Focal epithlieltal hyperplasia: report of six cases from Ghana, West Africa

N.O. Nartey* / Merley A. Newman** / E.A. Nyako***

Focal epithelial hyperplasia is a proliferative growth of the oral mucosa with distinct clinical and histopathological features. Although focal epithelial hyperplasia is frequently reported in children of American Indian and Eskimo descent, it is rarely seen in Africans. This report presents six new cases of focal epithelial hyperplasia observed in African children. The age of the patients ranged from 4 to 12 years, and all except one were females. Clinical variants, the papillary and the papular types were noted in the same patient.

There was spontaneous regression of focal epithelial hyperplasia in four patients during the study period. However, the lesions still persist in two patients three years after the initial presentation.
J Clin Pediatr Dent 27(1): 63-66, 2002

INTRODUCTION

Focal epithelial hyperplasia (FEH) is a proliferative condition of the oral mucosa caused by the human papilloma virus types 13 and 321.

FEH was first described by Stern as an exophytic mucosal growth with distinct clinical and histopathological features. Since this initial publication, FEH has been reported in various ethnic groups.[3-7] Witkop and Niswander[4] reported a high incidence of FEH in Native Americans and Eskimos and proposed that, genetic predisposition may play an important role in the pathogenesis of this condition. This suggestion has not been substantiated by recent studies.[7,8] Soneira and Fonseca[7] analyzed the oral distribution of FEH in Venezuelan school children and suggested that a virus may be the causative agent. But, the first evidence of causal association between the virus and FEH was produced by Praetorius-Clausen and Willis,[8] who demonstrated the papilloma viral particles in electron-microscopic sections of FEH. Recent studies[9-11] using immunohistochemical staining methods and *in-situ* hybridization techniques have confirmed the findings of Pretorius-Causen and Willis.

Although these studies[8-11] implicated the human papilloma virus as the primary etiological agent, the observation of the viral DNA in normal oral tissue[12] implied that the oral epithelium may harbor HPV without the associated proliferative changes. Therefore, the host factors such as the state of the immune system and the nutritional status, may play a significant role in the pathogenesis of FEH. Oral mucosal lesions resembling FEH have been reported in patients with Human Immunodeficient Virus infection.[13,14] These observations support the assertion that the immune condition of the host is critical to the pathogenesis of FEH.

Although FEH is common in other ethnic groups, it is rare in Black Africans.[15] Van Wyk and Harris[16] reported a high incidence in the colored communities of South Africa. In that report, FEH was not observed in the indigenous South African. In an extensive review of the literature, Sawyer *et al.*,[17] recorded a single unpublished case in a black African and reported three additional cases in Sub-Saharan Africans. Since this publication, sparodic cases[18,19] have been reported in the dental literature in individuals of African heritage.

This report presents the largest number of cases recorded in Sub-Saharan African children.

MATERIAL AND METHODS

The study population was drawn from patients who attended the Oral Diagnosis and the Child Dental Health Clinics at the University of Ghana Dental School with multifocal, nodular or papillary lesions of the oral mucosa. Complete medical and dental history was obtained from the patients or relatives and was followed by clinical examination of the head, neck and the oral tissues. A lesion biopsy was performed under local anesthesia (2% lidocaine HCl with 1:50,000 epi-

* Dr. N.O. Nartey, Department of Oral Pathology /Oral Medicine, University of Ghana Dental School.
** Dr. Merley A. Newman, Department of Orthodontics and Child Dental Health, University of Ghana Dental School.
*** Dr. E.A. Nyako, Department of Restorative Dentistry, University of Ghana Dental School.

Send all correspondence to Dr. N. O. Nartey, University of Ghana Dental School, P.O. KB 460, Korle-bu, Accra, Ghana.

nephine) on all patients with the clinical diagnosis of FEH. The biopsy specimen included a papulonodule with perilesional mucosae. The tissue was fixed in 10% formal saline solution and stained with haematoxylin and eosin. Two cases were excluded from the study because no biopsy was taken for histopathological examination. The patients were seen periodically and were discharged when there was complete resolution of the lesions.

RESULTS

Clinical findings

The sex distribution was skewed with a female to male ratio of 5:1. The age of the patients ranged from 4 to 12 years with a mean of 8.7 years. None of the patients had a sibling living in the same household with FEH. (Table 1)

Two clinical forms of FEH were observed, they were the papulonodular (Figure 1) and the papillomatous type (Figure 2). The Papulonodular variant occurred mainly on the lining mucosa and was more common than the papillomatous type, which occurred on the masticatory mucosae such as the attached gingivae and the tongue. The papulonodular type was pink and had a smooth surface, while the papillomatous variant was whitish with rough pebblish surface.

