
C. Mantegazza
F. Angiero*
G.V. Zuccotti

Department of Paediatrics, University of Milan, Ospedale dei Bambini Vittore Buzzi, Milan, Italy
*Department of Surgical sciences and Integrated Diagnostics, University of Genova, Genoa, Italy
e-mail: cecimante@hotmail.com

ABSTRACT

Alterations of the oral cavity are common in children: 22% of children aged less than 4 years and 44% of those aged more than 12 develop dental erosion, 9-95% of children in Europe and in North America develop gingivitis, with adolescents showing a prevalence of more than 60% [Italian Ministry of Health, Guidelines 2013]. Alterations within the oral cavity can be the first sign of systemic diseases and may thus allow for an early diagnosis and treatment. In particular, being the oral cavity a part of the gastrointestinal system, oral alterations can be an expression of a gastrointestinal disease. Pyostomatitis vegetans can be a sign of ulcerative colitis. Dental erosion with enamel loss in facial, occlusal, and lingual surfaces, and an increased risk of dental caries have been reported in children and adolescents with gastro-oesophageal reflux with varying prevalence. A prompt recognition of systemic diseases through a careful examination of the oral cavity could allow proper investigations and management in a timely fashion.

Ulcerative colitis

Ulcerative colitis (UC) is the most common type of inflammatory disease of the bowel, whose peak incidence is between the ages of 15 and 25 years, with a second, smaller peak between 55 and 65 years. In the United Kingdom incidence of ulcerative colitis in children aged less than 16 years has been reported to be 1.4 per 100,000 with Asian children mostly involved and a median age for diagnosis of 11.7 years [Sawczenko, 2001]. The cause of the disease is still unknown [Loftus, 2004]. Diagnosis of UC relies on the presence of bloody diarrhoea with negative stool cultures and evidence of diffuse continuous mucosal inflammation involving the rectum and extending to a point more proximal in the colon at the endoscopic evaluation [Kugathasan, 2003; Bentsen, 2002] (Fig. 1).

UC share some clinical manifestations with Crohn’s disease (CrD), and all the non-specific oral manifestations seen in the latter, may also occur in the former but less commonly except for pyostomatitis vegetans, that is more frequent in UC [Ficarra, 1993; Litsas, 2011]. Oral involvement in paediatric patients with UC may be present in up to one-third of the patients and it is usually non-specific [Katsanos, 2015].

Pyostomatitis vegetans is characterised by multiple miliary white or yellow pustules that can coalesce into “snail-track” ulcers, with an erythematous and edematous mucosal base and involve mostly the labial gingiva and the labial and buccal mucosa. A combination of clinical features of inflammatory bowel disease, peripheral eosinophilia, histological findings, and...
and negative culture of the exudate allow diagnosis of pyostomatitis vegetans [Mijandrusić-Sincić, 2010]. Average age at diagnosis occurs usually around 34 years, no reports of pyostomatitis vegetans and ulcerative colitis in children can be found in the literature. Other non-specific oral manifestations in UC are oral aphthae, seen in at least 5% to 10% of the patients, glossitis, cheilitis, stomatitis, lichen planus, mucosal ulcers, diffuse pustules, and non-specific gingivitis [Folashade, 2008; Leković, 2011; Krebs, 2011] (Fig. 2, 3).

Treatment of the underlying disease allows the management of oral alterations in UC; oral steroids are considered the treatment of choice [Thrash, 2013].

**Gastro-oesophageal reflux disease**

Gastro-oesophageal reflux is a physiologic event which allows movement of gastric content into the esophagus and oropharynx through relaxation of the lower esophageal sphincter; gastroesophageal reflux becomes pathologic if symptoms or complications are present, in which case the term GERD is used [Colletti, 2003]. Repeated regurgitation, nausea, heartburn, coughing, laryngitis, asthma, or pneumonia can be signs of GERD. Infants and young children may demonstrate irritability or arching of the back while feeding, symptoms that might lead to refusal of feeds and therefore poor growth [Alfaro, 2008]. Oesophagitis, hemorrhage, stricture, Barrett’s oesophagus, and adenocarcinoma can be complications due to GERD [Vakil, 2006].

Oral manifestations have also been described in GERD, in particular the 2009 NASPGHAN and ESPGHAN guidelines on reflux in children report evidence of correlation between dental erosions, defined as the loss of tooth substance by a chemical process that does not involve bacteria, and GERD [Vandenplas, 2009; Pindborg, 1970]. Prevalence of dental erosions in children with GERD is quite variable: while Dahshan et al. [2010] demonstrated a 83.3% prevalence of dental erosions in their enrolled children suffering from GERD, O’Sullivan et al. [1998] reported just a 17% prevalence of perimyolysis in their cohort of children between 2 and 16 years of age with moderate to severe GERD [O’Sullivan, 1998]. Perimyolysis may be due to extrinsic and intrinsic factors such as exposure to acidic foods, beverages, or contaminants, salivary flow, eating disorders, and acid regurgitation [Gudmundsson, 1995; Dahshan, 2010]. The pattern of dental erosion in GERD involves initially the posterior teeth in particular the facial, occlusal, and lingual surfaces and mainly the mixed dentition [Dahshan, 2010].

GERD may also lead to changes of the soft oral tissues and salivary flow [Silva, 2001]. Di Fede et al. [2008] demonstrated that oral acid/burning sensation, xerostomia, subjective halitosis and soft/hard palate and uvula mucosal erythema are significantly associated with GERD in the adult population, conversely they found that only 9% of patients with GERD presented dental erosions, compared to 13% of healthy subjects. Moshkowitz et al. [2007] found a strong association between the occurrence and severity of halitosis and GERD in adults. No data on these last oral cavity alterations are available in children.

Inspection of the oral cavity in search for oral alterations is therefore advisable in patients with known GERD. Following the 2009 NASPGHAN and ESPGHAN guidelines on reflux, those children aged more than 8 years with heartburn can be “trialed” with a proton pump inhibitor for 2-4 weeks time; infants and children aged less than 8 years, with atypical symptoms or with possible complications need further investigations such as pHimpedence or endoscopy [NASPGHAN ESPGHAN Guidelines, 2009]. Lifestyle changes such as a regular diet, weight loss, smoking avoidance, correct sleeping patterns and reflux monitoring in children are also recommended [Vandenplas, 2009; Pindborg, 1970].

**FIG. 2** Gingivitis.

**FIG. 3** Reticularis oral lichen planus of the left cheek.
position, no late night eating, and acid suppression are the main management options for GERD.

The use of proton pump inhibitors has been demonstrated to be effective in suppressing tooth erosion in GERD [Wilder, 2009].

References


