

Diagnosis and management of oral mucosal conditions commonly seen in the elderly population

Learning outcomes:

- recognise the older adult as a unique subset of patient;
- develop familiarity with the appearance and aetiology of various oral mucosal conditions that can present in the older adult; and,
- develop awareness of common treatment modalities for oral mucosal diseases.

Introduction

Ageing may be defined as the age-progressive decline in intrinsic physiological function. However, due to advances in medicine, the rate of mortality has reduced and the older population is ever increasing. Indeed, the proportion of the Irish population aged 65 and over is expected to double over the next 20 years from 11% in 2006 to 22% in 2041.¹ The older population is more likely to have a high burden of comorbidities and, as such, a higher incidence of oral disease, including oral mucosal diseases. The oral mucosa is subject to various age-related changes (Table 1). Although the oral mucosa is not subject to the same environmental threats as the skin, such as UV light and air pollution, it is exposed to a barrage of irritants throughout life. Masticatory trauma and resident microflora cause a constant influx of inflammatory and immune cells. Elastic changes may lead to a higher incidence of trauma and infection complicated by a poorer response of the immune system. The oral mucosa may also suffer the effect of polypharmacy, which is defined as the concurrent use of five or more medications. According to a report published by The Irish Longitudinal Study on Ageing (TILDA), one in three Irish adults over 65 report polypharmacy.²

Table 1: Reported age-related changes in the oral mucosa.

Decreased overall thickness
Flattening of epithelial cells
Decreased cell density
Decreased mitotic activity
Reduction in microvasculature
Less prominent rete ridges

The purpose of this article is to provide an overview of the common oral mucosal lesions seen in the older patient that may present to the general dental practitioner (GDP), and their management.



FIGURE 1: Fissured tongue.

Common oral mucosal findings in an elderly population

Many soft tissue variations may be seen during the intra-oral soft tissue examination of an elderly patient. Therefore, variations of normal should be easily recognised and diagnosed by the GDP. Examples of these include lingual varices, fissured tongue and atrophic tongue.³

Lingual varices

Lingual varices are dilated veins that may be seen on the ventral surface of the tongue.

Their pathogenesis may be related to changes in the connective tissue and/or weakening of the venous walls during the ageing process. There is an increased incidence of lingual varices in the older population, and a correlation with cardiovascular disease and smoking has also been noted.⁴

Fissured tongue

Fissured tongue is characterised on clinical examination by a central groove on the dorsal surface of the tongue, with multiple laterally extending, branching fissures (Figure 1). Its incidence increases markedly with age and it can be considered a variation of normal findings and a result of the ageing process.⁵

Fissured tongue is usually asymptomatic unless accompanied by inflammation, which may be caused by low-grade bacterial infection or trapped food debris. Atrophy of the filiform papillae on the dorsal surface of the tongue can result in pain, soreness, or a burning sensation of the tongue.

Oral mucosal diseases

Oral mucosal diseases are more common among the elderly. Three common oral mucosal conditions associated with the older population are: salivary gland hypofunction and/or xerostomia; oral lichen planus (OLP); and, the vesiculobullous conditions.

Oral cancer is not a common malignancy seen in the elderly; however, it is more common in this age group than in the younger population.



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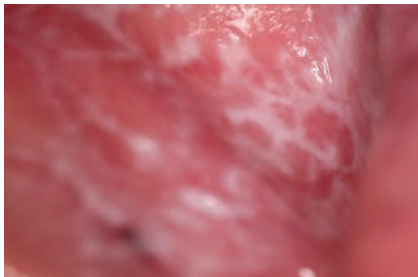


FIGURE 2: Reticular pattern of oral lichen planus.

Salivary gland hypofunction

Saliva has many functions, including:

- maintaining a moist oral mucosa that is less susceptible to abrasion;
- clearance of micro-organisms, desquamated epithelial cells, leucocytes and food debris; and,
- acting as a buffer to protect the oral, pharyngeal and oesophageal mucosae from ingested or regurgitated acid.

Salivary gland hypofunction or hyposalivation is an objective reduction in whole salivary flow rates (unstimulated rate of <0.1ml/min).⁶ Xerostomia is defined as the subjective complaint of dry mouth. Both conditions are common among the elderly and may be related to the use of xerogenic drugs, including (but not limited to): anticoagulants; antidepressants; antihypertensives; antiretrovirals; hypoglycaemics; levothyroxine; and, non-steroidal anti-inflammatory drugs. The impact of dry mouth on the oral mucosa includes the development of smooth surface caries, ill-fitting dentures, and soreness associated with denture wear. Patients can also have difficulty with speech and swallow, and are more prone to candida infection.⁵

Management: Salivary gland hypofunction may be managed through salivary substitutes containing carboxymethylcellulose, mucin or xanthan gum. There is also evidence for the use of parasympathomimetic agents such as pilocarpine to stimulate salivary flow.⁷

Oral lichen planus

OLP is a common, chronic, autoimmune disease associated with cell-mediated immunological dysfunction.⁸ It affects 0.5-2% of the adult population and has a female predisposition. It is generally diagnosed in the sixth decade and the disease process may continue for life. Therefore, patients presenting with OLP will often be elderly. It can present with a range of clinical appearances, including: a lacy white pattern (Figure 2); erythema; erosions; ulcerations; plaques; desquamative gingivitis; and, blistering of the oral mucosa.

