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Spindle Cell Carcinoma- A Rare Case Report with Review of Literature

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Abstract

Spindle cell carcinoma is a rare variant of Squamous cell carcinoma which is characterised by malignant epithelial component in conjunction with an invasive spindle cell element. It mainly affects aero digestive tract and patients show history of therapeutic radiation. In this case report we describe a rare case of Spindle cell carcinoma involving right lower alveolar ridge in a 45-year male. Histopathological examination and Immunohistochemical staining were done. This variant of carcinoma is considered potentially aggressive in nature with high incidence of metastases. The 5-year survival rate is 30% and death occur within 1 year of diagnosis, however prognosis depends on many factors.

Keywords: Spindle cell carcinoma, Squamous cell carcinoma, Alveolar ridge, Immunohistochemistry, Therapeutic radiation, Prognosis.

Introduction

Spindle cell carcinoma or sarcomatoid carcinoma is considered to be a biphasic tumour. It comprises <1 % of

all intraoral tumours and 3% of all oral squamous cell carcinoma.[1,2] World health organisation (WHO) classifies Spindle cell carcinoma as a rare, highly aggressive variant of squamous cell carcinoma.[3]It most commonly affects upper aero digestive tract that too larynx is the predominant site,[4] comprising of 70% of cases.[5] In oral cavity this biphasic tumour occurs predominantly in lower lip, gingiva and alveolar ridge. Patient usually gives history of previous therapeutic radiation.[6]Diagnostic criteria include a carcinomatous component (carcinoma in situ or invasive squamous cell carcinoma) and a sarcomatous component. In this we report an unusual case that occurred in mandibular alveolar ridge in a 45-year male that showed biphasic morphology.

Case Report

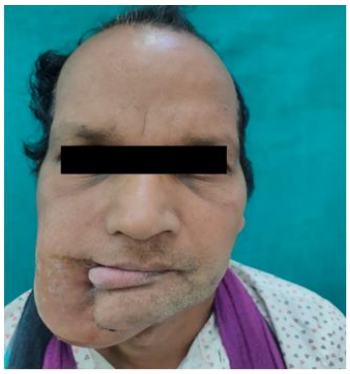
A 45-year male reported to Government Dental College and Hospital, Raipur with chief complaint of a growth in his right lower front tooth region for 5 months. The growth was initially small then gradually increased to the present size as on the day of examination. There was no history of trauma or any discharge from site. Patient had undergone treatment for oral squamous cell carcinoma of buccal mucosa 3 years back for which he had undergone segmental mandibulectomy and received chemotherapy and radiotherapy. On extraoral examination facial asymmetry was seen with flap and surgical scar present on right side of face extending from corner of mouth to chin and approximately 1.5cm below ala tragus line to skin over neck. The scar was completely healed and no sign of discharge was seen (Fig. 1 & 2). On intraoral examination restricted mouth opening was noted with a solitary ovoid polypoid growth of size approximately 2x1.5x1.5 was present on alveolar ridge at the junction of normal mucosa and flap distal to 31 with rough surface (Fig 3). On palpation the growth was firm in consistency and nontender.

Investigation

Ortho pantomogram showed part of right side of mandible was missing with soft tissue shadow of size approximately 2x1.5x1.5 cm over mandibular alveolar ridge distal to 31.We received an excisional gross specimen of size 1.8x1.5x1.5cm which was greyish white in colour, firm in consistency with rough surface texture. Entire tissue was taken under processing.

Microscopy

H and E stained section of the lesional tissue showed malignant epithelial cell invading into connective tissue stroma in the form of island, cords and dissociated cells which exhibited features such as cellular and nuclear pleomorphism, increased nuclear-cytoplasmic ratio, hyperchromatic nuclei, vesicular nuclei, multiple nucleoli and 2-3 mitotic figures per high power field (Fig 5-8). The connective tissue stroma was fibro cellular composed of long streaming fascicles of spindle cells with focal areas showing cells forming storiform pattern (Fig. 9). The spindle cells showed malignant features such as cellular and nuclear pleomorphism, increased nuclear-cytoplasmic ratio, vesicular nuclei and prominent nucleoli and bizarre mitotic figures (Fig. 10 and 11). Numerous dilated and engorged endothelial lined blood vessels and moderate chronic inflammatory cell infiltrate chiefly composed of lymphocytes and plasma cells were also evident. Based on clinical and histopathologic correlation final diagnosis of Spindle cell carcinoma was made. Immunohistochemical staining was performed which showed tumour cell were positive for cytokeratin and vimentin (Fig 12, a & b) which confirmed the diagnosis.



