

ORAL PIGMENTATION

THESIS

Submitted for Partial Fulfilment
of the Master Degree in
(Dermatology and Venereology)

By

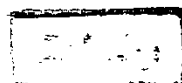
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1986



ACKNOWLEDGEMENT

I wish to express my sincere gratitude to Professor Dr. ZENAB EL GOTHAMY Professor of Dermatology and Venereology to whom I am deeply indebted, for her most valuable guidance, supervision and encouragement.

I am also grateful to Dr. MOSTAFA MOKHTAR, Lecturer of Dermatology and Venereology, who generously participated in this work.

I have been touched by the sincerity, generosity and Hospitality shown by all members, of the Dermatology Department, Ain Shams University.

I am proud to be a member of the Dermatology family and hope that they accept my warm thanks.

Ghada M. Farag

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INTRODUCTION AND AIM OF THE WORK

INTRODUCTION AND AIM OF WORK

Oral pigmentation is a common clinical problem that is not infrequently noted by the clinician who routinely and carefully examines the oral cavity. Oral pigmentation is of considerable diagnostic importance. It may be physiological or pathological. It occurs in all races of man and in all nationalities.

The colour of the healthy gingiva is variable, ranging from a pale pink to a deep bluish purple. Between these normal limits are a large number of colours.

Any deviation in normal gingival colour may indicate pathological condition. Pathological oral pigmentation may be of exogenous or endogenous origin. The latter may be caused by systemic diseases or due to local pathologic processes.

The aim of this work is to present a thorough review of the biology of oral integument, physiology of oral pigmentation, racial variations, sources of pathological oral pigmentation, the aetiology, clinical features, histopathology and treatment of such conditions.

REVIEW OF LITERATURE

BIOLOGY OF THE HUMAN ORAL INTEGUMENT

The oral cavity is an anatomic structure composed of specialized tissues, which function together and comprise a regional physiological unit. The oral integument serves several functions which include:

1. Mastication and initiation of deglutition,
2. Speech and articulation,
3. Respiration,
4. Prehension, and
5. Sensory and psychic gratification (Archard,1979).

Perhaps the most essential structural element of the mouth is the mucous membrane. It forms the interface between the internal milieu and the physical, chemical, and biologic factors of the oral environment. The clinical and morphologic changes observed in this mucosal interface are, a product of the interaction of both these intrinsic and extrinsic forces (Fitzpatrick, et al.,1979).

I. Normal anatomy of the oral mucosa

The oral mucosa may be divided into areas corresponding to the anatomic configuration of the jaws and associated musculature. These areas are the gingiva,

buccal mucosa, labial mucosa, tongue, hard palate and soft palate (McCarthy et al., 1980).

Gingiva

The gingiva or "gums" refers to the tissue surrounding the teeth and covering the alveolar bone. The portion of the gingiva that extends beyond the alveolar bone and attaches to the teeth is referred to as the marginal gingiva or free gingival margin. The surface of the marginal gingiva is smooth and light pink in colour. Beyond the gingiva and separated from it by a clear demarcation is the alveolar mucosa. The line of demarcation is referred to as the mucogingival junction. Numerous small blood vessels can be seen through the alveolar mucosa. The alveolar mucosa on the outer or buccal aspect is continuous with the mucous membrane of the lip and cheek (Lozdan et al., 1983).

Buccal and labial mucosa

The buccal mucosa is the oral mucosa of the cheek; it covers the buccinator muscle. The buccal mucosa is light pink in colour and smooth in texture. Usually, a ridge or fold of tissue appears along the line of the teeth. This represents a tissue response to constant

stimulation by the teeth during mastication. The fold may be white gray in colour and occasionally may be confused with white lesions of the buccal mucous membrane. Anteriorly, the buccal mucosa blends into the labial mucosa, which covers the musculature of the lip. The lip is a mucocutaneous junction, and the mucosal and skin surfaces are separated at the vermilion border of the lip (Meyer, et al., 1964).

Tongue:

The tongue is a highly specialized organ. The mucosa covering the dorsal surface of the tongue is rough in texture and is composed of large numbers of minute papillae. The major group of lingual papillae are the filiform papillae which are small and punctate in appearance. Scattered among these are the large fungiform papillae which appear somewhat more red in colour. At the posterior border of the lingual dorsum are the large circumvallate papillae arranged in a V-shaped configuration. In the posterior portion of the lateral border of the tongue are the foliate papillae. They are red, irregularly shaped soft masses of lymphoid tissue. The mucosa of the ventral surface of the tongue is smooth and delicate (McCarthy, et al., 1980).

Hard palate:

The mucosa of hard palate covers the palatal osseous structure. Numerous mucous glands lie beneath the palatal mucosa. Their ducts appear on the palatal surface as large number of small pores. Anteriorly, the hard palate presents numerous folds of firm tissue (Meyer, et al., 1964).

Soft palate:

The soft palate is that palatal mucosa posterior to the osseous structure of the palate. The soft palate is more freely movable than the hard palate. The demarcation between the soft and hard palate is easily seen by having a person open his mouth wide and expose his throat. In this action the soft palate folds upward (Meyer et al., 1964).

II. Embryology of oral mucous membrane:

The mucous membranes of the oral cavity are ectodermal in origin; however, the mucosa of the tongue, has a dual origin. The anterior two-thirds of the tongue, including the taste buds, is derived from oral ectoderm. While the pharyngeal part, or root of the tongue, is formed from endoderm. Between the tenth and thirteenth

weeks fungiform, filiform, and finally circumvallate papillae appear. Taste buds may be seen in the fungiform papillae as early as the thirteenth week (Willis, 1979).

III. Histology of oral mucosa:

Depending on the location and functional stresses, the changes in the oral epithelium may go in two directions. If subjected to strong abrasive forces, the epithelium becomes keratinized, whereas it remains non keratinized in less stressed areas (Rhodin, 1974). Non-keratinized epithelium, covers the inside of the lips, cheeks, soft palate, floor of the mouth, lower surface of the tongue and tonsils. There is a basal layer of small polyhedral cells, characterised by high mitotic activity and resting on a thin basal lamina. The basal cells change in shape as they move through the spinous layer to the superficial squamous layers. The cells of the uppermost layers are less squamous. They become detached and are shed into the oral cavity. Keratinized epithelium, covers the hard palate, gingiva, and parts of the dorsal surface of the tongue (Rhodin, 1974).

McCarthy et al., (1980) reported that, the oral mucosa is composed of three main types. A functioning mucosa or masticatory mucosa, such as that of the gingiva and hard palate is well keratinized and has a dense connective tissue. A non functioning or lining mucosa, occurs on the lips, floor of mouth, ventral surface of the tongue, and buccal region. The third type of oral mucosa, presents on the dorsum of the tongue. It is highly specific and has a specialized function. Its surface is composed of papillary structures of three main types: Filiform papillae, fungiform papillae and circumvalate papillae.

With the exception of the dorsum of the tongue and the hard palate, the mucous membrane of the mouth has neither a granular nor a horny layer. Where these layers are absent, the epithelial cells in their migration from the basal layer to the surface first appear vacuolated and large as a result of their glycogen content, then shrink, and finally desquamate (Lever et al., 1963).

Examination of haematoxylin and eosin sections of gingiva reveal melanin only when pigmentation is heavy. Melanocytes are not easily identified by light microscopy (Squier, et al., 1967).