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## Subgemmal neurogenous plaque: Clinical and microscopic evaluation of 7 cases

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Subgemmal neurogenous plaques (SNPs) are biphasic neural structures found on the posterolateral border of the tongue. Fewer than 40 cases have been reported and only a few were symptomatic. The present report details the features of 7 cases of SNP retrieved from the files of a single institution. Clinical and histopathological data were reviewed and immunohistochemical analysis was performed for S100, CD56, neuron-specific enolase, epithelial membrane antigen, CK7, CK8, CK14, and CK20. All cases showed similar morphological and immunohistochemical characteristics. Neural markers highlighted the biphasic pattern and CK7, CK8, and CK20 were detected on taste buds confined to the epithelium adjacent to the SNPs. Five patients presented pain/discomfort as the main symptom. Symptomatic SNPs seems to be more common than previously reported, presenting as focal burning on the posterolateral border of the tongue. (*Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2009;108:920-924)

Subgemmal neurogenous plaques (SNPs) were first described as subepithelial nerve plexuses associated with the taste buds of the tongue.<sup>1,2</sup> Although tortuous nerve plexuses had been described close to taste buds, only recently were they recognized as a unique structure.<sup>1</sup> Usually no clinical signs or symptoms are reported, although erythema, ulcers, white patches, and hyperplastic nodules can be associated with SNPs. There are many studies considering the taste buds, lingual foliate papillae, and lymphoid follicles present on the posterolateral border of the tongue, nevertheless little is known of the biology and clinical relevance of SNPs.<sup>2-4</sup> Recently, we reported 2 cases of SNP associated with focal burning of the tongue, which was thought to be more than a coincidental finding.<sup>2</sup> The present report describes the clinical, microscopic, and immunohistochemical features of 7 new cases of SNPs.

### MATERIAL AND METHODS

Four hundred and seven biopsies of the lateral border of the tongue were reviewed from the files of the Oral

Pathology Laboratory of the Piracicaba Dental School (University of Campinas, São Paulo, Brazil), retrieved from 2001 to 2007. All specimens were fixed in 10% neutral-buffered formalin, processed for routine light microscopy, and stained with hematoxylin and eosin (H&E). After histopathological analysis, SNPs were identified in 7 cases. All 7 specimens were obtained via incisional biopsy under local anesthesia for diagnostic purposes. Clinical information regarding patients' age, gender, signs and symptoms, and diagnosis were obtained from the clinical records (Table I).

### Immunohistochemical analysis

The immunohistochemical analysis included S-100 (polyclonal, dilution 1:12000; Dako A/S, Glostrup, Denmark), neuron-specific enolase (NSE) (BBS/NC/YI-H14, dilution 1:800, Dako A/S), CD56 (CD56-1B6, dilution 1:50; Novocastra, Newcastle upon Tyne, UK), epithelial membrane antigen (EMA) (E29, dilution 1:400, Dako A/S), neurofilament protein (NP) (2F11, dilution 1:100, Dako A/S), CK7 (OV-TL12/30, dilution 1:400, Dako A/S), CK8 (35bH11, dilution 1:200, Dako A/S), CK14 (NCL-L-LL002, dilution 1:200, Novocastra) and CK20 (KS20,8, dilution 1:500, Dako A/S). Briefly, the slides were hydrated, and subjected to microwave antigenic retrieval in sodium citrate solution (pH 6). Next, the sections were treated with 3% H<sub>2</sub>O<sub>2</sub> and incubated overnight with the primary antibody. This was followed by secondary antibodies conjugated with streptavidin-biotin-peroxidase (Strept ABComplex/HRP Duet, Mouse/Rabbit, Dako A/S, Denmark), which were visualized with diaminobenzidine chromogen counterstained with Carazzi's hematoxylin.

Supported by The National Council for Scientific and Technological Development (CNPq) and The State of São Paulo Research Foundation (FAPESP).