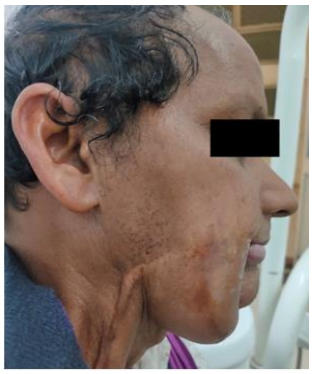


Figure 1, 2: Extra oral asymmetry seen with surgical scar on right side of face

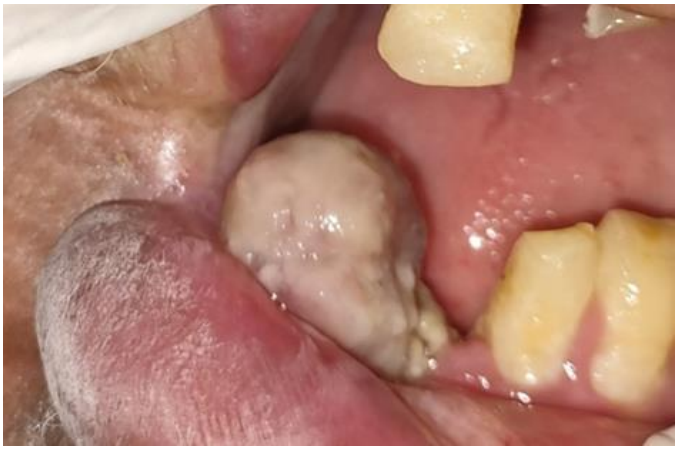


Figure 3: A polypoid growth seen on edentulous alveolar ridge

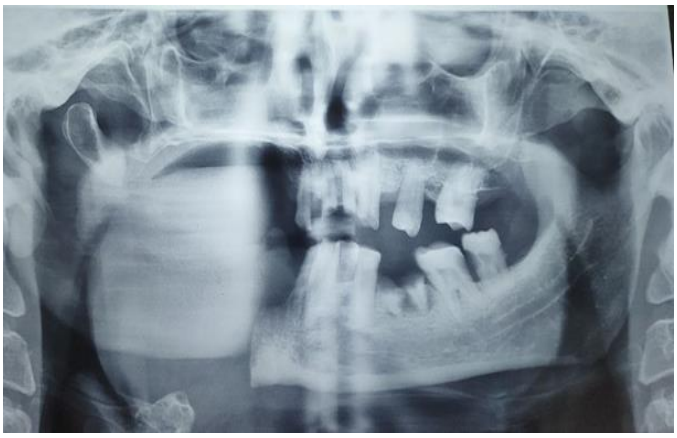


Figure 4: A soft tissue shadow seen on alveolar ridge distal to 31 and part of mandible is missing

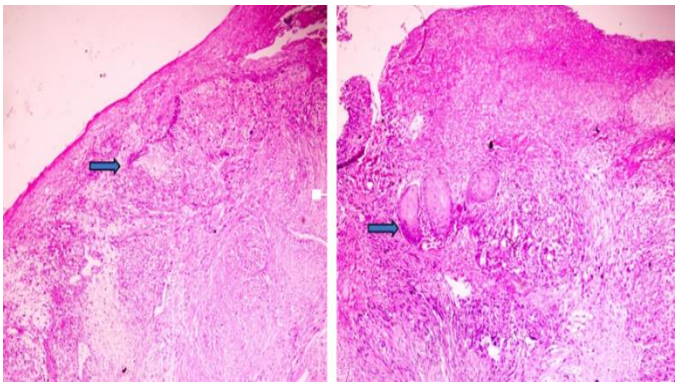


Figure 5, 6: showing islands and dissociated malignant epithelial cell invading into connective tissue stroma (H and E, 4x)

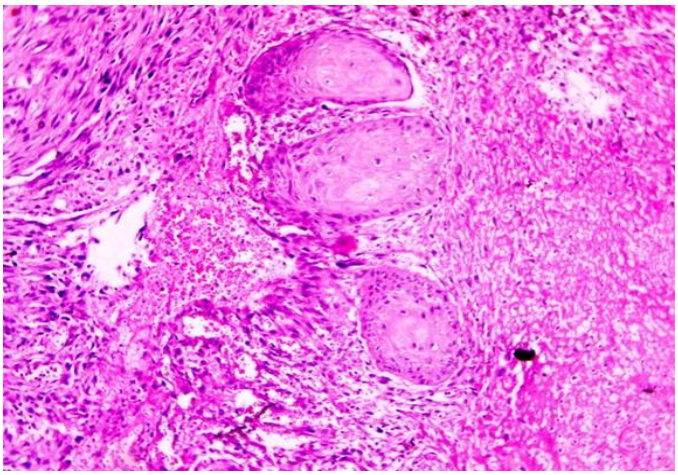


Figure 7: Malignant epithelial cells showing cellular and nuclear pleomorphism, increased N:C ratio, hyperchromatic nuclei (H and E,10x)

