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CASE REPORT

White sponge naevus with minimal clinical and histological changes: report of three cases

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White sponge naevus (WSN) is a rare autosomal dominant disorder that predominantly affects non-cornified stratified squamous epithelia: oral mucosa, oesophagus, anogenital area. It has been shown to be related to keratin defects, because of mutations in the genes encoding mucosal-specific keratins K4 and K13. We illustrate three cases diagnosed as WSN, following the clinical and histological criteria, with unusual appearance. They presented with minimal clinical and histological changes that could be misleading in the diagnosis. The patients showed diffuse irregular plaques with a range of presentations from white to rose coloured mucosae involving the entire oral cavity. In one case the lesion was also present in the vaginal area. The histological findings included epithelial thickening, parakeratosis and extensive vacuolization of the suprabasal keratinocytes, confirming WSN diagnosis. Clinical presentation and histopathology of WSN are discussed in relation to the differential diagnosis of other oral leukokeratoses.
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Keywords: histology; leukokeratosis; white sponge naevus

Case report

Case history and clinical findings

The three white sponge naevus (WSN) cases studied at the Department of Odontostomatology of the University of Bari are presented in Table 1. The table reports both the anamnestic data and the clinical presentation of each of them. In comparison the three cases had similar oral appearances. They manifested as soft, corrugated, firm plaques, with light spongy texture and varied in a range from white to light rose colour (Figs 1–3). Similar lesions were also present on the vaginal mucosa of the patients 1 and 2. None of the patients was found positive to human papilloma virus (HPV) infection.

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Pathological findings

Incisional biopsy specimens of the buccal mucosa of the three patients and specimens of the vaginal mucosa of patients no. 2 and 3 were obtained, fixed in 10% buffered-formalin solution, and then embedded in paraffin. Several sections of the histological samples were stained with haematoxylin–eosin.

Microscopy (Fig. 4) revealed that the epithelium was thickened; the spinous cells had enlarged with intracellular oedema; the clear cell keratinocytes were located from suprabasal to spinous layer, until the superficial layers of epithelium, which showed less parakeratosis and thickening than classical epithelium of WSN. As an additional diagnostic tool, we used confocal laser scanning microscopy (CLSM) in order to obtain a more detailed cell visualization and avoid possible artefacts of sectioning and fixation. Figure 5 clearly illustrates that the CSLM produced bright definition of the clear cell keratinocytes and confirmed the morphological and histopathological analyses.

No nuclear atypia was observed. The vaginal mucosa (Fig. 6) of the patients 1 and 2 showed clear cells constantly reaching the superficial layers of epithelium, which presented little parakeratosis and thickening. The final diagnosis was WSN for all the three cases.

Comments

In general, WSN diagnosis is based on macroscopic analyses, by being characterized as white, firmly adherent lesions. On the other hand, it has to be noted that a great number of conditions can exhibit such appearances. Among all: pre-malignant and malignant diseases, infections, inflammations, as well as hereditary disorders (1). This complex clinical scenario is further complicated by the histological analysis. Microscopically, WSN consists of thickened epithelium with marked spongiosis, acanthosis and parakeratosis. Within the epithelium, especially in the stratum spinosum, clear cells are noted. Indeed, the differential histological diagnosis should exclude clear cell tumours of oral mucosa as well as HPV-derived lesions, all of them having the presence of clear cells in common with WSN (2, 3). More specifically, intra-oral clear cell neoplasms

Table 1 Case history and clinical findings

Clinical data	*Case 1*	*Case 2*	*Case 3*
Gender	Female	Female	Male
Age	46	48	47
Duration (years)	2	5	4
Symptoms	None	None	None
Clinical presentation	Bilateral, diffuse, soft, corrugated, spongy, light rose, not removable plaques	Soft, corrugated, firm spongy, light rose plaques	Unilateral, soft, corrugated, firm, spongy, light rose plaque
Sites	Buccal mucosa; lateral margins of the tongue	Buccal mucosae; inferior lip; tongue	Right buccal mucosa; labial mucosa of the upper lip
Extraoral lesions	Vaginal mucosa	Vaginal mucosa	No
HPV infection	No	No	No
Familial history	None	A sister with oral involvement	None

