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REVIEW OF SPINDLE CELL LESIONS OF THE ORAL CAVITY PART II

[1]*Dr. Praveena Kulkarni and [2]Dr. Venkatesh Kulkarni

[1]Assistant Professor, Department of Oral Pathology & Microbiology Bharati Vidyapeeth Deemed to be University Dental College & Hospital, Pune.
[2]Professor, Department of Oral Pathology & Microbiology, Bharati Vidyapeeth Deemed to be University Dental College & Hospital, Pune.

***Corresponding Author: Dr. Praveena Kulkarni**
Assistant Professor, Department of Oral Pathology & Microbiology Bharati Vidyapeeth Deemed to be University Dental College & Hospital, Pune.

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ABSTRACT
Spindle cell lesions are lesions that consist of spindle-shaped cells in the histopathology. Due to complex nature of the oral cavity, presence of neural tissue, and varied type of lesions occurring in oral cavity, Spindle cell lesions are seen the oral cavity. Even though the spindle cell lesions of oral cavity are rare finding. In the oral cavity, the spindle cell lesions are diverse and diagnostically challenging. The origin of the spindle cell lesions may be due to epithelial, mesenchymal and odontogenic components. This article aims to review the spindle cell lesions of the oral cavity with emphasis on histopathology and immunohistochemical findings.

KEYWORDS: epithelial, mesenchymal and odontogenic components.

INTRODUCTION

Spindle cell lesions rarely but can encounter in the oral cavity. It is often very difficult for the oral pathologists to differentiate it from other similar microscopic simulates.[1] Some spindle cell lesions are highly malignant while others are benign or just reactive lesion. In the oral cavity, the origin of the spindle cell lesion may be epithelial, mesenchymal and odontogenic components. The simple working type classification of the spindle cell neoplasm was proposed. This classification was based on the predominance of spindle cells in the histopathology of the lesions of the oral cavity.[2] Such classification contain almost all the spindle cell lesions occurring in the oral and maxillofacial areas.

Neural tumors
Neurofibroma,
Neurilemmoma (schwannoma)
Palisaded encapsulated neuroma
Traumatic neuroma (amputation neuroma)
Malignant peripheral nerve sheath tumor

Myofibroblastic tumors
Myofibroma
Inflammatory myofibroblastic tumor
Low-grade myofibrosarcoma

Muscle tumors
Leiomyoma
Vascular leiomyoma
Leiomyosarcoma
Rhabdomyoma
Rhabdomyosarcoma

Fibroblastic tumors
Solitary fibrous tumor
Fibromatosis
Nodular fasciitis
Fibrosarcoma
Desmoplastic fibroma

Vascular tumors
Hemangiopericytoma
Kaposi sarcoma
Spindle cell hemangioma

Epithelial tumors
Spindle cell carcinoma
Malignant melanoma
Pleomorphic adenoma

Odontogenic tumors
Ameloblastic fibroma
Ameloblastic fibrosarcoma
Central odontogenic fibroma
Desmoplastic ameloblastoma

Miscellaneous tumors
Benign fibrous histiocytoma
Malignant fibrous histiocytoma
Synovial sarcoma

Ossifying fibromyxoid tumor
Giant cell angiofibroma
Blue nevus

In previous article various lesions have been described that include Neural tumors, Myofibroblastic tumors, Muscle tumors, Fibroblastic tumors and Vascular tumors in previous article, here Epithelial tumors, Odontogenic tumors and Miscellaneous tumors are described.

VI. Epithelial Tumors
Epithelial tumors include tumors of epithelial tissue origin. This category includes spindle cell carcinoma, pleomorphic adenoma and malignant melanoma.

Spindle Cell Carcinoma
Spindle cell carcinoma is considered a rare variant of squamous cell carcinoma. Also know as carcinosarcoma, biologically the lesion is very aggressive. Microscopically, the streaming fascicles of pleomorphic spindle cells will represent anaplastic epithelial cells. The diagnosis is supported by immunohistochemical demonstration of cytokeratins, common epithelial marker within the tumor cells.[3]

Pleomorphic adenoma
Pleomorphic adenoma is the most frequently encountered salivary gland neoplasm derived from ductal and myoepithelial elements.[4] Microscopically, myoepithelial cells form the major share and shows spindle shaped cells and plasmacytoid appearance in a myxomatous background.[5]

Malignant Melanoma
Oral malignant melanoma is a rare aggressive neoplasm of melanocytic origin representing 0.2- 8% of all melanomas. Microscopically, the presence of atypical melanocytes showing varying degrees of nuclear pleomorphism, hyperchromatism, prominent nucleoli and abundant cytoplasm with brown pigment in the epithelial and connective tissue junction confirm the diagnosis of oral malignant melanoma. Immunohistochemically, the tumor cells stain positively with antibodies against HMB-45, S-100 protein and vimentin.[6]

VII. Odontogenic tumors
Odontogenic tumors include tumors of odontogenic origin. This category includes ameloblastic fibroma, ameloblastic fibrosarcoma, central odontogenic fibroma and desmoplastic ameloblastoma.

