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Review Article

Pediatric Oral Pigmented Lesions: A Short Review

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ABSTRACT:

Change in color of oral mucosa reflects the underlying health status, which is either local or systemic. Pigmentation is defined as the process of deposition of pigments in tissues. This color change is due to pigmentation, which may be physiological or pathological. Oral cavity soft tissue lesions are so common in children, and have various clinical presentations as colored lesions, mucosal ulceration or Nodular lesions. Here we are presenting a short review on oral pigmented lesions present among children.

Key words: Oral lesions, Child, Pigments. Oral mucosa.

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INTRODUCTION

Pigmentation is defined as the process of deposition of pigments in tissues.^{1,2} The variation from the normal color of oral tissues should always attract one's attention, as a proportion of these changes may indicate potential underlying pathology.^{2,3} Oral pigmentation may be physiologic or pathologic. Oral mucosa is deeply colored when compared to skin. Color reflects the clinical state of the mucosa; inflamed tissues are red, because of the increase in number and dilation of blood vessels, whereas normal healthy tissues are pale pink.⁴ This coloration is the net result of many factors, one of which is pigmentation. Pigments are present throughout the human body including the oral cavity. Oral pigmentation is a relatively common condition that may involve any part of the oral cavity.^{3,4} Normal regional variations in oral pigment from greatest to least occur in gingiva, buccal mucosa, hard palate, tongue, soft palate, and floor of the mouth.³ Oral cavity soft tissue lesions are so common in children, and have various clinical presentations as colored lesions, mucosal ulceration or Nodular lesions.^{2,3,5,6} [Table-1]

Table 1: Classification of Pigmented Oral Lesions in Children:-^[2,3]

Oral Lesions in Children	TYPE
Developmental Lesions	Geographic tongue, Fissured tongue, Retro cuspid papillae, Gingival overgrowth
Mucosal Changes (pigmented)	White Lesions: Lineaalba, Leukoedema, Pseudo membranous candidiasis, White sponge nevus. Red And/Or White Lesions: Petechiae, Purpura, Ecchymosis, Erythematous Candidiasis. Angular Chelitis, Erythema Migrans (Benign Migratory Glossitis), Median Rhomboid Glossitis.
Brown-Black Lesions	Physiologic Pigmentation, Amalgam Tattoo/Graphite, Melanotic Nevus
Soft Tissue Nodules	Inflammatory/reactive lesions- Mucocele, Irritation fibroma, Peripheral ossifying fibroma, Pyogenic granuloma, Peripheral giant cell granuloma.
Benign Tumors	Hemangioma, Lymphatic malformations, Fibroma, Benign neoplasms, Squamous papilloma.
Cysts	Eruption cyst
Ulcerations	Traumatic ulcers, Aphthous ulcers.
Infections	Herpes simplex virus, Coxsackievirus, Herpangina, Hand, foot, mouth, Candida albicans, HIV infection

ORAL MUCOSAL WHITE LESIONS

Frictional keratosis (Morsicatio buccarum):-

The constant rubbing of the mucosa may cause white patches that can disappear if the causative agent habit is discontinued. Habits causing this finding include traumatic tooth brushing (toothbrush keratosis) and forcefully rubbing the tongue against the teeth (tongue thrust keratosis).^{2,3}

Clinical presentation: The condition is observed as a corrugated, gray or white lesion that may be smooth or rough and occasionally irregular with small loose tags of epithelium on the surface. The site of appearance is mostly the buccal mucosa.

Treatment: Removal of intraoral irritants and discontinuation of causative habits usually resolves this lesion.

Leukoedema:-

Leukoedema is a benign white lesion found bilaterally or unilaterally on the buccal or labial mucosa. The etiology is unknown but associations with local irritation, and malocclusion have been made.

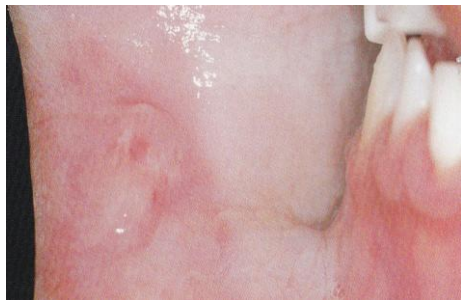


Figure 1: Diffuse white opacification present on buccal mucosa

Clinical presentation: Leukoedema is characterized by a diffuse white opacification that resolves when the mucosa is stretched.^{2,3,7} [Figure -1]

Linea alba:-

This condition is a benign finding located on the buccal mucosa across the commissures and extending posteriorly toward the molars.

