Dendritic cell neurofibroma with pseudorosettes: a clinicopathologic and immunohistochemical study of 5 intraoral cases

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Objective. We report cases of dendritic cell neurofibroma with pseudorosettes (DCNP) presenting in the oral cavity and discuss clinicopathologic and immunohistochemical features that differentiate this from other benign peripheral nerve sheath tumors.
Study Design. DCNPs were identified over a 2-year period, and history and histopathologic features were reviewed. Common nerve sheath tumors from the same period were identified and compared.
Results. Five intraoral cases of DCNP presented in 2 men and 3 women, with a median age of 59 years. Three presented on the buccal mucosa, and 2 presented on the tongue. Each exhibited a biphasic population of cells with pseudorosettes and strong CD57 positivity.
Conclusions. With 31 cases of DCNP reported, the most common site of occurrence is now the head and neck region. DCNPs exhibit a characteristic biphasic population of cells and strong CD57 positivity. Pathologists should consider this diagnosis when confronted with unusual neural lesions. (Oral Surg Oral Med Oral Pathol Oral Radiol 2014;117:221-226)

Dendritic cell neurofibroma with pseudorosettes (DCNP) is a rare benign peripheral nerve sheath tumor first described in 2001 by Michal et al.[1] There have been only 26 DCNPs (in 25 patients) reported in the English-language literature to date, with none reported in the oral cavity.[1-5] DCNP has been reported in adults with no gender predilection and a median age of 48 years (range, 24-73 years). Most presented as well-circumscribed, dome-shaped, firm nodules in the dermis of the trunk (40%), extremities (32%), or the head and neck region (28%).

DCNP has been characterized previously by a biphasic population of neural cells, both having strong S-100 positivity, with CD57 positivity in most type I cells and type II cells. Type I cells are the predominant type and are spindled, with scant cytoplasm and irregular or cleaved nuclei. They also may appear round or ovoid, may be densely basophilic, and may resemble lymphocytes.[1] Type II cells are larger, with pale-staining nuclei and intranuclear pseudoinclusions.[1] Type I cells are generally arranged concentrically around centrally located type II cells, forming pseudorosette structures, although Petersson recently reported 1 case that lacked this finding and that presented with a granulomatous appearance.[5]

We report a series of the first 5 cases of DCNPs in the oral cavity and discuss features that differentiate DCNP from other benign peripheral nerve sheath tumors. The

Table I. Summary of the antibodies used

Antibody	*Dilution*	*Manufacturer*	*Clone*
CD57	1:50	Biocare Medical (Concord, CA, USA)	NK-1
EMA	1:50	Biocare Medical (Concord, CA, USA)	MC-5
GFAP	1:100	Leica (Newcastle Upon Tyne, United Kingdom)	GA5
MEL-A	1:150	Cell Marque (Rocklin, CA, USA)	M2-7C10
MiTF	1:50	DBS (Pleasanton, CA, USA)	Mob462
NFP	1:50	Covance (Herts, United Kingdom)	2F11
S-100	1:75	Biocare Medical (Concord, CA, USA)	NA (cocktail)

EMA, epithelial membrane antigen; *GFAP*, glial fibrillary acidic protein; *MEL-A*, Melan-A/MART-1; *MiTF*, microphthalmia transcription factor; *NFP*, neurofilament protein; *NA*, not applicable.

Statement of Clinical Relevance

We present a series of the first intraoral cases of dendritic cell neurofibroma with pseudorosettes. This diagnosis may be considered when confronted with benign peripheral nerve sheath tumors inconsistent with neurofibromas, schwannomas, or other common nerve sheath tumors.

