Dental Awareness

The role of dental professionals in **diagnosing acromegaly**

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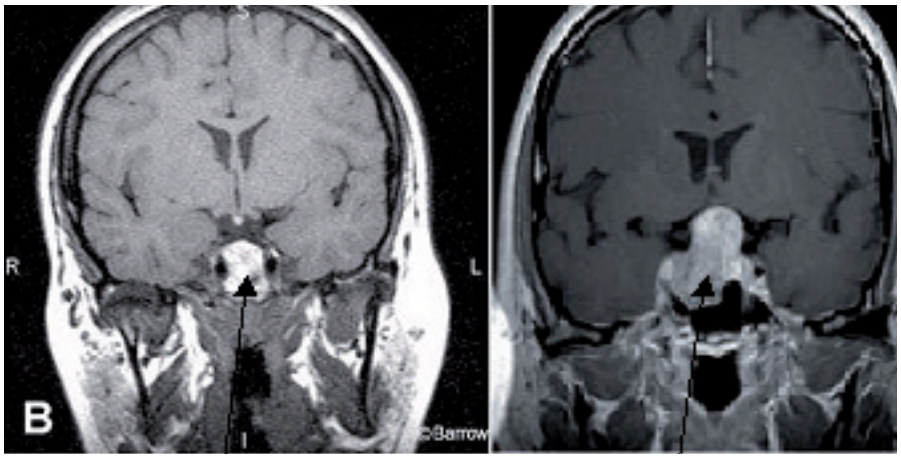
One of your patients is likely to have acromegaly
Think acromegaly before you see acromegaly

Over half of acromegaly patients reported dental changes (jaw & bite changes, increased tongue size, increased tooth gap) prior to diagnosis.[1]

Acromegaly is a condition caused by excessive growth hormone production by a pituitary tumour, with serious complications if left untreated. Recent studies[2, 3, 4] suggest a "prevalence as high as 1000 per million patients"[5] and an average diagnosis delay of 5-10 years after symptom onset, [6, 7] resulting in reduced quality of life [8, 9] & increased mortality[10].

A pituitary tumour (or adenoma) is a benign growth on the pituitary gland. The tumour maybe 'non-functioning' (does not affect hormone production), or may secrete excessive hormones. Additionally, the tumour can push on the normal pituitary gland leading to reduced hormone production (hypopituitarism) or visual upset. There are several different types of pituitary tumour depending on how it affects hormones in our body. This article will focus on acromegaly.



Normal pituitary

Pituitary tumor pushing onto normal pituitary gland

What is Acromegaly?

Acromegaly is a condition caused when a pituitary tumour produces too much growth hormone (GH).

Acromegaly usually develops between the ages of 30 and 50, but can occur at any age. If the condition develops before a person has stopped growing (before age 15-17yrs), it causes gigantism, when a person grows far taller as GH causes continued bone growth prior to epiphyseal fusion.

There is usually a 5-10 year delay[9, 10] between symptom onset to diagnosis of acromegaly, frequently more than 10 years, the insidious onset of symptoms and its rarity making diagnosis difficult. Late diagnosis can result in irreversible changes, leading to reduced quality of life[8, 9] and increased mortality.[10]

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How common is acromegaly?

Acromegaly has traditionally been considered a rare disease with an estimated prevalence of 40-60 cases per a million people. Gender and ethnicity do not appear to affect acromegaly prevalence. However, recent studies[2, 3, 4] shows the prevalence could be "as high as 1000 per million"[5] patients. This means there are people in the community with acromegaly whose diagnosis have been delayed or missed. Routine dental visits by patients are an ideal time to make the diagnosis because of the high prevalence of oral symptoms that occur with acromegaly. An increased awareness of acromegaly among primary care clinicians will improve early recognition of symptoms and signs of acromegaly and would reduce delays in time-to-diagnosis, enable earlier treatment, and may improve outcomes for patients with acromegaly.[1]

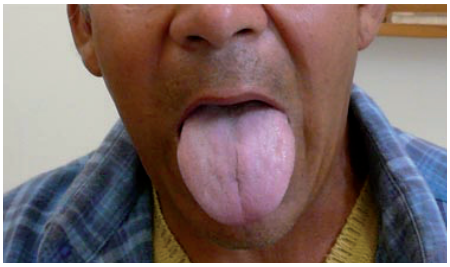
What should dental professionals look for?