The cause of OLP is unclear and it can present with a range of symptoms ranging from asymptomatic to severe soreness, with impact on oral health-related quality of life (OHRQoL). Although controversial, according to a recent meta-analysis, OLP has a reported malignant transformation rate of 1.14%.⁹ As such, regular screening for dysplastic changes in the oral tissue is crucial in the management of patients with oral lichen planus.

Management: Mild cases may be treated with 5mg prednisolone soluble tablets, dissolved in water and used as a mouthwash, up to six times daily. Patients should be instructed to hold the mouthwash in contact with the tissues for 5-10 minutes at a time.



FIGURE 3: Mucous membrane pemphigoid.

Vesiculobullous diseases

Due to immune system alterations in older age, and the accumulation of autoantibodies, older patients are more susceptible to immunobullous conditions. These diseases are listed in Table 2.

Table 2: Immunobullous diseases.

- Pemphigus:
 - pemphigus vulgaris
 - pemphigus foliaceus
 - IgA pemphigus
 - drug-induced pemphigus
 - paraneoplastic pemphigus
- Pemphigoid:
 - bullous pemphigoid
 - mucous membrane pemphigoid
 - linear IgA disease
 - drug-induced pemphigoid
- Epidermolysis bullosa acquisita
- Dermatitis herpetiformis

Pemphigus is a rare, chronic, potentially life-threatening autoimmune vesiculobullous disorder. The average age of presentation is reported to be 71 years but it can affect all age groups.¹⁰ There are three clinical subtypes of pemphigus vulgaris (PV):

- mucosal-dominant type – mucosal lesions with minimal skin involvement;
- mucocutaneous type – extensive skin blisters and erosions in addition to mucosal involvement; and,
- cutaneous type with skin lesions only.

PV is an autoimmune disease in which autoantibodies are produced against desmoglein-1 or 3 (two of the desmosomes that hold epithelial cells together). Oral lesions typically present as shallow vesicles and bullae. Ruptured vesicles may form irregular erosions on the mucosa.

Mucous membrane pemphigoid (MMP) is a chronic, autoimmune, sub-epithelial blistering disorder (Figure 3). Possible affected sites include: the oral mucosa; the ocular mucosa; the laryngeal mucosa; the tracheal mucosa; and, the anogenital mucosa. It typically occurs in the elderly with a mean age of onset of 60-80 years.

Like PV and OLP, MMP persists into old age. Clinical appearance differs from that of PV as the roof of the blister is formed by intact, full-thickness epithelium. Therefore, vesicles and blisters are more resilient and may be seen on clinical examination before they burst. If these break down, they leave shallow ulcers with ragged margins. Diagnosis involves a perilesional biopsy and immunofluorescence.



FIGURE 4: Oral squamous cell carcinoma.

Management: First-line therapy involves corticosteroids paired with an adjuvant immunosuppressant (e.g., azathioprine) to induce remission of the disease, followed by a tapered reduction of the corticosteroids and continuation of the steroid-sparing immunosuppressant therapy. The use of corticosteroids establishes disease control more rapidly than steroid-sparing agents; however, these have a more important role in maintenance therapy.¹¹

Oral cancer

Cancer of the oral cavity and pharynx is now the seventh most prevalent cancer globally.¹² These cancers are strongly associated with smoking and excessive alcohol consumption. A 30-year study on survival rates reported mean age of diagnosis to be 62 years. Overall survival rate at five years was reported to be 64.4%. Early diagnosis is key to improving survival rates and improving quality of life for survivors. A thorough oral cancer screening should be completed for all patients. Oral cancer is commonly managed by surgical excision with or without reconstruction with a local or free flap. Patients may also receive postoperative radiation therapy. Figure 4 illustrates a squamous cell carcinoma of the tongue.

These patients require careful management by their GDP in conjunction with the oncology and surgical team to restore function and minimise risk of postoperative complications such as osteoradionecrosis of the jaw. This includes a thorough pre-operative dental assessment along with stringent oral hygiene instruction. The identification and treatment of any dental disease should be completed prior to surgery. Patients may also suffer unpleasant side effects of radiation therapy such as mucositis, trismus and xerostomia.¹³

Denture-related conditions

According to the 2011 TILDA report on oral health in older adults, 18% of Irish adults over the age of 54 have no natural teeth remaining, and this figure increases to 40% over the age of 75.2 Some 17% of the population wear complete dentures, and these people are predisposed to denture-related oral mucosal lesions. These may be acute or chronic reactions to microbial colonisation of the denture base or the denture base material itself, or may be caused by mechanical injury caused by the denture. Angular cheilitis, denture stomatitis and traumatic ulcers are the more common oral mucosal lesions seen in denture-wearing patients.

