Periodontal conditions of relevance to the Australian Defence Force

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Synopsis

- The dental problems of members of the ADF are no different from those of the general public.
- The incidence of acute and other specialised conditions affecting the periodontal tissues in the ADF is largely unknown.
- Many acute and other specialised conditions affecting the periodontal tissues can be debilitating and are thus of particular significance to members of the ADF.
- Early diagnosis on the basis of signs, symptoms and appropriate clinical tests is crucial and will lead to an accurate diagnosis and correct treatment. It is important to remember that some conditions may mimic others (eg, acute necrotising ulcerative gingivitis/HIV infection, periodontal abscess/periapical abscess).
- Periodontal conditions can be quite debilitating or indicate the presence of more severe underlying systemic problems, and thus dentists (and medical practitioners) must be aware of the likely manifestations and complications of these problems.

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ALTHOUGH THE DENTAL CARE of members of the Australian Defence Force is of a high standard and, in the main, carried out by permanent and reserve dental officers and specialists, this was not always the case.

At the start of World War I, in 1914, the Australian Imperial Force had no dental officers. Dentistry was supposedly to be carried out by Regimental Medical Officers, who were issued with four dental forceps each. They were assisted by dentists who had enlisted as infantry, stretcher bearers and other ordinary ranks, some of whom had brought their own dental kits. They performed their primitive dentistry after standing down from their normal duties.[1]

The result of this was quite disastrous. Evacuation for dental causes from Gallipoli in 1 Division alone was 600 by July 1915. (These figures were a vast improvement on the dental casualties of the Boer War, when 28 000 troops were incapacitated because of defective teeth and quite a few died from the effects of abscessed teeth).[1]

Fortunately, sense finally prevailed and, in July 1915, six dentists with the rank of honorary Lieutenant were sent to Egypt along with support staff.[2] From these humble beginnings grew the Royal Australian Army Dental Corps followed by the dental branches of the Navy and Air Force.

Group Captain David Keys has had 29 years service in the RAAF Reserve, having commenced his career as a Dental Officer in 23 Squadron in 1971. At present he is Principal Reserve Dental Officer for Queensland and Consultant in Periodontics to the DGDHS. In civilian life he is in private practice as a specialist periodontist in Brisbane.

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The dental problems of members of the ADF and the incidence of periodontal disease (gingivitis and periodontitis, diseases of the tissues surrounding the teeth) are similar to those of the general public.[3] However, because of the nature of the members of the Defence Force (including age, fitness, conditions of service and deployment) there are some differences in periodontal conditions suffered.

Periodontal disease is of particular significance in the ADF because many of these conditions can be debilitating or represent significant underlying systemic health problems. This article reviews specific acute and specialised periodontal conditions that may affect members of the ADF.

Acute traumatic ulcerative lesions

Clinical features

The clinical features of acute traumatic ulceration of the periodontal tissues usually leave no doubt as to the diagnosis.[4] There is generally a single lesion in the form of irregular ulceration or

a transient vesicle, which quickly ruptures, associated with a history of trauma in the form of a toothbrush, hot food or drink, or chemical burns (Figure 1).

Treatment

Treatment involves removal of the cause, allowing the wound to heal without interference. Necessary palliative care is taken in the form of analgesia and the application of a protective emollient like Orabase.

Periodontal abscess

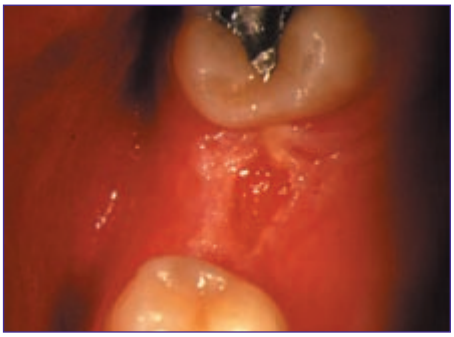
Clinical features

The symptoms of a periodontal abscess include well localised pain in the tissues surrounding a specific tooth and tenderness to percussion.[5] Only rarely is there systemic involvement.

The clinical signs of a periodontal abscess vary depending on how long the abscess has been established. Invariably there will be gingival swelling, sometimes with suppuration from the gingival sulcus. As a general rule, a periodontal abscess manifests as swelling at or coronal to the mucogingival margin (Figure 2). Tooth mobility is often present, with the tooth slightly extruded from the socket.