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Table II. Previous and current reports of dendritic cell neurofibroma with pseudorosettes

Reference	*Age (y)*	*Gender*	*Site*	*Treatment*	*Follow-up*
Michal et al., 2001	26	M	Back	Excision	NA
	48	F	Left posterior thorax	Excision	NA
	42	M	Chin	Excision	NA
	24	M	Left flank	Excision	No evidence of disease in 24 years
	42	F	Hand	Excision	No evidence of disease in 21 years
	52	M	Right lower eyelid	Excision	No evidence of disease in 21 years
	NA	F	Left forefoot	Excision	No evidence of disease in 14 years
	43	M	Cervical area	Excision	NA
	NA	M	Nose	Excision	No evidence of disease in 8 years
	73	M	Left mental area	Excision	No evidence of disease in 4 years
	27	M	Left hand	Excision	No evidence of disease in 3 years
	61	F	Right hand	Excision	No evidence of disease in 1 year
	43	M	Left shoulder	Excision	No evidence of disease in 4 years
	35	F	Midline buttock	Excision	No evidence of disease in 2 years
	52	M	Left lower leg	Excision	No evidence of disease in 1 year
	38	F	Behind the right ear	Excision	No evidence of disease in 1 year
	48	F	NA	Excision	No evidence of disease in 3 years
	47	F	Left hand	Excision	No evidence of disease in 6 years
Simpson and Seymour, 2001*	53	M	Occiput	Excision	No evidence of disease in 1 year
			Back	Excision	No evidence of disease in 1 year
Kazakov et al., 2004	53	M	Right shoulder	Excision	NA
Kazakov et al., 2005	62	F	Abdomen	Excision	No evidence of disease in 1 year
	52	M	Left shin	Excision	No evidence of disease in 4 years
	30	M	Presternal chest wall	Excision	No evidence of disease in 2 years
	48	M	Left scapula	Excision	No evidence of disease in 5 years
Petersson, 2011	71	F	Anterior thigh	Excision	NA
Lerman et al., 2013	73	M	Right dorsal tongue	Excision	NA
	40	F	Left posterior buccal mucosa	Excision	NA
	36	F	Left buccal mucosa	Excision	NA
	59	M	Right dorsal tongue	Excision	NA
	59	F	Right buccal mucosa	Excision	NA

M, male; *F*, female; *NA*, not available.
*The patient had 2 additional sebaceous cysts at the right scapula and the left paravertebral region, and a café au lait spot was at the posterior fold of the left axilla.

clinicopathologic and immunohistochemical features are described.

MATERIALS AND METHODS

Five cases diagnosed as DCNP were identified over a 2-year period from March 2011 through February 2013 at StrataDx, a surgical pathology laboratory in Cambridge, MA, USA. Clinical history, histopathology, and immunohistochemical studies were reviewed. Typical cases (2 each) of schwannoma, solitary circumscribed neuroma (SCN) (palisaded encapsulated neuroma), and neurofibroma were identified from the same period, and their light microscopic and immunohistochemical features were compared with DCNP. The antibodies used in the immunohistochemical studies are summarized in Table I.

RESULTS

Patient demographics and clinical features

There were 2 men and 3 women with a median age of 59 years (range, 36-73 years) (Table II). Three cases involved the buccal mucosa and 2 cases involved the dorsal tongue. Lesions ranged in size from 0.3 to 0.8 cm and were typically described as nonulcerated pink nodules. A fibroma was considered the most likely clinical diagnosis in each case.

Histopathologic features

All 5 cases exhibited similar histopathologic features. The lesions revealed unremarkable stratified squamous epithelium overlying unencapsulated but well-circumscribed tumors composed of sheets of cells within delicate fibroconnective tissue stroma (Figure 1, *A, B*); 2 cases (cases 2 and 4) exhibited foci of myxoid/mucinous change. Each tumor had a proliferation of a biphasic population of cells (see Figure 1, *C*). The predominant type I cells had indistinct cytoplasmic borders and curvilinear or comma-shaped nuclei with dispersed chromatin and inconspicuous nucleoli (see Figure 1, *D*). These were arranged around acellular regions containing centrally located larger type II cells forming pseudorosettes, vaguely resembling Verocay bodies of schwannomas. Some type I cells had round or ovoid, densely basophilic nuclei referred to as "lymphocyte-like" cells (see Figure 1, *E*). Type II cells