Angular cheilitis

Angular cheilitis is an infection at the commissure of the lips, which is typically caused by the leakage of saliva at the angles of the mouth. Reduction in vertical dimension caused by edentulism and ill-fitting dentures can cause inappropriate support of the corners of the mouth, which commonly harbour *Candida albicans*, *Streptococcus aureus*, and *Streptococci*.¹⁴

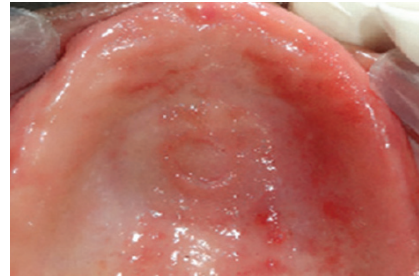


FIGURE 5: Denture stomatitis.

Management: Elimination of causative factors in conjunction with a topical antifungal usually leads to resolution.

Denture stomatitis

Denture stomatitis is defined as an inflammatory process of the oral mucosa that underlies a removable denture (Figure 5). It is commonly associated with candida infection, trauma to mucosa, poor denture hygiene, and denture wear at night.¹⁵ The ability of candida species to adhere to the porous acrylic material contributes to the incidence of denture-related candidiasis.¹⁶ Continuous wear of the denture may also prevent the self-cleansing action of saliva on the oral mucosa. Diagnosis is based on the clinical picture of a sharply demarcated erythema restricted to the area covered by the denture, and can be confirmed by a finding of candida hyphae in a mucosal smear from the inflamed mucosa.

Management: Topical application of an antifungal such as miconazole gel to the fitting surface of the denture is recommended. For more widespread infection patients can be prescribed Nystatin oral suspension (1ml – 400,000-600,000 units) to be dropped on the tongue and retained in the mouth for as long as possible four times daily for four weeks. Systemic therapy may be indicated in severe cases. Patients should also be counselled on denture hygiene and reduction in denture wear at night.

Orofacial pain

Two common orofacial pain conditions affecting the elderly are burning mouth syndrome (BMS) and trigeminal neuralgia (TN).

Burning mouth syndrome

BMS is characterised by a burning sensation of the oral mucosa in the absence of any clinically apparent mucosal alterations. It is most common among middle-aged and older women, occurring with a predilection for the female sex of 5:1.¹⁷ Patients may also complain of dysgeusia and xerostomia. BMS can be commonly associated with stressful life events, anxiety or depression. There is also evidence for a neurogenic cause.¹⁸

Management: BMS is commonly managed through psychological methods such as cognitive behavioural therapy (CBT), or pharmacological means such as a selective serotonin reuptake inhibitor (SSRI) or tricyclic antidepressant (TCA), or a combination of both.

Trigeminal neuralgia

The International Association for the Study of Pain (IASP) defines TN as a sudden, unilateral, severe, brief, stabbing, recurrent episode of pain in the



FIGURE 6: Lichen planus-related ulcer.

distribution of one or more branches of the trigeminal nerve.¹⁹ It may be categorised as Type I, Type II and Secondary TN. In Type I, symptoms are of 'classical' TN – short sharp paroxysms of pain that may be brought on by touch, toothbrushing,

or shaving. Type I may be further subdivided into 'idiopathic', in which no microvascular compression is demonstrated on investigation, or 'classical', in which microvascular compression is proven. Type II presents as a continuous low level of pain superimposed by bursts of severe pain. Secondary TN occurs as a result of a neurological disease and is not caused by microvascular compression of the trigeminal nerve.²⁰

Management: The first line of treatment is medical management with the use of anti-convulsant medications such as carbamazepine or oxcarbazepine. Second-line treatment options include transcutaneous, percutaneous, radiotherapy and open surgical management. Patients suffering from secondary TN should undergo treatment for the primary source of pathology.

Case report

A 71-year-old lady attended the Oral Medicine Department in Cork University Dental Hospital. She was referred by her dentist regarding fiery red appearance of her gingivae, and painful ulceration and white patches on the buccal mucosae and lateral borders of the tongue. She had soreness while eating spicy foods and during toothbrushing.

Medical history included hypertension, type II diabetes mellitus, osteoarthritis, and gastro-oesophageal reflux disorder. Medications included bisoprolol, aspirin, and pantoprazole.

On examination, her attached gingivae had a full-thickness erythematous appearance and her buccal mucosae were erythematous with white macules and striations superimposing. She had an ulcer on the lateral border of her tongue that measured 9x4mm (Figure 6).

An incisional biopsy was taken and sent to histology. A diagnosis of OLP was made and the patient was treated with topical prednisolone mouthwash.

A one-month review showed improved appearance of the erythematous tissues and complete healing of the ulcer.

Conclusion

The GDP should be aware of the normal physiological signs of ageing tissues in the older dental patient.

They should also be aware of conditions that warrant appropriate referral for further investigation and monitoring.

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