Clinical presentation: Linea alba presents as a distinct white linear area on the buccal mucosa opposing the plane of occlusion. Occasionally, it has also been recognized on the lateral border of the tongue.^{2,3}

Hairy tongue:-

Hairy tongue is a benign condition that arises from abnormal elongation of the filiform papillae of the tongue (1–12 mm) or the proliferation of bacteria that release pigments on them. This condition may also be caused by intrinsic factors, such as antibiotics (erythromycin),

antipsychotics (olanzapine), iron supplements, or radiation therapy. Extrinsic causative factors are primarily related to diet (coffee, tea), poor oral hygiene.^{2,3,5}

Clinical presentation: Papillary elongation gives the appearance of thick, hairylike surface on the dorsal tongue. The condition may present with superficial coating that blunts the hairy appearance.

Treatment: Good oral hygiene, diet restriction, smoking cessation, or tobacco counseling and brushing with 1% to 2% hydrogen peroxide solution or diluted sodium hypochloride has been suggested.^{3,5}

Pseudomembranous candidiasis:

This common condition in children is an opportunistic fungal infection caused by *Candida albicans*, more likely to occur in children who had a recent use of antibiotics, corticosteroids, or extended exposure to pacifier. It is a hallmark oral finding in children with systemic conditions, such as endocrine disorders, leukemia, chemotherapy, radiation therapy, transplantation, prematurity, and malnutrition.^{2,3}

Clinical presentation: This condition is presented as superficial white plaques on the mucous membranes that can be wiped off. These white plaques can be seen on the buccal and labial mucosa, hard and soft palate, tongue, and oropharynx.³

Treatment: Treatment usually includes gentian violet or topical nystatin for infants, and nystatin (topical) or topical clotrimazole for older children. Systemic fluconazole, ketoconazole, or itraconazole may be used for children who are at risk of developing systemic infection or are intolerant to topical therapy.^{2,3}

ORAL MUCOSAL RED AND/OR WHITE LESIONS

Petechiae, Purpura, Ecchymosis:-

These red lesions are commonly caused by trauma affecting the underlying vasculature. They are frequently a sign of bleeding disorders, such as thrombocytopenia or hemophilia, and may occasionally be associated with leukemia and anemia. The prevalence of vascular lesions is 1.89% to 8.39% in children and may be up to 42.8% in children with systemic disease.³

Clinical presentation: The lesions are predominantly seen on the lips, tongue, hard palate, and gingiva and are classified as follows:

- ✓ Petechiae: pinpoint hemorrhages
- ✓ Purpura: 2-mm to 2-cm hemorrhages
- ✓ Ecchymosis: >2 cm hemorrhages

Treatment: Treatment includes the initial investigation of the source of the trauma to rule out child abuse. All other lesions associated with medical conditions or medications must be referred for further medical workup.

Erythematous candidiasis:-

The etiology of the symptomatic form is often linked to vitamin B12 and folate deficiency, as well as recent antibiotic or steroid therapy. The asymptomatic form is characterized by chronic erythema of tissues covered by prostheses, such as dentures and retainers. Lesions are commonly seen on the palate and occasionally on the mandibular tissue.³

Clinical presentation: Red macular lesions that is usually asymptomatic or occasionally symptomatic with a burning sensation on the tongue or mouth and a bright red appearance.