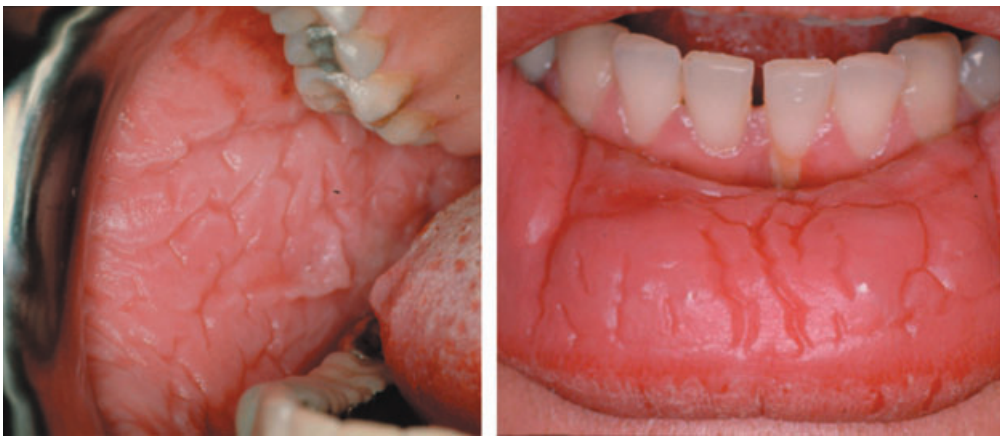

Figure 1 Light rose fissured plaques of buccal and labial mucosae in a 48-year-old-woman.

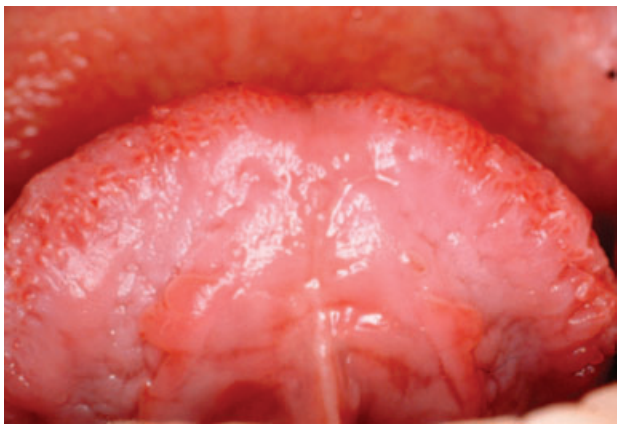

Figure 2 Light rose spongy plaques of the tongue in a 46-year-old woman.

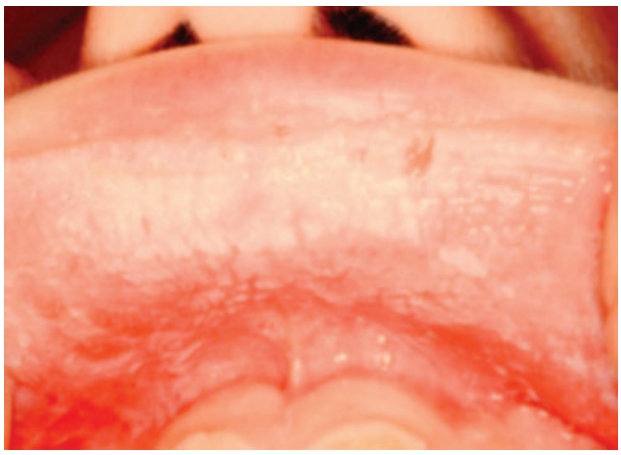

Figure 3 White corrugated lesion of labial mucosae of the upper lip in a 47-year-old man.

show a minor component of clear elements, which may result from intracellular accumulation of glycogen, mucin, lipids, etc., or paucity of organelles. Likewise, the histopathological features of HPV lesions include oedematous and optically clear cells, the so-called koilocytic cells.

Moreover, in the differential diagnosis other mucosal white lesions should also be considered. As a matter of fact, panchyonychia congenita, hereditary benign intraepithelial dyskeratosis, pre-malignant leukoplakia, chronic cheek-biting, tobacco-induced keratotic lesions, lichen planus and chronic candidiasis may show clinical

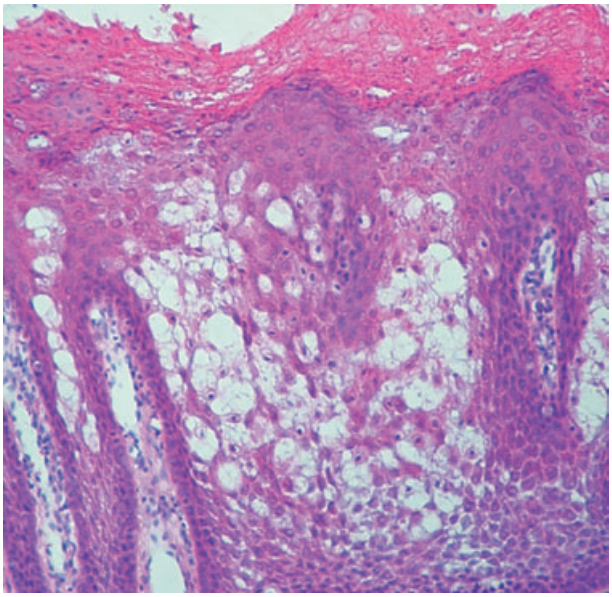

Figure 4 Haematoxylin and eosin-stained section obtained from the buccal mucosa of patient 1 (original magnification 100×).