Ameloblastic fibroma
Ameloblastic fibroma Ameloblastic fibroma is a rare odontogenic tumor constituting neoplastic epithelial and mesenchymal tissues. Microscopically, the tumor is composed of islands and strands of odontogenic epithelial cells in a loose connective tissue stroma resembling primitive dental papilla. The peripheral epithelial cells lining the islands and strands are low columnar, similar to the cells found in the peripheral layer of the follicle in ameloblastoma.[7]

Ameloblastic Fibrosarcoma
Ameloblastic fibrosarcoma is a rare malignant odontogenic tumour characterized by a benign epithelial component within a malignant fibrous stroma. Histologically, the mesenchymal portion of the tumor is highly cellular and shows hyperchromatism, pleomorphism and prominent mitoses. The sarcomatous mesenchymal component of ameloblastic fibrosarcoma is positive to Ki67, PCNA and p53, in front of the negativity of ameloblastic fibroma.[8]

Central Odontogenic Fibroma
The central odontogenic fibroma (COF) is a benign odontogenic tumour derived from the dental mesenchymal tissues. Gardner defined two histological variants: a) hyperplastic dental follicle with a connective fibrous tissue and small amounts of odontogenic epithelium and b) WHO type with a prominent epithelial component and the presence of variable quantities of dentine or cement-like tissue.[9]

Desmoplastic Ameloblastoma
Desmoplastic ameloblastoma is a rare variant of ameloblastoma. Histologically, the tumor shows scattered epithelial odontogenic nests and extensive desmoplasia with hypercellular central area composed of spindle-shaped or polygonal epithelial cells. Immunohistochemically, the tumor cells show variable expression of S-100 protein and desmin and connective tissue stroma will exhibit strong positive reaction for collagen type VI.[10]

VIII. Miscellaneous Tumors
Miscellaneous tumors comprise of unclassified category tumors. This category includes benign fibrous histiocytoma, malignant fibrous histiocytoma, synovial sarcoma, ossifying fibromyxoid tumor, giant cell angiofibroma and blue nevus.

Benign Fibrous Histiocytoma
Benign fibrous histiocytoma is one of the most common tumors of the superficial and deep soft tissues, made up of a mixture of fibroblastic and histiocytic cells. Histologically, the tumor is characterized by uniform spindle-shaped cells arranged in whorled or storiform pattern with scattered xanthomatous cells, multinucleated giants cells, lymphocytes and deposits of hemosiderin.[11] Immunohistochemically, the tumor cells are positive for vimentin and CD68 and negative for S100, factor XIIIa and CD34 and SMA.[12]

Malignant Fibrous Histiocytoma
Malignant fibrous histiocytoma is a tumor of mesenchymal origin, which rarely occurs in head and neck. Histopathologically, the tumor can be divided into 4 morphologic subtypes depending on the predominant cellular components: a) storiform or pleomorphic, b)

myxoid, c) giant cell and d) inflammatory. Immunohistochemically, the tumor cells and giant cells are positive for vimentin.[13]

Synovial Sarcoma

The head and neck synovial sarcomas account for 6.8% of all synovial sarcomas occurring in the body. Histopathologically synovial sarcoma can be sub classified into four types: (a) biphasic type with distinct epithelial and spindle cell components present in various proportions and patterns, (b) monophasic spindle cell type with little or no evidence of epithelial differentiation, (c) monophasic epithelial type, and (d) poorly differentiated type.[14] Immunohistochemically, both epithelial and spindle cells are positive for cytokeratin and epithelial membrane antigen, while only the spindle cells are positive for vimentin.[15]

Ossifying Fibromyxoid Tumor

Ossifying fibromyxoid tumor is a rare tumor of mesenchymal origin with varied presentation at head and neck and only a few cases have been reported in the oral cavity with predilection on gingiva.[16] Histopathologically the tumor is characterised by proliferation of round to spindle- shaped cells arranged in cords and nests embedded in a fibromyxoid matrix with incomplete shell of bone trabeculae located beneath the fibrous pseudocapsule at the periphery. Immunohistochemical analysis will show positivity for vimentin and S-100 protein and negativity for smooth muscle actin, muscle-specific action, and glial fibrillary acidic protein.[17]

Giant Cell Angiofibroma

Giant cell angiofibroma (GCA) is a distinctive orbital tumor with only 3 cases reported as painless solitary nodule in buccal mucosa.[18] Histopathologically, the tumor is characterized by a patternless spindle-cell proliferation within a generally myxoid stroma containing areas of perivascular sclerosis with numerous floret type multinucleated giant cells. Immunohistochemically, the tumor cells and multinucleated giant cells will show positivity for CD34.[19]

Blue Nevus

A blue nevus is a benign acquired melanocytic lesion that typically presents as an asymptomatic, slate blue or blue-black smooth-surfaced macule or papule which measures less than 6 mm in diameter. Histopathologically, blue nevus can be classified into common and cellular subtypes. The common blue nevus is characterized by an intramucosal proliferation of elongated, bipolar, spindle-shaped melanocytes that are often grouped in short fascicles arranged parallel to the overlying epithelium.

The cellular blue nevus is characterized by an intramucosal, nodular proliferation of dendritic spindle-shaped, pigmented melanocytes, tightly packed aggregates of larger oval-to-round melanocytes with pale cytoplasm and little or no melanin.[20] Immunohistochemically, the spindle-shaped cells of blue nevi will express both S-100 and HMB-45.[21]

CONCLUSION

Spindle cell neoplasms of the oral cavity form a diverse group and it is very difficult to diagnose these neoplasms from routine haemotoxyline and eosin sections of histopathology. Immunohistochemistry investigations have to be carried out to rule out individual neoplasms.

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