The lesions disappeared within 18 months in four of the patients after the initial presentation at the Oral Diagnosis Clinic. However, two patients still have three years after the initial presentation.

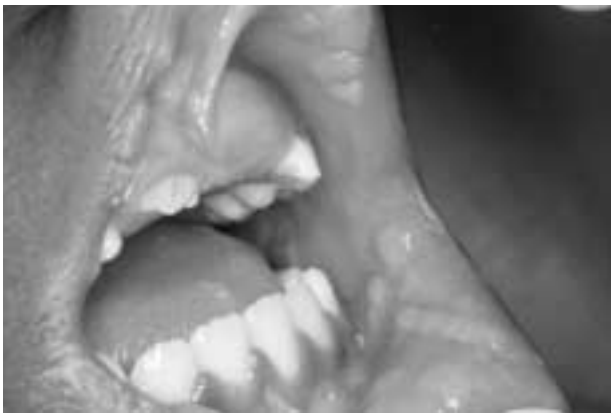

Figure 1. Labial mucosa showing multiple slightly elevated papulonodular lesions.

Figure 2. FEH on the lateral border of the tongue and on the lips.

Table I. Summary of clinical data of six patients with focal epithelial hyperplasia.

Case Number	Age Sex	Clinical and gross appearance	Distribution of lesions	Remarks
1.	4/F	Multiple whitish papillomatous and pink papulo-nodular lesions with sessile bases.	Buccal and labial mucosae, floor of mouth, lateral aspect of tongue and attached gingival.	Lesions present three years after initial visit. No family History of FEH.
2.	10/F	Multiple pink papulonodular lesions with sessile bases.	Buccal and labial mucosae, commisures of the mouth.	No clinical evidence of FEH Twelve months after initial presentation. No family History of FEH.
3.	12/F	Multiple pink papulonodular lesions with sessile bases.	Buccal and labial mucosae, commisures of the mouth.	Spontaneous regression three Months after initial visit. No family history FEH.
4.	7/F	Multiple pink papulonodular lesions with sessile bases.	Buccal and labial mucosae.	Spontaneous regression eight months after initial presentation.
5.	12/F	Multiple papillomatous lesions	Attached gingivae	No family history of FEH. Clinical evidence of FEH 3 ½ yrs after initial presentation. No family history of FEH.
6.	7/M	Multiple pink papulonodular with sessile base	Buccal and labial mucosae and commisure of mouth	No clinical evidence of FEH 1 ½ yrs after initial presentation.

HISTOLOGICAL FINDINGS

The histopathological sections consisted of loose fibroconnective tissue surfaced by parakeratinised stratified squamous epithelium.

The epithelium was characterised by acanthosis, bulbous rete ridges and anastomoses of the rete ridges (Figure 3).

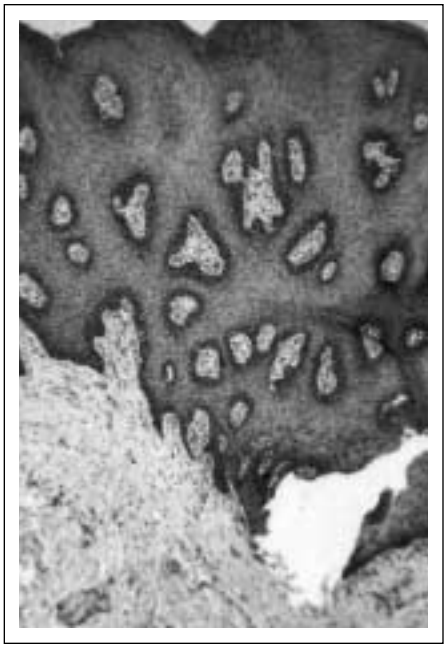

Figure 3. Histopathological section of FEH showing parakeratinised stratified squamous epithelium over loose fibroconnective tissue. The epithelium shows acanthosis and extensive anastomoses.

DISCUSSION

The infectious nature of FEH is well documented[8-11] however, the initiation of the proliferative process is not well elucidated. FEH recent studies attribute to chronic immunodeficiency state, which is usually associated with malnutrition. The recent publications[13,14] of FEH in adults with acquired immunodeficiency syndrome gives credence to the assertion that chronic immunodeficient state may play a key role in the pathogenesis of FEH.

The ages of the patients in this report were similar to those reported previously in other ethnic groups. The nutritional status of the children and the financial status of the parents were not determined in this study, therefore, FEH would not be attributed to malnutrition associated with poverty as reported previously,[5-7] but the age group observed in this report corresponds to the period when most children in this country are afflicted with chronic malaria and viral infections such as measles and chicken pox.

