Review Article

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Spindle Cell Lesions of Oral Cavity: A Comprehensive Review

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ABSTRACT

Background: Spindle cell neoplasms are defined as neoplasms that consist of spindle-shaped cells in the histopathology. Spindle cell neoplasms can affect the oral cavity. One challenging feature of head and neck pathology is that a dizzying array of spindle cell lesions occurs here ranging all the way from reactive to malignant and very aggressive. In the oral cavity, the origin of the spindle cell neoplasms may be traced to epithelial, mesenchymal and odontogenic components. This review aims to highlight the common spindle cell neoplasms of the oral cavity.

Keywords: Oral Cavity, Spindle cell lesions.

INTRODUCTION

Spindle cell lesions of the head and neck are quite diverse with great clinical and biological heterogeneity. Some are malignant while many others are benign or simply reactive in nature. Spindle cell lesions can occur in head and neck skin, in the soft tissues of the scalp, orbit, and neck, and along the upper aerodigestive tract (UADT) mucosa.[1] The most common spindle cell lesion presenting along the UADT mucosa is spindle cell carcinoma (SpCC), which has many unique and challenging clinical and pathologic features.[2]

In the oral cavity, the origin of the spindle cell neoplasms may be traced to epithelial, mesenchymal and odontogenic components and Spindle cell neoplasms are spindle-shaped cells in the histopathologythese lesions in oral cavity are of neural, myofibroblastic, muscle, fibroblastic, vascular, epithelioid, odontogenic and miscellaneous tumor.[3]This article aims to review the spindle cell neoplasms of the oral cavity with emphasis on histopathology.

Classification

A simple working type classification proposed for the spindle cell neoplasm's of the oral cavity[2].

Neural Origin Tumors:

- Neurofibroma
- Neurilemmoma (Schwannoma)
- Palisaded Encapsulated Neuroma
- Traumatic Neuroma
- Malignant Peripheral Nerve Sheath Tumor

Myofibroblastic Origin Tumors:

- Myofibroma
- Inflammatory Myofibroblastic Tumor
- Low Grade Myofibrosarcoma

Smooth Muscle Origin Tumors:

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- Leiomyoma
- Vascular Leiomyoma
- Leiomyosarcoma
- Rhabdomyoma

Fibroblastic Origin Tumors:

- Solitary Fibrous Tumor
- Nodular Fasciitis
- Fibromotosis
- Fibrosarcoma

Vascular Origin Tumors:

- Hemangiopericytoma
- Kaposi Sarcoma
- Spindle Cell Hemangioma

Epithelial Origin Tumors:

- Spindle Cell Carcinoma
- Pleomorphic Adenoma
- Malignant Melanoma

Odontogenic Origin Tumors:

- Ameloblastic Fibroma
- Ameloblastic Fibrosarcoma
- Central Odontogenic Fibroma

Fibrohistocytic Origin Tumors:

- Benign Fibrous Histiocytoma
- Malignant Fibrous Histiocytoma

Miscellaneous Tumors:

- Synovial Sarcoma
- Spindle Cell Lipoma
- Liposarcoma

NEURILEMMOMA

Schwannoma, also called neurilemmoma, neurinoma, and perineural fibroblastoma, is a solitary, benign, encapsulated, and slow growing tumor, arising from neural sheath's Schwann cells of the peripheral, cranial (except for the optic and olfactory), spinal, and autonomic nerves. These tumors have a predilection for the head and neck, the extremities, and the posterior mediastinum. In the head and neck area, they primarily appear in soft tissue and often in the tongue, and intraosseous schwannomas are particularly rare, making up less than 1% of all benign primary bone tumors.[3-5]

Size and locations of lesions determine the presence and intensity of symptoms. Schwannomas are usually solitary lesions but in unusual instance are multiple or occur in the setting of von Recklinghausen's neurofibromatosis.[6]

Oral manifestation

Reported cases of intraoral soft-tissue neurolemmomas have been reviewed by Hatziotis and Asprides with the following frequency of occurrence: tongue, 59 cases; palate, 11 cases; floor of mouth, 10 cases; buccal mucosa, 9 cases; gingiva, 6 cases; lip, 6 cases; and vestibule, 5 cases. Other cases have involved the maxillary sinus and salivary glands, as well as the retropharyngeal, nasopharyngeal and retrotonsillar areas. The central lesions in bone may produce considerable destruction of bone with expansion of the cortical plates and thus resemble a more serious lesion. Pain and paresthesia may accompany these central lesions of bone.[7,8]

Histopathologic features

The microscopic picture of the neurolemmoma is characteristic and can seldom be confused with that of other lesions. The tumor is classically described as being composed of two types of tissue, Antoni type A and Antoni type B. Antoni type A tissue is made up of cells with elongated or spindle-shaped nuclei which are aligned to form a characteristic palisading pattern, while the intercellular fibers are arranged in parallel fashion between rows of nuclei. These fibers in some planes will give the impression of occurring in whorls or swirls. Antoni type B tissue does not exhibit this characteristic palisading, but rather a disorderly arrangement of cells and fibers with areas of what appears to be edema fluid and with the formation of microcysts. Verocay bodies, small hyaline structures, are also characteristically present in this tumor. Of great importance is the fact that in nearly all instances the tumor is encapsulated.[8]

