Linear Leukoplakia on the Right Lateral Border of the Tongue

Course Author(s): Anne Cale Jones, DDS; H. Stan McGuff, DDS; Michaell A. Huber, DDS
Online Case: *www.dentalcare.com/en-us/professional-education/case-challenges/case-challenge-058*

The following Case Challenge is provided in conjunction with the UT Health San Antonio School of Dentistry faculty.

A 26-year-old male presents with linear leukoplakia on the right and left lateral borders of the tongue.

After you have finished reviewing the available diagnostic information, make the diagnosis.

Diagnostic Information

History of Present Illness

Jay is a 26-year-old homosexual male who presents to your office for a routine dental examination. His medical history is unremarkable.

Medical History

- Adverse drug effects: allergic to penicillin
- Medications: Flonase (prn) for seasonal allergies
- Pertinent medical history: unremarkable
- Pertinent family history: paternal - alive, prostate cancer; mother - alive, atrial fibrillation and hypercholesterolemia
- Social history: occasional recreational drug exposure; uses smokeless tobacco since age 14; 1-2 beers on the weekend

Clinical Findings

Extraoral examination is within normal limits. Intraoral examination is within normal limits except for areas of linear leukoplakia on the right and left lateral borders of the tongue. The patient states that he unaware of these lesions and they are asymptomatic. He reports no history of trauma in the affected areas.

Histopathologic Findings

Histopathologic examination reveals surface epithelium and underlying connective tissue. The surface epithelium is markedly hyperplastic and covered by a thickened, irregular layer of parakeratin. Aggregates of bacterial organisms are noted in the parakeratin layer (Figure 2). The nuclei of the squamous epithelial cells in the superficial epithelium exhibit nuclear beading (chromatin is pushed to the periphery of the nuclear membrane - Figure 3). Epstein-Barr virus encoded small RNAs (EBER) in situ hybridization is positive.

Figure 1. Linear leukoplakia on the right lateral border of the tongue.

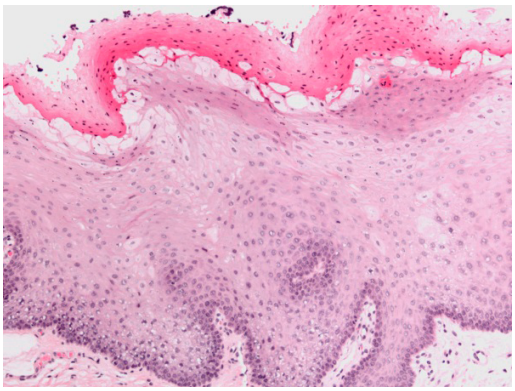

Figure 2. Low power histologic image showing epithelial hyperplasia with elongated rete ridges, ballooning degeneration, hyperparakeratosis, and bacterial overgrowth.

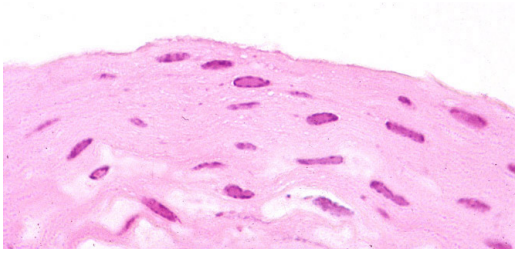

Figure 3. High power histologic image showing superficial squamous epithelial cells within the parakeratin layer exhibiting cytopathic changes with peripheral margination and clumping (beading) of nuclear chromatin.

Select Diagnosis

Can you make the diagnosis

A 26-year-old male presents with linear leukoplakia on the right and left lateral borders of the tongue.

Select the Correct Diagnosis

A. Smokeless tobacco keratosis
B. Oral hairy leukoplakia
C. Morsicatio linguarum
D. Hairy tongue

Smokeless tobacco keratosis

Choice A. Sorry, this is not the correct diagnosis.

Smokeless tobacco keratosis presents as a grey to white alteration on the oral mucosa due to the placement of smokeless tobacco products against the mucosa. The alteration may result from use of either chewing tobacco or snuff. The majority of individuals are young adult males and the most common location is the mandibular anterior or posterior vestibule region. The lesions appear as a diffuse area of leukoplakia with a surface contour that varies from smooth to irregular depending on the amount of keratin formation. Groves or cracks may be noted in the surface mucosa.[1] Histopathologic examination reveals hyperkeratosis and thickening of the surface epithelium, typically with normal maturational changes. The keratin layer is arranged in chevrons or pointed peaks and the underlying connective tissue contains a superficial eosinophilic band. Dysplastic epithelial changes are uncommon. Treatment consists of cessation of the smokeless tobacco habit and resolution should occur in several weeks. Although the prognosis is good, individuals who use smokeless tobacco products are at an increased risk of developing squamous cell carcinoma or verrucous carcinoma.[1-2] The histopathologic findings in this case, along with the location of the lesions, do not support this diagnosis.

Please re-evaluate the information about this case.

Oral hairy leukoplakia

Choice B. Congratulations! You are correct.

Oral hairy leukoplakia (OHL) is a specific type of leukoplakia that predominantly occurs in human immunodeficiency virus (HIV) seropositive individuals. Occasional cases have been reported in individuals who are HIV seronegative or immunosuppressed for another reason.[3] Oral hairy leukoplakia is caused by Epstein-Barr virus (EBV or human herpesvirus 4 - HHV4) and most often occurs on the lateral border of tongue, usually in a bilateral fashion. It presents as a white flat to corrugated plaque that does not rub off. The lesion is asymptomatic and usually first noticed during an oral examination. Histopathologic examination reveals thickening of the spinous cell portion of the epithelium with an overlying thickened layer of parakeratin. The parakeratin layer often demonstrates corrugations which account for the hair-like appearance seen clinically. A unique feature of the squamous epithelial cells in the superficial portion of the epithelium is the presence of nuclear beading. In nuclear beading the chromatin is clumped and pushed to the periphery of the nuclear membrane since the nucleus is filled with EBV virions.[4] This unique histopathologic finding is noted on either a biopsy or a cytologic smear of the lesion and serves to indicate EBV infection. The prognosis is excellent. Treatment is usually not necessary. Oral hairy leukoplakia is a clinical marker of profound immunosuppression and cases have spontaneously resolved following highly antiretroviral therapy (ART).[2,5]

Morsicatio linguarum

Choice C. Sorry, this is not the correct diagnosis.

