

Management of drug-induced gingival enlargement

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SYNOPSIS

Healthy gums are pale pink or pigmented, and wrap tightly around the neck of the teeth. Gingival enlargement is an unwanted adverse effect of some drugs such as cyclosporin, phenytoin and calcium channel antagonists. This can be a cosmetic problem, interfere with eating and speech, impede effective tooth cleaning or force the teeth out of alignment. Gingival enlargement can be managed locally and systemically with a combination of medical and dental treatment. Co-operative teamwork and good communication between the patient, their doctor and their dentist are essential.

Index words: periodontal disease, cyclosporin, phenytoin, calcium channel antagonists.

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Periodontal disease

The periodontal diseases are a family of chronic inflammatory diseases that involve the periodontium – the bone and soft tissues that support the teeth in the jaws. They are the most common infection in humans. These diseases are caused by bacterial plaque that grows on the teeth and the immune response to that chronic infection.

Gingivitis and periodontitis are the two main periodontal diseases and may be present concurrently. Gingivitis is inflammation of the gingival margin. It affects approximately 45% of the adult population in Australia and is characterised by redness and swelling or oedema of the gingival margin around the neck of the teeth. Periodontitis is a more severe condition. It afflicts 15–20% of the adult dentate population and causes loss of the bone supporting the teeth. Signs of periodontitis include, in addition to signs of gingivitis, recession of the gums, tooth looseness, changes in tooth alignment, and halitosis. The commonest sign of either gingivitis or periodontitis is bleeding gums which can be provoked by toothbrushing, flossing, and eating hard foods, but can also be spontaneous. The absence of bleeding does not necessarily indicate the absence of periodontal disease, particularly in smokers.

Periodontal practice today is largely evidence-based. It aims to reduce inflammation by cleaning the teeth to remove plaque, and by using various treatment modalities to prevent or limit further plaque accumulation. A patient's management of their plaque control is central to successful periodontal treatment, but the response to treatment will also be influenced by factors such as genetic susceptibility to periodontal disease and background systemic disease.

Drug-induced gingival enlargement

Drug-induced gingival enlargement was first observed in patients who were taking phenytoin for epilepsy, with approximately 50% having gingival overgrowth. Cyclosporin is an immunosuppressant which has been reported to cause gingival enlargement in 25–80% of patients.^{1,2} The calcium channel antagonists can also cause gingival enlargement. The dihydropyridines (e.g. nifedipine, felodipine, amlodipine) tend to be more commonly associated with gingival enlargement than the other sub-groups of calcium channel antagonists. Prescription of calcium channel blockers is relatively common, making it difficult to determine the true incidence of drug-induced gingival enlargement. Some of the variation in incidence of gingival enlargement can be attributed to differences between study populations and methods of classifying its severity.

Clinical presentation

Gingival enlargement usually develops in a susceptible individual within a few months of starting the medication. Drug-induced gingival enlargement consists of soft tissue growth that begins between the teeth and increases in all directions. As the tissue enlarges it develops a characteristically thickened and lobulated appearance. It may partially or completely cover the tooth surfaces, including the occlusal (chewing) surfaces, as well as extending the other way, into the sulcus. The epithelial surface is usually smooth and fibrotic, but can be nodular in cyclosporin-induced enlargement. If there is underlying periodontal disease then the tissues may be inflamed, red or purplish in colour, and highly vascularised, with a tendency to bleed profusely (Fig. 1).

Gingival enlargement tends to be more severe in areas where plaque accumulates, such as at the edges of fillings and around orthodontic appliances. It is rarely seen in edentulous areas. Gingival enlargement impedes effective plaque control and regularly traps plaque or food, producing halitosis or suppuration. There is a tendency for gingival enlargement to be distributed symmetrically and for the anterior teeth to be more severely affected than the posterior teeth.

Clinical parameters such as the standard of oral hygiene, drug dosage, and serum and salivary levels have some relationship to the incidence of gingival enlargement. Generally, a higher dose and poorer plaque control – or more plaque retentive sites – are more likely to be associated with gingival enlargement. However, there is no direct relationship and these factors do not fully explain the incidence or the characteristics of the lesion.

Fig. 1

Gingival enlargement

a. Mild-moderate: gingival enlargement induced by cyclosporin and diltiazem



b. Severe: gingival enlargement induced by cyclosporin, nifedipine, amlodipine



c. Healthy gingival tissue



Management of gingival enlargement

In addition to plaque control and medical management, periodontal surgical treatment and multidisciplinary dental care are key strategies in managing gingival enlargement.

Mild gingival enlargement may only require local management as improvement in oral hygiene, together with professional cleaning of the teeth, can lead to resolution of inflammation and reduction in gingival enlargement. Treatment planning becomes more complex where there is periodontitis plus

gingival enlargement that is a cosmetic or functional problem. Periodontitis can be treated using conventional clinical care, but the gingival enlargement may require changes to the medication regimen, periodontal surgery to remove excess tissue, or a combination of the two.