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1079-2104/\$ - see front matter

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doi:10.1016/j.tripleo.2009.07.038

**Table I.** Summary of all reported cases of subgemmal neurogenous plaques

Author	Age	Gender	Location	Presentation
Triantafillou & Coulter, 2004	49	F	Left tongue	Erythematous ulcer approximately 10 mm <sup>3</sup>
	60	F	Left lateral border of tongue	Exophytic lesion, present for 5 mo
	69	M	Right lateral border of tongue	Raised white lesion
	42	F	Right posterior tongue	Firm fluctuant lesion, present for 4 mo
	61	M	Left lingual tonsil	Lump, slightly increased in size, present for 2 wk
	77	M	Right lateral border of tongue	Nonerythematous, nonindurated white patch, approximately 2 mm <sup>2</sup>
	43	F	Right lateral border of tongue	Small nodular lesion
	49	F	Left lateral border of tongue	Papillomatous lesion approximately 3 mm <sup>3</sup> , present for 1 wk
	78	M	Right lateral border of tongue	Localized erythematous lesion, approximately 2 mm <sup>3</sup>
	31	M	Right lateral border of tongue	White patch and polyp, present for 12 mo
	68	F	Right base of tongue	Incidental finding, right neck swelling
	74	F	Right lateral border of tongue	Erythematous area, painful
	70	F	Right lateral border of tongue	Incidental finding, partial resection right floor of mouth
	70	M	Left lateral border of tongue	Pus-filled lesion, history of ulceration, approximately 0.8 mm <sup>3</sup> , present for 9 mo
McDaniel, 1999 (12 cases)	33 to 61	M: 7 F: 5	Lateral border of the tongue (10), Tip of the tongue, anterior portion of the tongue	Not described
	Val-Bernal et al., 2006	66	M	Posterior zone of the tongue
Gueiros et al., 2008	61	F	Lateral border of the tongue	Erythematous area
	34	F	Lateral border of the tongue	Small red swelling
Current series	53	F	Pain	Candidosis/Folliate papillitis
	46	F	Pain	Hyperplastic Lingual tonsil/Candidosis
	34	F	Burning/pain	Folliate papillitis Hyperplastic/lingual tonsil
	51	M	Pain	SCC
	43	M	Burning/pain	Folliate papillitis
	52	F	No Symptom	Hyperplastic lingual tonsil
	58	M	No Symptom	Hyperplastic lingual tonsil

M, male; F, female; SCC, squamous cell carcinoma.

**RESULTS**

Four (57.14%) of the 7 patients were women. The patients' ages ranged from 34 to 58 years, with a mean age of 48.14 years. Four patients reported pain or burning sensation on the lateral border of the tongue, which was the main reason for biopsy. One patient had a clinical diagnosis of oral squamous cell carcinoma, and the other two presented with an asymptomatic swelling on the lateral border of the tongue.

Microscopically, the SNPs showed a biphasic pattern, composed of a superficial circumscribed neural plexus parallel to the surface epithelium, and a deeper portion formed by small nerve fascicles intermingled with scarce mature ganglion cells, most of which were surrounded by satellite cells (Fig. 1). The superficial portion consisted of elongated and spindle wavy cells, with a variable amount of collagen in a neurofibromalike pattern. The nerve fascicles of the deeper zone showed a thin perineurium and few mature ganglion cells with a neuromalike pattern. All biopsies contained

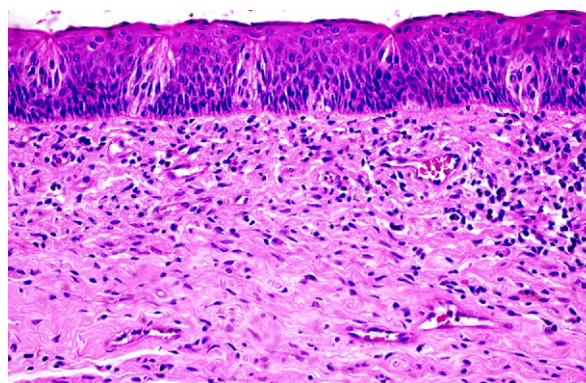


Fig. 1. Subgemmal neurogenous plaque, showing the superficial neural component, parallel to the surface epithelium. Note the taste buds in the epithelial tissue (H&E, original magnification ×10).

Von Ebner's glands and a discrete to moderate amount of subepithelial inflammatory lymphoid infiltrate. Lymphoid follicles were associated with SNP in 4 cases,

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