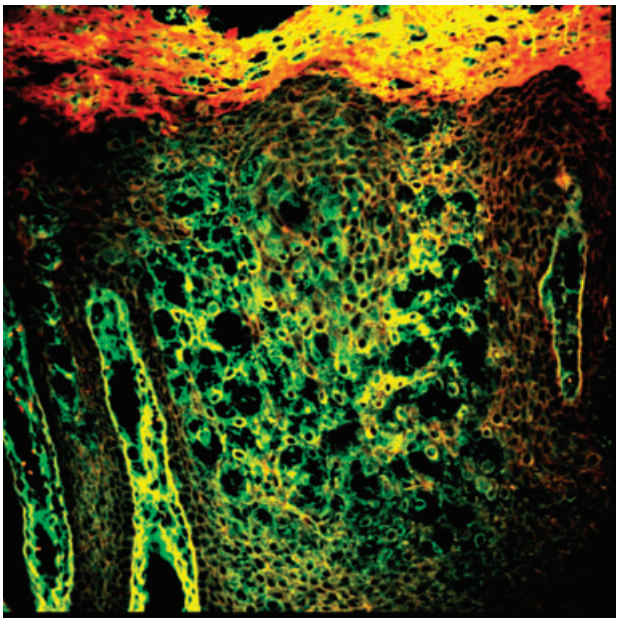

Figure 5 Confocal laser scanner microscopy of the previous haematoxylin and eosin (H & E)-stained section: the spinous cell had enlarged with intracellular oedema the clear cell keratinocytes were located from suprabasal to spinous layer (original magnification 100×).

similarities to WSN (1). Detailed history and biopsy are necessary to establish the diagnosis. Nail changes are present in panchyonychia congenita; hereditary benign intraepithelial dyskeratosis also often involves bulbar conjunctivitis. Finally, specific microscopic features can be of help in screening other white lesions from sponge naevus.

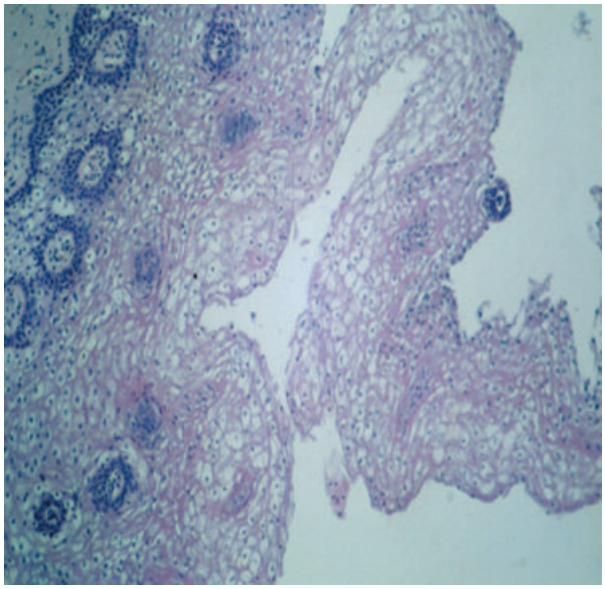

Figure 6 Haematoxylin and eosin-stained section from vaginal mucosa showing clear cells reaching the superficial layers of epithelium, which presented little parakeratosis and thickening (original magnification 100×).

To our knowledge, this is the first report of cases with minimal changes both clinically and histologically.

Therefore, it is possible that the WSN might be an underdiagnosed disease, possibly because of the difficult differential diagnosis, especially with leukoedema, which does not show the tipical overall thickness of the classic WSN.

The clinical condition is painless. Patients complain only unaesthetic appearance or symptomatic condition deriving from the altered texture of the mucosa. Specific therapeutical treatments are not necessary by being a developmental malformation, benign and unsusceptible of malignant evolution. However, a few reports indicate some benefits from systemic antibiotic therapy with penicillin (4), although the reported results were derived from a small cohort of patients.

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