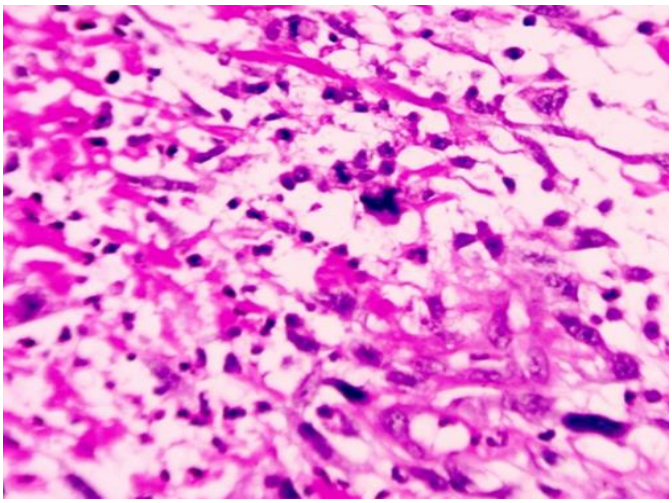


Figure 8: Abnormal mitotic figure seen in malignant epithelial cell (H and E,40x)

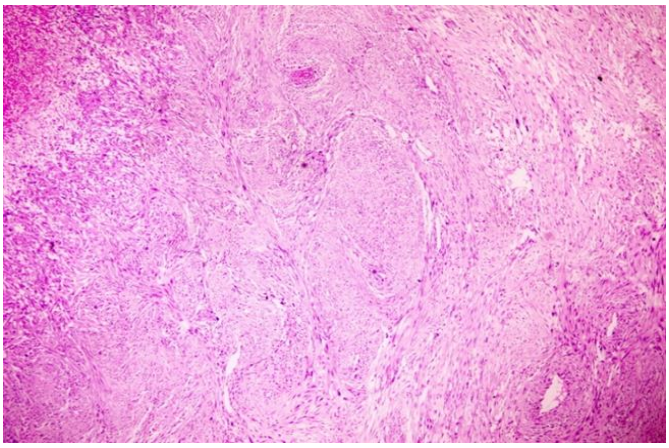


Figure 9: Streaming fascicles of spindle cells and focal areas showing cells forming storiform pattern (H and E, 4x)

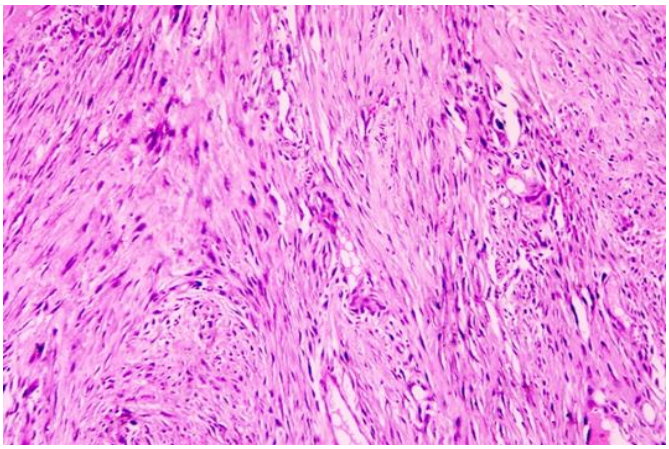


Figure 10, Spindles cells showing cellular and nuclear pleomorphism, increased N:C ratio, hyper chromatic nuclei (H and E, 10x)