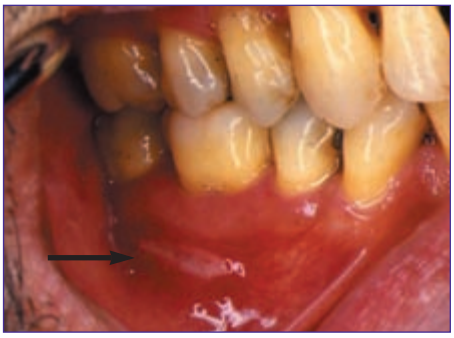
It is important to distinguish a periodontal abscess from a pulpal (periapical) abscess, as both have different causes and requirements for treatment. A periapical abscess requires extirpation of the pulp, while a periodontal abscess requires external drainage and root surface debridement. The most important aid to differential diagnosis is pulp-vitality testing along with radiograms and an examination to ascertain if any other periodontal disease is present. Generally, if a single abscess in an otherwise periodontally healthy mouth is noted then a diagnosis of an abscess other than periodontal must be considered. Conversely, the

1 Acute traumatic injuries to gingival tissues



A. Traumatic ulcer arising from biting into a chop bone.

B. Self inflicted gingival recession from fingernail scratching habit.



C. Acute ulcer arising from aggressive tooth brushing.

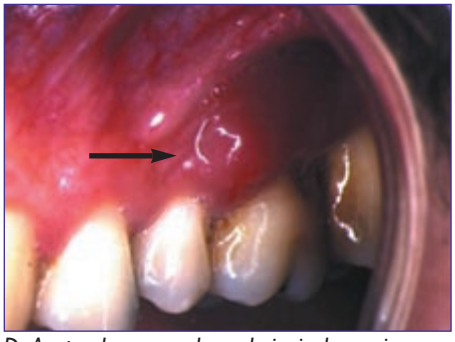
D. Acute ulcer arising from placement of aspirin in gingival sulcus to alleviate toothache.

2 Periodontal abscess

A. Acute periodontal abscess in buccal gingiva adjacent to mandibular first molar.

B. Chronic abscess on labial gingival margin of maxillary incisor.

C. Chronic abscesses on labial gingiva of maxillary incisor.



D. Acute abscess on buccal gingival margin adjacent to maxillary first molar.

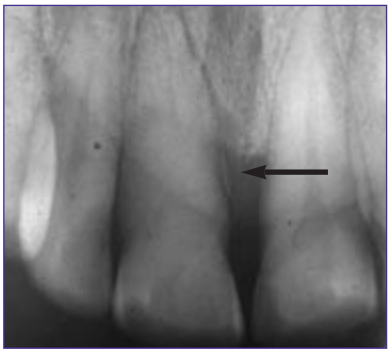
appearance of an abscess within the periodontal tissues in a mouth clearly affected by periodontal disease would be highly suggestive of a periodontal abscess.

Treatment

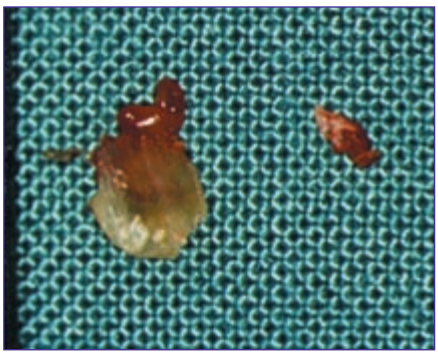
The essence for management of any abscess is to establish drainage. For a periodontal abscess this may be achieved via extraction of the tooth, incision (curettage) through the gingival sulcus, or by an external incision.[6] This local treatment may be assisted by systemic antibiotics, but these are generally not required provided adequate drainage can be established and there is no evidence of systemic involvement. Often, an abscess may be best managed via surgical debridement to ascertain the cause (Figure 3). When the acute phase has been resolved, the generalised periodontal disease must be treated.