ORAL MUCOSAL BROWN-BLACK LESIONS

Physiologic Pigmentation:-

This pigmentation is the most common form of diffuse and bilateral pigmentation that arises from the increased production of melanin in dark-skinned populations (Middle Eastern, African American, and occasionally Asians). In general, conditions that increase the prevalence of this pigmentation are race/ethnicity, increased age, smoking, pregnancy, endocrine syndromes, and hormonal changes. Atypical cases have been reported in newborns. Peutz-Jeghers syndrome is an autosomal dominant trait that is associated with multiple intraoral and perioral pigmentations, most of which do not require treatment and involute after the first decade of life. However, the early establishment of a diagnosis is critical for a gastroenterology workup for intestinal polyps and hamartomas that have a 2% to 3% tendency for malignant transformation. Addison disease or adrenal insufficiency is an autoimmune disease resulting in insufficient secretion of glucocorticoids and mineralocorticoids. In the oral cavity, the pigmentation is commonly located on the gingiva, tongue, buccal mucosa, and hard palate. Occasionally, isolated macules may be present. Oral surfaces frequently exposed to trauma may develop the pigmentation more frequently.^{3,5,6}

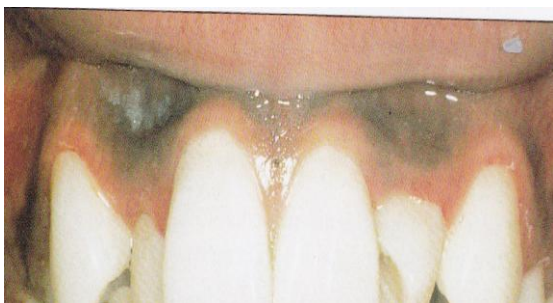


Figure 2: Physiologic pigmentation seen on attached gingival

Clinical presentation: The pigmentation is commonly found on the attached gingiva. Occasionally, the buccal mucosa, palate, and lips, as well as the dorsal surface of the tongue are affected.^{3,7} [Figure-2]

Treatment: Treatment is not required. Intraoral pigments associated with Peutz-Jeghers syndrome require monitoring and evaluation by a gastroenterologist for the development of mucosal gastric malignancies.

Amalgam Tattoo/Graphite:-

This disorder occurs as sequelae of surgical oral interventions or removal of amalgam restorations. The prevalence in children is 1.3%.³



Figure 3: Amalgam tattoo pigmentation seen on gingiva

Clinical presentation: Amalgam tattoo is a localized flat blue-gray solitary or multiple lesions of variable sizes and shapes (0.1–2.0 cm). It is commonly found on the attached and alveolar mucosa next to teeth restored with amalgam, and may be occasionally seen dispersed in the buccal mucosa or the floor of the mouth. Graphite pigmentation is a common finding in the anterior palatal area in children due to trauma. It appears clinically as an ill-defined flat gray/black pigmentation.^{3,5,7} [Figure-3]

Treatment: No biopsy is indicated in most cases unless a confirmation of amalgam is needed when the patient's medical history suggests susceptibility to dermatologic malignancy.

Melanotic Nevus:-

Melanotic nevus is an alteration of mucosal color. Nevi may be congenital or develop over the life span and mostly represent deviations of normal anatomy. It is important to mention the histologic classification of nevi, as it may impact lesion prognosis:

- 1. Junctional:** proliferation of the nevus cells at the tips of the rete pegs that are close to the surface and are confined in the epithelium.
- 2. Compound:** proliferation of nevus cell into the epithelium and connective tissue.
- 3. Intradermal/intramucosal:** nevus cells are located in the lamina propria and do not contact the basement

membrane. These lesions are dome shaped, typically light brown in color and are commonly seen on the gingiva, and labial and buccal mucosa.

4. Blue nevi: proliferation of spindle cells within the deep connective tissue and remotely from the surface epithelium. This lesion is commonly seen on the hard palate. They are further classified into atypical blue nevus, locally aggressive blue nevus, and congenital giant melanotic nevus with nodular growth.

5. Other melanotic nevi include the combined nevus and the Spitz nevus, which may be located on the palate or tongue. 6. The congenital melanotic nevi with large nodules.³

Clinical presentation: Melanotic nevi present as localized brown, blue, gray, black, or colorless macule or papule and rarely polypoid that range from 0.1 to 3.0 cm .

Treatment: Treatment includes excisional biopsy to rule out mucosal melanoma, especially if the lesion is located in the palate.

CONCLUSION

Color changes and soft tissue lesions are relevant findings in the pediatric population. Oral health practitioners should be aware of the clinical characteristics of these pigmented findings and the need for further workup or referral in these selected oral pigmented lesion cases.

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