FIBROSARCOMA

Fibrosarcoma is a malignant tumor of the fibroblasts, which is liable to recur and metastasize,

most frequently in the lungs. Although fibrosarcomas are rare, they can occur anywhere in the body. The most common sites are in the retroperitoneum, thigh, knee, and distal extremities. It is very uncommon in the head and neck region and comprises only about 1% of all the malignancies in humans. Almost 23% are seen in the oral cavity. The prognosis for fibrosarcomas is poor with a five-year survival rate of 20–35%. The common modality of treatment is radical surgery.[9]

Oral manifestation

Fibrosarcomas in the head and neck region develop in the 3 rd and 5 th decade of life, but there is a wide age range and many patients are below 20 years of age. Infantile or congenital fibrosarcoma is the most common soft tissue sarcoma found in children under 1 year of age. There is no gender predilection. Generally, the tumors develop with equal frequency in males and females. The symptoms of fibrosarcoma vary depending on size, location and spread of the tumor. Symptoms may include pain, swelling or ulceration. Fibrosarcoma of the oral cavity most often manifests as a clinically innocuous, lobulated, sessile, painless and nonhemorrhagic submucosal mass of normal coloration.[10]

Histopathologic features

Microscopically, low grade fibrosarcoma has been characterized as uniform spindle shaped cells which are arranged in fascicles, having a herring bone growth pattern. There are mild degrees of nuclear pleomorphism and rare mitoses. High grade lesions show intense nuclear pleomorphism, a greater cellularity and atypical mitoses. In the present case, pleomorphic spindle shaped cells were arranged in a herring bone pattern, which were associated with collagen and mild mitosis which are characteristic of fibrosarcoma characteristic of a fibrosarcoma. The histological appearance of a fibrosarcoma is similar to that of fibromatosis, fibroblastic odontogenic sarcoma, malignant fibrous histocytoma, liposarcoma and synovial sarcoma. In fibromatosis, mitosis is absent and the grade of cellular atypia is very low. Odontogenic sarcomas shows odontogenic tissues which are absent in fibrosarcoma.[11]

PLEOMORPHIC ADENOMA

Pleomorphic adenoma (PA) is the most common salivary gland tumor, accounting for about 40–70% of all major and minor salivary gland tumors. The commonest sites for intraoral PA are palate, buccal mucosa and lips. Palatal PA presents clinically as a painless, slow-growing mass found on posterior lateral aspect.[12]

Oral manifestation

It arises in the oral cavity as a painless, slowly growing, firm swelling, commonly seen on the posterior lateral aspect of the palate, presenting as a smooth, dome-shaped mass.[5] Because of tightly bound nature of the hard palate mucosa, it appears to be fixed. While in cases of lips and buccal mucosa, it is freely movable. PA of palate is seldom allowed to attain a size greater than 1–2 cm in diameter because it causes difficulty in mastication, speech, and swallowing. It is detected and treated earlier than tumors of major salivary glands. If the overlying mucosa is ulcerated and ulceration is not due to any trauma or biopsy, malignancy should be suspected.[13]

Histopathologic features

It is an epithelial tumor of complex morphology, possessing epithelial and myoepithelial elements arranged in varieties of patterns and embedded in mucopolysaccharide stroma. Formation of the capsule is a result of fibrosis of the surrounding salivary parenchyma which is composed of the tumor and is referred to as false capsule. Pleomorphic adenomas demonstrate combinations of glandular epithelium and mesenchyme like tissue and the proportion of each component varies widely among individual tumors. The epithelial component forms ducts and small cysts that may contain an eosinophilic coagulum, the epithelium may also occur as small cellular nests, sheets of cells, anastomosing cords and foci of keratinizing squamous or spindle cells. Myoepithelial cells are a major component of pleomorphic adenoma. They have a variable morphology, sometimes appearing as angular or spindled, while some cells are more rounded with eccentric nuclei and hyalinised eosinophilic cytoplasm resembling plasma cells (earlier referred to as hyaline cells).[14]

AMELOBLASTIC FIBROMA

Ameloblastic fibroma is a rare odontogenic tumor comprising neoplastic epithelial and mesenchymal tissues. This lesion was previously considered to be a benign lesion with very limited recurrence rate and malignant transformation. However, recent reports have suggested that this lesion has the potential for recurrence and malignant transformation.[15]

Oral manifestation

The ameloblastic fibroma, arising most commonly in the molar region of the mandible, is similar in location to the simple ameloblastoma. Nearly 75% of the 55 cases reviewed by Slootweg occurred in this location. There is a considerable difference, however, in the age group of patients most commonly affected. They reported that there was a very slight predilection for occurrence in males. This tumor exhibits somewhat slower clinical growth than the simple ameloblastoma and does not tend to infiltrate between trabeculae of bone. Instead it enlarges by gradual expansion so that the periphery of the lesion often remains smooth. It will frequently cause no complaint on the part of the patient and has been discovered accidentally during radiographic examination. Pain, tenderness or mild swelling of the jaw may induce the patient to seek aid from the dentist, however.[16]

Histopathologic features

Microscopically, hematoxylin and eosin sections showed islands and strands of epithelial cells in a loose connective tissue stroma resembling primitive dental papilla. The peripheral epithelial cells lining the islands and strands were low columnar, similar to the cells found in the peripheral layer of the follicle in ameloblastoma. The connective tissue resembled cellular fibroblastic tissue similar to the dental papilla in the developing tooth. Hyaline-like tissue is also seen adjacent to the epithelial strands and islands. It was interesting to note that both the epithelial islands and connective tissue stroma revealed high cellularity when compared with the conventional lesions of AF.[17]

SUMMARY

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.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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