3 Chronic abscess associated with foreign object

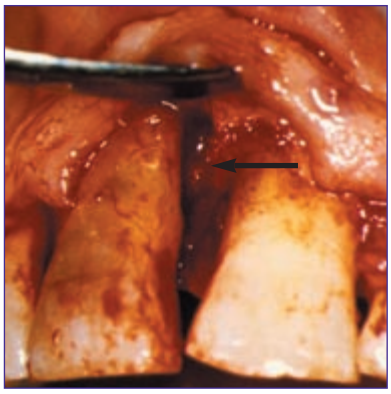
A. Labial swelling of gingiva adjacent to maxillary central incisor.



B. Radiograph showing presence of foreign object on mesial surface of maxillary central incisor.



C. Foreign object removed from site.



D. Bony defect resulting from chronic irritation.

Periocoronitis

Clinical features

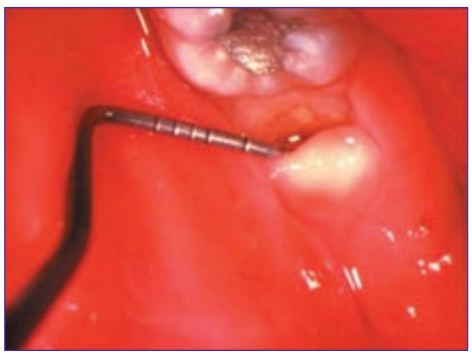
Pericoronitis is an acute inflammatory lesion affecting the operculum (flap of gingiva) overlying an unerupted tooth. Young adults are most commonly affected (which makes this a common affliction in the ADF) and the most frequently involved tooth is the lower third molar, which is often only partially erupted (Figure 4).

Pericoronitis classically presents with a history of acute pain along with swelling of the pericoronal tissues, and quite often tenderness on closing because of the occlusion of the swollen tissue with the opposing tooth. Occasionally there is facial swelling, along with some maxillary and cervical lymph gland involvement. Quite often the area may be the site of superimposed acute necrotising ulcerative gingivitis.[7]

Treatment

Drainage must be carried out immediately by debridement and irrigation under the pericoronal flap. Extraction or grinding of the opposing tooth may need to be done and systemic antibiotics should be prescribed, metronidazole being an ideal choice. Following the acute phase, the pericoronal flap should be excised, or the tooth extracted, which is usually the choice of treatment for lower third molars.

4 Pericoronitis



A. Pericoronitis associated with partially erupted mandibular third molar.

Acute necrotising ulcerative gingivitis

Clinical features

This acute infection primarily affects young adults of 18 to 30 years and is relatively uncommon now, although during both World Wars it became so widespread that it was erroneously believed to be infectious. It was then commonly referred to as "trench mouth", and certainly affected our troops in both the Korean and Vietnam Wars as well. The bacteria associated with the condition are *Spirochaetes* and *Fusobacteria* species that are normally found in small numbers in the oral cavity, but which overcome normal resistance to infection in circumstances of poor oral hygiene, poor diet, smoking and stress[8] — factors frequently present among troops at war.

The symptoms of acute pain, bleeding gums, halitosis and metallic taste are quite distressing and may be accompanied by systemic symptoms like fever.[9] The characteristic signs

include "punched out" ulceration of the interdental papillae and ulcers covered with a white pseudomembrane (Figure 5). Removal of the pseudomembrane produces bleeding. Ulceration does not occur on the lips, tongue, cheek or other soft tissues. These signs are most important in the differential diagnosis of ANUG, intraoral herpetic lesions and periodontal diseases associated with AIDS.

Treatment

The principles of treatment include removal of infected material and calculus (ultrasonics), metronidazole for the anaerobic bacterial infection and removal of associated factors — stress, smoking, poor diet and poor oral hygiene.

Herpetic gingivostomatitis

Clinical features

Primary infection by the herpes simplex virus occurs mainly in infancy but occasionally adults and adolescents are affected. The symptoms include malaise, rapid onset of fever and painful gums, tongue and mouth, along with irritability and refusal to eat. The characteristic signs are red swollen gingiva, with multiple ulcers on gingiva, tongue, palate and oral mucosa (Figure 6). The early vesicular lesions are rarely seen because they quickly rupture. The acute phase lasts about 7 to 10 days but healing of the ulcers takes a little longer.[10]

Treatment

This is palliative, as, like other viral infections, the disease is self-limiting (up to 14 days). The treatment should involve increased fluid intake, bed rest, paracetamol or aspirin for fever and a soft, nutritious diet. Tetracycline mouth rinses often help in relieving the pain and appear to accelerate healing.[11]

