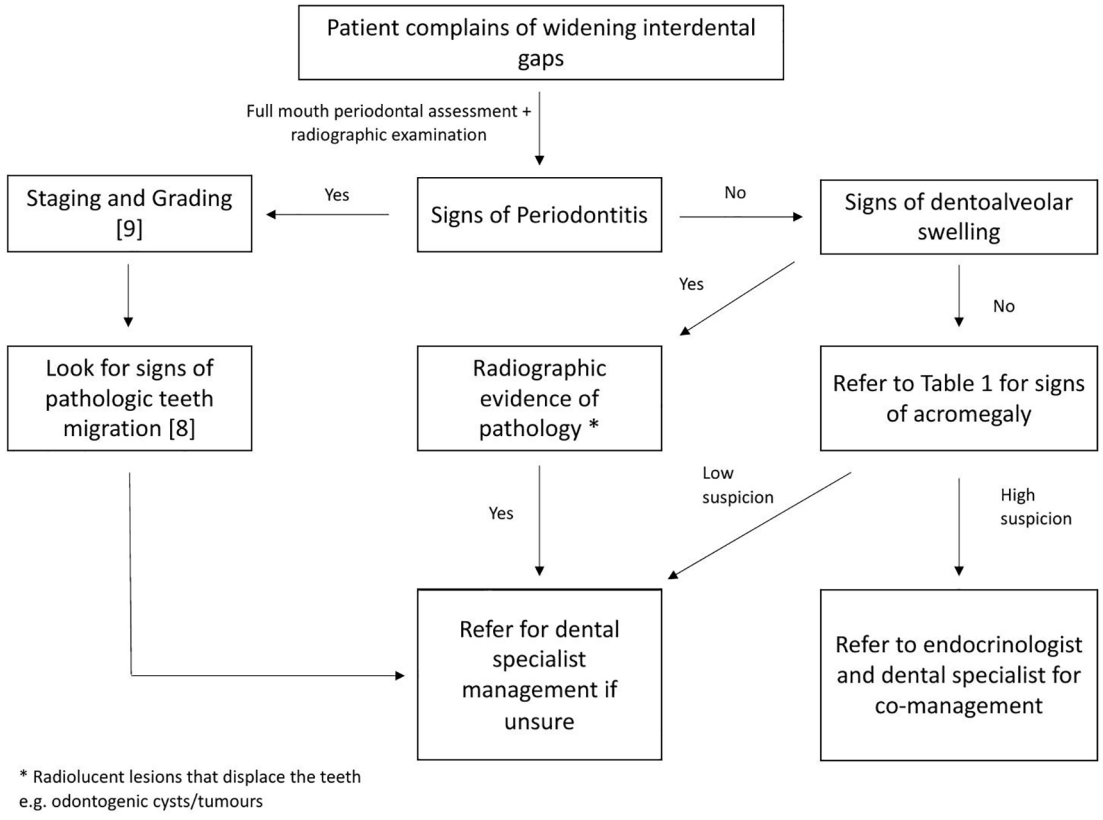

Figure 3. Proposed flowchart for referral for general dentists.

Table 1. Proposed non-exhaustive Oro-facial checklist for suspected acromegaly.

Extra-oral	•	Mandibular prognathism
	•	Growingtaller (2)
	•	Larger extremities (hands and feet) (2)
	•	Frontal bossing
	•	Thickened soft tissue
	•	Large and wide nose
Intra-oral	•	Increased interdental gaps NOT due to periodontal pathological migration (6)
	•	Class III dental relationship (2)
	•	Submerged teeth
	•	Deranged occlusion
	•	Macroglossia (5)
Radiographic	•	Hypercementosis (5)
	•	Ankylosis
	•	Detection of a radiopacity on the Sei Ia turcica with a lateral cephalometric radiograph. (10)
	•	Post-pubertal growth of mandible (if previous records were available).
Photographic records	•	Previous orthodontic and photographic records (10)

CONCLUSION

The oral manifestations play a critical role in the diagnosis of acromegaly, which otherwise is an insidious disease. This report summarises the common signs and symptoms of the disease. Dentists are in a prime position to detect manifestations of acromegaly and offer a prompt medical referral. A delay in diagnosis may lead to serious multi-systemic complications. The simple checklist proposed in this report aims to provide clinicians with a diagnostic algorithm to aid in the early detection and holistic management of patients with acromegaly.

ACKNOWLEDGEMENTS

The authors also declare that they did not receive any financial support for this case report. The authors report no conflicts of interest related to this case report. The patient's consent has been sought and approved for this publication.

AUTHOR CONTRIBUTIONS

The authors contributed equally to the preparation of this case report, including the photographs and clinical charts. The management of the case is by the authors, Dr Choo Hui Jia Sophia (initial periodontal treatment and post-instrumentation reviews) and Dr Chee Hoe Kit (periodontal maintenance).

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