Plaque control

Effective plaque control can reduce and prevent gingival enlargement. Most people clean their teeth, but not particularly effectively. It is important that the dental professional encourages improved tooth cleaning in a supportive and positive manner, as well as providing information about the role of dental plaque in promoting gingival overgrowth. Mild gingival enlargement will often diminish with removal of plaque and calculus deposits. Even moderate gingival enlargement may reduce enough to avoid surgical intervention.

Attempts at improving oral hygiene are of limited benefit in severe gingival enlargement – surgical gingival resection is indicated. Chlorhexidine 0.1% should be rinsed two or three times daily for the first few postoperative days, with careful mechanical cleaning introduced gradually as it becomes more comfortable. Areas that are not included in the surgery can be cleaned as usual. The efficacy of chlorhexidine may be reduced by toothpaste because of a chemical interaction. The interval between toothbrushing and rinsing should therefore be at least 30 minutes.³

Many patients who take drugs that induce gingival enlargement will have some gingival growth between the teeth and thickening of the gums. It follows then that when they brush their teeth they risk either traumatising the soft tissue or inadequate cleaning of the crown of the tooth close to the gingival margin. Flossing is difficult and using interproximal brushes and woodsticks is often out of the question when gingival enlargement is present.

Plaque can be removed by cleaning each tooth separately, holding the brush in line with the long axis of the tooth. The narrower dimension of the head of the brush then fits in between the papillae (the part of the gum between the teeth). Another option is to use an electric toothbrush with a round head to clean the teeth in the same longitudinal fashion. Cleaning plaque from between the teeth can also be carried out if the patient is shown how to gently slide dental floss or tape along the tooth surfaces and under the edge of the gum. Thorough cleaning by brushing and flossing should be carried out at least once daily.

Medical management

Many cases of gingival enlargement will respond to local treatment, but consideration should be given to altering the medication if gingival enlargement covers more than about a third of the tooth surface. When possible, reducing the dose or changing to another drug may bring about partial or complete regression of the lesion. Most patients will observe an alteration in the soft tissues within a few days. If a person continues taking the same gingival enlargement-inducing medication then they should be warned of the possibility of gingival

enlargement recurring despite periodontal treatment.

Several alternatives to phenytoin are available, but they may not be as well tolerated or they may not control seizures as well. Some patients can switch to a lower dose of phenytoin combined with another anticonvulsant.

If a patient develops gingival enlargement as a result of taking a particular calcium antagonist, they will usually also develop it in response to other calcium antagonists. Alternative classes of antihypertensive medication may be suitable for patients who are being treated for hypertension.

The dose of cyclosporin may be reduced in the course of medical treatment, and can also be reduced in some cases where patients are on a maintenance dose, with no adverse effects. Once the gingival enlargement is drawn to the treating physician's attention, it may be possible to maintain a patient on a lower dose.

Changing from cyclosporin to tacrolimus can be considered if significant gingival enlargement recurs after excision. Tacrolimus has a different toxicity profile and is not associated with gingival enlargement. It has the same interactions with diltiazem, which could still be used, producing a residual but diminished gingival enlargement.

Conclusion

Gingival enlargement is an under-recognised adverse effect of cyclosporin, phenytoin, and the calcium channel antagonists. Medical practitioners and pharmacists are ideally placed to advise patients of the possibility of this effect and emphasise the importance of maintaining good oral hygiene as a preventive measure. Doctors can identify the problem by looking in the patient's mouth and can then refer the patient for dental management if necessary.

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FURTHER READING

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Conflict of interest: none declared

Self-test questions

The following statements are either true or false (answers on page 23)

5. Among the calcium channel antagonists, gingival enlargement is most frequently associated with dihydropyridines.
6. Gingival hypertrophy occurs in less than 5% of patients treated with phenytoin.

The painting on the cover

Australian Prescriber's international readership is growing. To identify the journal as distinctively Australian, the cover features an Australian Aboriginal painting. Jennifer Summerfield, the Aboriginal artist, from the centre of Australia, created the painting in 1998 for National Medicines Week. The central icon is of a gathering of people sitting around a fire, talking. Jennifer's story follows:

I'm Jennifer Summerfield. I am a Pitjantjatjara woman. I live at Umuwa on the Anangu Pitjantjatjara Lands in the north west of South Australia. I work as an Anangu Health Worker for Nganampa Health Council. I am the artist who did the painting for National Medicines Week.

This painting is about using medicine properly, especially for older people. Store your tablets in a cool place or in your bag away from kids and other old people. Take your medication at the right time with the pictures of the sun

showing in the morning, at midday and in the evening. Don't throw your medicines on the ground. If you don't take your tablets you may be blind or never walk again. This is what the painting is about.

The older people in the middle of the painting are keeping their medicine safe in a bag. The people in each corner have not taken their medicines and have become blind or crippled. There is the sun to tell them to take their medicine, in the morning, at midday and in the evening. People at the middle top of the painting are taking their medicines. People down the bottom of the painting sometimes take their medicine and sometimes throw it away. Then young kids can find that medicine and take it and become sick. The two black paintings show that when people don't take their medicine properly, they die. Around the outside of the painting are a few bush medicines.