Such systemic infections may depress the immune system and stimulate epithelial proliferation in the presence of the human papilloma virus. However, reports of FEH in ethnic groups,[5-7] which were previously thought to be immune and the high incidence in children from low socio-economic background, contradicts the genetic predisposition theory.

The distribution of the papulonodular and the papillomatous variants to specific areas of the oral mucosae may be related to the underlying connective tissue. The papillomatous variant, which showed exophytic growth, was located on the attached gingival and the tongue where the underlying connective tissue was dense collagenous type.

In contrast, the papulonodular type showed endophytic growth and were seen on the labial and buccal mucosae where the underlying connective tissue is loose. This phenomena explains the presence of the two clinical variants in the same patient, but located to specific areas of the oral mucosae.

FEH unlike other proliferative lesions of the oral mucosae resolves completely without treatment. In this case study, excisional biopsy was performed to confirm the diagnosis of FEH. Large lesions, which interfered with mastication and appeared unesthetic, were also excised. The lesions resolved completely in four of our patients over periods ranging from 8 to 18 months without treatment.

The term Focal Epithelial Hyperplasia describes the histopathological features of FEH. However the usual clinical presentation of FEH consists of multiple mucosal lesions. In view of the fact that FEH is recognized clinical entity, we propose that the term multifocal epithelial hyperplasia should be used in place of Focal Epithelial Hyperplasia to highlight the multifocal nature of this condition.

REFERENCES

1. Scully C, Cox ME, Prime SS, Maitland NJ, Papillomaviruses: the current status m relation to oral disease, Oral Surg Oral Med Oral Pathol 65: 526-32,1988.
2. Stern E. Multiple weiche warzen der mundschleimhaut. Dermatol Wocheschr 74: 274-6, 1922.
3. Archard HO, Heck JW, Stanley HR. Focal epithelial hyperplasia: an unusual oral mucosal lesion found in Indian children. Oral Surg Oral Med Oral Pathol 20: 201-12, 1965.
4. Witkop CJ, Niswander JD. Focal epithelial hyperplasia in Central and South American Indians and Latinos, Oral Surg Oral Med Oral Pathol 20: 213-17, 1965.
5. Carlos R, Sedano HO. Multifocal papilloma virus epithelial hyperplasia. Oral Surg. Oral Med. Oral Pathol 77: 631-5, 1994.
6. Lamey PJ. Lewis MAO, Rennie JS Beattie AD. Heck's disease. Br Dent J 168: 251-2, 1990.
7. Soneira A, Fonseca N. Sobre una lesion de la mucosa oral en los ninuos Indios de la Mision Los Angelos del Tokuko. Venez Odont 29: 109-22, 1964.
8. Praetorius-Clausen F, Willis JM. Papovavirus-like particles in focal epithelial hyperplasia. Scand J Dent Res 79: 362-5, 1971.
9. Pflster II, Hettich I, Runne U, Gissman L, Chiff GN. Characterization of human papillomavirus type 13 from focal epithelial hyperplasia. Hecks Lesions. J Virol 47: 363-6, 1983.
10. Beaudenon S, Praetorius F, Kremsdorf D, et al. A new type of human papillomavirus associated with oral focal epithelial hyperplasia. J Invest Dermatol 88: 130-5, 1987.

11. Hernandez-Jauregin P, Eriksson A, Tamayo R, et al. Euman papillomavirus type 13 DNA in focal epithelial hyperplasia among Mexicans. Arch Virol 93: 131-7, 1987.
12. Maitland NJ, Cox MF, Lynas C, Prime SS, Meanwell CA, Scully C. Detection of human papillomavirus DNA in biopsies of human oral tissues. Br J Cancer 56: 245-50, 1987.
13. Greenspan D, De Villers EM, Greenspan JS, Desouza YG, Hansen E. Unusual HPV types in oral warts in association with HLV infection. J Oral Path 17: 482-7, 1988.
14. Praetorius-Clausen F. Geographic aspects of oral focal epithelial hyperplasia. Pathol Microbiol 39: 204-13, 1973.
15. Van Wyk CW, Earns Amp. Focal epithelial hyperplasia: a survey of two isolated communities in the cape province of South Africa. Commun Dent Oral Epidemiol 15: 161-3, 1987.
16. Sawyer DR, Arole G, Mosadomi A. Focal epithelial hyperplasia. Report of three cases from Nigeria, West Africa. Oral Surg 56: 185-89, 1983.