Morsicatio linguarum or tongue biting is an example of frictional keratosis that results in an area of leukoplakia of the lateral border of the tongue. Most patients are adults and a female predilection is reported. The lesion is asymptomatic and thought to occur more often in patients who are under stress. The clinical appearance varies but is characterized by an area of leukoplakia that corresponds with the occlusal plane. The surface architecture may appear smooth or irregular.[6] Histopathologic examination reveals a hyperkeratosis and thickening of the spinous cell portion of the epithelium. The keratin layer often demonstrates irregular projections with interspersed bacterial aggregates. The underlying connective tissue is typically within normal limits although scattered chronic inflammation may be seen. Treatment consists of eliminating the biting habit and the lesion should resolve in several weeks. The prognosis is excellent.[2] The histopathologic findings in this case, and no history of tongue trauma, do not support this diagnosis.

Please re-evaluate the information about this case.

Hairy tongue

Choice D. Sorry, this is not the correct diagnosis.

Hairy tongue is a common asymptomatic, alteration of the filiform papillae that occurs on the dorsal surface of the tongue. The lesion typically results from an accumulation of keratin on the filiform papillae. It may also be due to a lack of desquamation of keratin. Hairy tongue is more prevalent in heavy smokers but other risk factors include xerostomia, hydrogen peroxide use, chemical rinses, alcohol abuse, poor oral hygiene, and general debilitation. Clinical examination reveals marked elongation of the filiform papillae creating a hair-like appearance. The keratin deposition may be marked and lead to a matted appearance of the filiform papillae. The papillae vary in color but are often white to brown in appearance. [6-7] Histopathological examination reveals marked hyperparakeratosis with elongation of the filiform papillae. Numerous bacterial organisms are often seen in the keratin layer. Treatment consists of identifying and removing the predisposing factors and advising the patient to gently brush or scrape the dorsal tongue. With appropriate oral hygiene the lesion should resolve and the prognosis is excellent.[2] The histopathologic findings in this case, and the location of the lesion, do not support this diagnosis.

Please re-evaluate the information about this case.

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About the Authors

Anne Cale Jones, DDS

Anne Cale Jones graduated from the University of Alabama in 1981 with the Bachelor of Science degree (Magna Cum Laude) in Natural Sciences. She received a Doctor of Dental Surgery degree (Magna Cum Laude) from the Medical College of Virginia, Virginia Commonwealth University in 1986. Following a three-year residency program in Oral and Maxillofacial Pathology at Booth Memorial Medical Center in Queens, New York, Dr. Jones joined the faculty at the University of Florida, College of Dentistry. In 1998, she became a faculty member at The University of Texas Health Science Center at San Antonio. She is currently a Distinguished Teaching Professor in the Department of Pathology and is board certified by the American Board of Oral and Maxillofacial Pathology.

Email: jonesac@uthscsa.edu

H. Stan McGuff, DDS

H. Stan McGuff, D.D.S. is a Professor of Pathology in the School of Medicine at The University of Texas Health Science Center at San Antonio. He graduated from the Dental School at The University of Texas Health Science Center at San Antonio in 1977. Dr. McGuff practiced dentistry as an officer in the United States Air Force and as a general dentist in Live Oak, Texas. In 1993 Dr. McGuff completed a residency in general anatomic pathology and a fellowship in oral, head and neck pathology at The University of Texas Health Science Center at San Antonio. He has remained at The University of Texas Health Science Center at San Antonio as a faculty member for 28 years. The main focus of his career has been diagnostic surgical pathology of the oral cavity, head and neck region. He is involved in graduate and undergraduate dental and medical education. His research interests include head and neck cancer, the immunopathology of Sjogren's syndrome, metabolic bone disease, bone wound healing and tissue interactions with biomaterials.

Email: mcguff@uthscsa.edu

Michaell A. Huber, DDS
Professor
Department of Comprehensive Dentistry
The University of Texas Health Science Center at San Antonio, School of Dentistry,
San Antonio, Texas

Dr. Michaell A. Huber is a Professor of Oral Medicine, Department of Comprehensive Dentistry, the UTHSCSA School of Dentistry. He received his DDS from the UTHSCSA in 1980 and a Certificate in Oral Medicine from the National Naval Dental Center, Bethesda, Maryland in 1988. He is certified by the American Board of Oral Medicine. Dr. Huber served as Graduate Program Director in Oral Medicine at the National Naval Dental Center, Bethesda, Maryland. In addition he served as Specialty Leader for Oral Medicine to the Surgeon General of the United States Navy, Washington, DC; and Force Dental Officer, Naval Air Force Atlantic, Norfolk, Virginia.

Since joining the faculty in 2002, Dr. Huber has been teaching both pre-doctoral and graduate dental students at the UTHSCA School of Dentistry. In 2014, he was awarded the UTHSCSA Presidential Teaching Excellence Award. He is a Past President of the American Academy of Oral Medicine. Dr. Huber has spoken before many local, state, and national professional organizations. He has published over 70 journal articles, book chapters, and online postings.

Phone: (210) 567-3360
Fax: (210) 567-3334

Email: huberm@uthscsa.edu