Acromegaly may not manifest with clear clinical symptoms, particularly early in progression.[11] This may mean the earliest signs of acromegaly is identified by dental professionals.

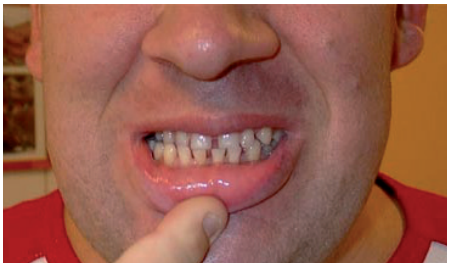
Oral manifestations

Observations may include the following:

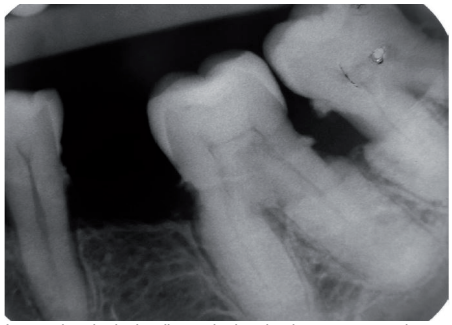
- Mandibular changes – Thickening of the mandible. Growth in condyle and ramus leading to development of a class III malocclusion in adulthood with an associated mandibular prognathism
- Widening of the maxilla
- Increased height and thickness of alveolar processes
- Occlusal changes - Over-eruption of posterior teeth (compensating growth of mandible). Buccal flaring of mandibular posterior teeth. Increased spacing between teeth, anterior flaring, anterior open bite.
- Hypercementosis
- Macroglossia and associated speech difficulty
- Increased difficulty with chewing
- Ill-fitting dentures
- Jaw and muscular pain
- Radiographic changes. Enlarged sella turcica, enlargement of the paranasal sinuses (especially the frontal sinus), steep mandibular angle and class III profile, Increased gonial angle



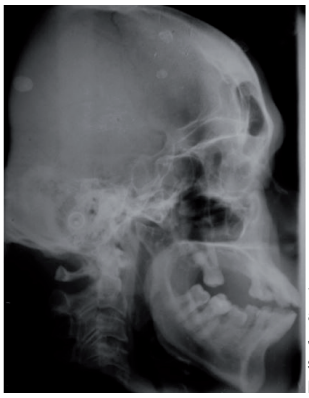
Large size of tongue in a patient with acromegaly.
Image from 'FIPA Patients' Family Isolated Pituitary Adenoma Patients charity group www.fipapatients.org/disorders/sporadicpituitaryadenomas



Increased space between teeth in a patient with acromegaly.
Image from 'FIPA Patients' Family Isolated Pituitary Adenoma Patients charity group www.fipapatients.org/disorders/sporadicpituitaryadenomas



Intraoral periapical radiograph showing hypercementosis in relation to molars. Roopashri et al, Dental patient with acromegaly: a case report. Journal of oral science, Vol 53, No 1, 2011.



Lateral cephalogram showing enlarged sella turcica, enlarged frontal sinus, steep mandibular angle and class III profile with prognathic mandible.

Roopashri et al, Dental patient with acromegaly: a case report. Journal of oral science, Vol 53, No 1, 2011.

- **Facial changes** - Thickened and widened nose, prominent malar bones, thick lips, marked facial lines, thickened forehead and overlying skin, frontal bossing
- **Other changes** - Enlarged hands and tight finger rings, enlarged feet with increased shoe size, increased snoring and sleep apnoea syndrome, headaches, fatigue, joint pains, carpal tunnel syndrome, multinodular goitre, unusual sweating, hypertension and heart disease, diabetes, sexual dysfunction, amenorrhea, visual field loss, colon polyps, deepening voice

Photos showing progressive facial changes that occurs in acromegaly

As you can see the progressive changes occur over many years, earlier diagnosis enabling earlier treatment will improve the quality of life[8, 9] and reduce morbidity and mortality.[10]

When and where to refer?

