Unusually high incidence of multifocal epithelial hyperplasia in children of the Nahuatl population of Mexico

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Abstract

Background: Multifocal epithelial hyperplasia is an uncommon disease of the oral mucosa caused by the human papilloma virus.

Aim: To study the clinical and pathological findings of multifocal epithelial hyperplasia detected during an oral examination of 343 Mexican Nahuatl children from a single primary school in El Paso de Cupilco, Mexico.

Methods: A thorough oral examination was performed in all children and clinical data (age, gender, location and number of lesions) were documented and analyzed.

Results: Multifocal epithelial hyperplasia was diagnosed in 110 of the 343 children (32.3%). The ages of the children varied from 5 to 15 years, and of these, 56.3% were girls. The lesions were asymptomatic, 0.2 to 3.0 cm in diameter, soft, round to oval, smooth surfaced, sessile papulonodules, similar in colour to that of the surrounding mucosa. The lesions were commonly seen on the buccal mucosa and tongue, and most affected children (85%) had less than 5 lesions. Children in the 7 to 10 years age group were most often affected.

Limitations: Human papillomavirus typing was not done owing to a lack of facilities.

Conclusions: There is a high incidence of multifocal epithelial hyperplasia in Nahuatl children with a predilection for females.

Key words: Human papillomavirus, multifocal epithelial hyperplasia, oral mucosa

Introduction

Multifocal epithelial hyperplasia is a benign condition affecting the oral mucosa and is associated with the human papillomavirus types 13 and 32. The lesions are asymptomatic, often numerous, soft, elevated, well-defined nodules, similar in colour to that of the surrounding mucosa. The disease has also been referred to as focal epithelial hyperplasia, Heck disease and multifocal papilloma by other authors. We have earlier suggested that the term multifocal epithelial hyperplasia is more appropriate in that it describes the clinicopathological and microscopic features of the lesions.⁸

Multifocal epithelial hyperplasia is more frequent in certain ethnic groups such as the Eskimos, and Central and South Americans. The incidence varies widely from 0.06% to 33.7% depending upon the population surveyed.⁴-¹¹ It is commonly seen in children, has a predilection for females and occurs more frequently in the lower socio-economic groups. Close relatives are often affected and hence it was earlier considered to be hereditary,⁵-¹³ but familial transmission through spoons, forks or knives is now considered as more likely.⁹ González-Losa et al. showed that human papillomavirus 13 could be detected in saliva of 73% of their studied population.²¹

The Mexican Nahuatl ethnic group is part of the Pina-Nahua branch and the Uto-Aztecan family residing in the area stretching from Mexico to Central America since pre-Hispanic age. Today, Nahuatl ethnic groups live in zones of the Mexican states from the northern...
area to Tabasco and Chiapas in the southern Mexican zone extending to Central America. We report the clinical and pathological findings of multifocal epithelial hyperplasia in schoolchildren of Nahuatl ancestry and describe the epidemiological characteristics of this condition.

Methods
Our protocol was approved by the Ethics Committee of the Facultad de Odontología, Universidad Autónoma de Tabasco. The oral cavity of 343 children of the Guillermo Prieto Primary School living in El Paso de Cupilco community of the Tabasco State, Mexico were examined clinically. The age, gender, location, morphological features and number of lesions were documented and analyzed. In addition, a questionnaire was sent to the parents regarding the socio-economic status and the presence of multifocal epithelial hyperplasia lesions in other members of the family. Families with a monthly income of less than $200 US dollars were classified as having a poor socio-economic status.

After an explanation of the purposes of our study, all parents signed a letter of consent giving permission to perform the clinical examination and biopsies of their children. A single lesion was excised in each patient and the tissue was immersed in aqueous neutral formalin solution for 24 hours. The specimen was routinely processed to obtain 5μ thick, paraffin-embedded, hematoxylin- and eosin-stained slides.

Results
Of the 343 children, 220 (64.1%) were girls and the remaining 123 (35.9%) were boys. The ages ranged from 5 to 15 years (mean 9 years). One hundred and ten of these children (32.1%) had lesions of multifocal epithelial hyperplasia (62 girls and 48 boys). The age distribution of the affected children is shown in Table 1. The most commonly affected site was the buccal mucosa (35.8%), followed by tongue (29.6%), upper lip (25%) and lower lip (9.6%). Eighty five percent of the children presented with one to five lesions and the remainder had more than five papules.