AIDS

Two types of periodontal disease are associated with the onset of AIDS: HIV-gingivitis and HIV-periodontitis. Both disorders are the result of a compromised immune system that leaves the patient vulnerable to bacterial infection.[12]

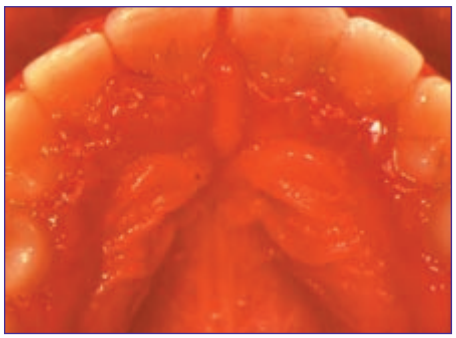
5 Acute necrotising ulcerative gingivitis

A and B. Localised lesions around mandibular incisors.

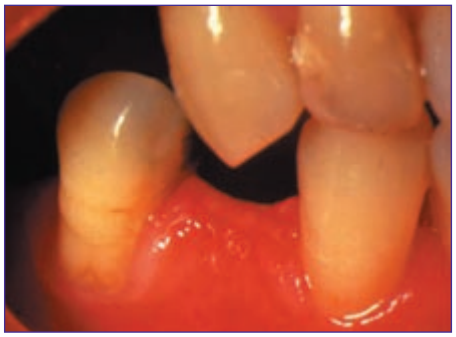
C. Generalised ulceration of interdental regions.

6 Acute herpetic gingivostomatitis

A. Acute herpes infection affecting labial gingiva.



B. Acute herpes infection affecting palatal tissues.



C. Herpetic ulceration following periodontal treatment.

The later stages of full-blown AIDS, including the presence of Kaposi's sarcoma, will not be covered here.

HIV-gingivitis

This appears as a generalised, linear, gingival, erythematous lesion throughout both arches of the mouth (Figure 7). Later it may take on an appearance very similar to ANUG, with destruction of the interdental papillae. The infecting bacteria may be different from simple gingivitis and ANUG. The patient experiences moderate to severe pain. If left untreated, HIV-gingivitis will invariably progress to HIV-periodontitis.

HIV-periodontitis

HIV periodontitis is very similar to rapidly progressing peri-

odontitis, with a superimposed ANUG-like complication (Figure 7). There is obvious acute and rapid destruction of the periodontium involving dramatic loss of attachment and bone. Unlike HIV-gingivitis, this tends to affect isolated areas of the mouth and there is very severe pain. The microbiological similarity between HIV-gingivitis and HIV-periodontitis is consistent with the concept that HIV-gingivitis is an earlier stage of HIV-periodontitis.

Treatment

This is palliative and includes the removal of irritants — plaque and calculus — together with povidone iodine irrigation, metronidazole and/or antifungal agents as required (in consultation with the attending physician), chlorhexidine mouth rinses, and long-term maintenance.[13,14]

Medication-induced gingival overgrowth

The most common medications associated with gingival overgrowth are anticonvulsants, antihypertensives, antianginal agents, and immunosuppressants.[15] In all cases of gingival overgrowth the reactions occur within a few days to several years after commencing treatment, with the development of a characteristic fibrotic or inflammatory overgrowth of the gingival tissues (Figure 8). As the clinical and histological characteristics of overgrowth caused by all drugs are similar, it is possible that they all affect the gingival tissues in the same way, although the pathogenesis is unknown.

Treatment

The primary preventive measure is a high standard of oral hygiene and elimination of gingival irritation. If possible, the patient can be given an alternative drug. Recovery is usually slow, ranging from weeks to more than a year after the drug substitution.

In severe cases, surgical removal of the hyperplasic tissue may be carried out, followed by meticulous oral hygiene.

7 AIDS

A. HIV-gingivitis. Note linear gingival erythema.

B & C. HIV periodontitis. Note ulcerative lesions in interdental area which resemble acute necrotising ulcerative gingivitis.

8 Medication-induced gingival overgrowth

A. Gingival overgrowth associated with phenytoin.

B. Gingival overgrowth associated with cyclosporin.

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