If you suspect your patient has features suggestive of acromegaly, a referral to his/her GP or an endocrinologist should be made. A general practitioner can liaise with an endocrinologist and arrange initial screening blood tests such as serum IGF-1 (insulin-like growth factor 1). A single GH (growth hormone) level is not sufficient to diagnose acromegaly, as GH is secreted by the pituitary in spurts and results can vary widely from minute to minute. IGF-1 mediates the growth promoting actions of GH and levels are stable during the day, hence high levels are a sign of excess GH activity. An MRI scan of the pituitary is used to locate and detect the size of the tumour causing excessive GH production. Other tests may be carried out on an individualised basis.

Treatment for acromegaly

The goals of treatment are to reduce excess GH and IGF-1 to normal levels, to improve the symptoms of acromegaly and prevent complications of the disorder from developing. First line treatment is pituitary surgery, usually carried out by operating through the lining of the nose using stereoscopic transsphenoidal surgery. The smaller the tumour (microadenomas are less than 1cm in size), the more likely it can be completely removed by surgery. Complete removal of large tumours (macroadenomas larger than 1cm) can be difficult and inaccessible areas of the tumour maybe left in place. When the pituitary tumour is not completely removed by surgery, GH and IGF-1 levels remain high, further treatment will need to be considered using drug therapy and/or radiotherapy.

Ongoing dental care for patients diagnosed with acromegaly

Patients who have been diagnosed with acromegaly should have a carefully considered recall plan based on a comprehensive risk assessment including factors related to the acromegaly. Consideration should be given to more frequent recalls to monitor (and as necessary adjust) occlusal changes. Regular study models, photos, and radiographic records may be considered to monitor for changes. Occlusal appliance therapy, physiotherapy, and pain medications may be indicated. Orthodontic and prosthodontic rehabilitation, and tongue and jaw surgery may be indicated but only when the disease is well controlled.

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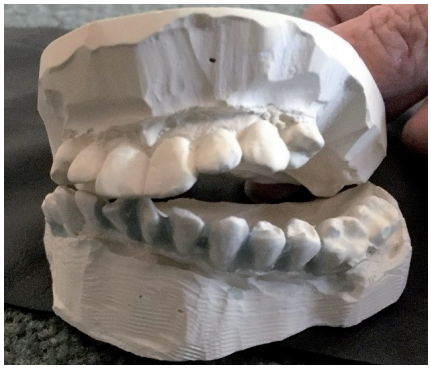
Case Study

Mrs D was diagnosed with acromegaly in 2001 and had surgery to remove her pituitary tumour in 2002. Because the tumour was large she was not biochemically cured, her tongue continued to enlarge and her jaw grew resulting in significant occlusal changes and difficulty chewing of food. Also, due to her enlarged tongue, she could not close her mouth properly, causing her to be self-conscious and affecting her self-esteem.

Unfortunately, during a 15-year medical diagnosis and treatment period, referral to a dentist for multidisciplinary management did not occur. It wasn't until early 2016 that her new dentist suggested she may benefit from surgical intervention. In May 2016 a specialist oral and maxillofacial surgeon completed tongue reduction surgery. Despite a slow recovery and some complications, she is pleased that her appearance and speech have improved following the surgery. She continues to have trouble eating. "I just have to be careful not to lose any teeth as I could never have dentures because of my jaw deformity." Earlier consultation with dental professionals may have provided the opportunity for earlier and ongoing improved aesthetics, function and quality of life.

Conclusion

Dental professionals may be the first health professional to note early symptoms and signs of acromegaly, and making an early referral to the patient's GP or an endocrinologist is recommended. Patients with acromegaly can benefit from multidisciplinary management, including by dental professionals, soon after diagnosis.



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If the information helps you identify an acromegaly patient, please let us know at info@acromegaly.org.nz

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