The lesions were smooth surfaced, elevated, round or oval, soft, sessile (sometimes pediculated) papules. Rarely, they were corrugated or verrucous. The colour was similar to that of the surrounding mucosa, but in some lesions a whitish hue was noted [Figures 1-3]. The lesions were sessile 95% of the children, but 5% had a small pedicle. They measured from 0.2 to 3.0 cm with a mean size of 1.12 cm. Smaller papules were seen on the buccal mucosa and tongue (range = 0.3–1.5 cm; mean = 0.9 and 0.8 cm, respectively), followed by upper lip nodules (range = 0.2–2.0 cm; mean = 1.1 cm) and the larger nodules were observed on the mucosal surface of the lower lip (range = 0.2–3.0 cm; mean = 1.6 cm). The lesions tended to coalesce on the lower lip and this may have produced the larger nodules.

The histopathology of the H and E-stained sections revealed uniformly similar features in all the lesions with a parakeratinized, acanthotic, squamous stratified epithelium [Figure 4], mitosis-like cells and numerous koilocytes [Figure 5]. The connective tissue was composed of fibroblasts, collagen bundles, some chronic inflammatory cells, capillaries and small nerves.

The questionnaire was answered by the mothers of the examined children in every case. There was at least one other member of the family with similar intraoral lesions for every affected child. Unfortunately, no permission for clinical review of these persons was obtained. Typically, these were single income families with the fathers working mainly in agriculture or fishing, and sometimes, breeding domestic animals. The monthly income in all the families was less than 200 US dollars and they were classified as belonging to the poor socioeconomic group.

Discussion
Children and adolescents are most frequently afflicted by multifocal epithelial hyperplasia. The size of the lesions reported in previous studies has ranged from 0.2 to <2 cm. Larger lesions up to 3 cm in diameter were seen in our children especially in those with more severe disease, mostly on the lips, tongue and buccal mucosa. Multifocal epithelial hyperplasia has been reported to afflict the lower lip, buccal mucosa, tongue and commissures in decreasing order of frequency. In our study, the buccal mucosa was most commonly involved, followed by the tongue and lips.

Multifocal epithelial hyperplasia has been studied in populations from different countries as well as in various Mexican ethnic groups. Earlier studies have shown that the Nahuats living in the Mexican states of Tabasco, Puebla, Queretaro and State of México have a high incidence of multifocal epithelial hyperplasia. Morales-Palacios examined children from the State of Puebla and found no differences in gender or age and that 75% of the brothers exhibited lesions. The incidence of multifocal epithelial hyperplasia in Nahuatl children from the State of Tabasco was approximately 10%, while it was 7.1%.

Table 1: Age distribution of MEH affected children

| Age        | n  | %  |
|------------|----|----|
| 5-6 Years  | 55 | 16 |
| 7-8 Years  | 89 | 26 |
| 9-10 Years | 117| 34 |
| 11-12 Years| 79 | 23 |
| 13-14 Years| 3  | 1  |
| Total      | 343| 100|

Figure 1: Oral mucosa entirely affected with numerous nodules in his buccal, tongue, commissures and lips mucosa
in Nahuatl-Mazahuas of the State of México and only 1.9% in Mestizos and 1.2% in Mestizo children.\(^{17,18}\) The incidence in adult Nahuatl patients with diabetes mellitus type 2 from the state of Morelos was 6.2%.\(^{19}\) However, the incidence of multifocal epithelial hyperplasia in the Nahuatl population we studied was much higher (32.1%).

A high incidence of multifocal epithelial hyperplasia has also been reported in other Latin American ethnic groups. In Peruvian children, the incidence of multifocal epithelial hyperplasia was 38.7% while in Venezuelan Indians it was 33.7%.\(^{4}\) In these studies all the children belonged to the low socioeconomic group.\(^{13,15-22}\)

A major limitation of the study is that viral typing could not be performed.

**Conclusions**

A high incidence of multifocal epithelial hyperplasia was found in children of the Nahuatl population. The condition was more common in female children of low economic status.

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