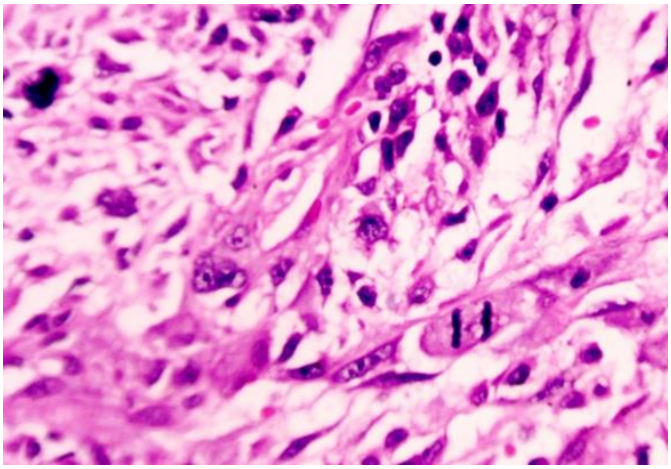


Fig. 11, Abnormal mitotic figure seen in spindle cell(H and E,40x)

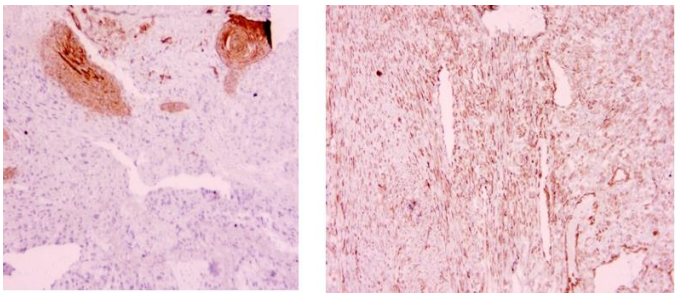


Figure 12 a: shows tumour cell are positive for cytokeratin,

Figure 12 b: Spindle cells showing diffuse positivity for vimentin

Discussion

Spindle cell carcinoma or sarcomatoid carcinoma is biphasic in nature. Theories that are given regarding its histogenesis are:[7]

- Tumour represents a collision tumour(carcino-sarcoma)
- Tumour is a squamous cell carcinoma with an atypical reactive stoma(pseudo sarcoma)
- Both spindle and epithelial components have monoclonal origin and transformation to spindle cell occurs due malignant epithelial cells
- Tumour is of epithelial origin that dedifferentiates to spindle cell morphology (sarcomatoid carcinoma)- this is the most accepted one.

Spindle cell carcinoma comprises of < 1% of all intraoral tumours and 3% of oral squamous cell carcinoma. It is commonly seen in patients with age group of 29-93 years (mean age of 57 years).[6]It shows no sex predilection, in some cases male predominance is seen. Most common site is upper aero digestive tract 70% occurs in larynx. Second most common site is oral cavity involving lower lip (42%), tongue (20%) and alveolar ridge (19%).[6] Other sites include scalp and orbit.[5]

Predisposing factors include tobacco/alcohol use, cigarette smoking, poor oral hygiene and previous therapeutic radiation.[3] Patients usually give history of

prior therapeutic radiation to the same region where the tumour developed subsequently. Time from radiation to the diagnosis of tumour ranges from 1.5- 10 years with mean of 7 years.[6] In this case patient received radiotherapy 3 years ago.

According to Baker's et al radiation induces various changes that causes development of this carcinoma.[8] Chromosomal aberration is caused by radiation in tumour cells as well normal cells. It also results in chromosomal loss and high level of micronuclei fragments.[9] Further studies are required to know about possible mechanism and role of radiation in pathogenesis.

98.9 % cases show exophytic polypoid or pedunculated growth.[5] Although it can be seen as sessile, nodular or endophytic in some cases. Other associated symptoms depend on the site of involvement. When it occurs in larynx patient may have complain of cough, hoarseness of voice, dyspnoea or stridor. When seen in oral cavity patients present with exophytic mass that may or may not be painful, non-healing ulcer or bleeding.

Histologically spindle cell carcinoma shows both malignant epithelial as well as sarcomatoid or malignant spindle cell components. The epithelial components may be carcinoma in situ or invasive carcinoma.

Differential diagnosis on the basis of histopathology includes:

1. Malignant Fibrous histiocytoma (MFH)
2. Fibrosarcoma
3. Malignant peripheral nerve sheath tumour (MPNST)

These spindle cell malignancies can be differentiated from the spindle cell carcinoma as they lack carcinomatous or malignant squamous cell element.

Immunohistochemical stains are useful in diagnosis and to know about the histogenesis of spindle cells and to know the nature of tumour. The epitheial markers includes cytokeratin, Epithelial membrane antigen(EMA) and p63 and 65-80% of spindle cell carcinoma show positivity to atleast one these markers.[4] In this study the tumour cell were postive for Cytokeratin which differentiates it from mesenchymal spindle cell malignancy. Nearly all cases express vimentin. In this case tumour cell were positive for vimentin suggesting that the epithelial cells have acquired mesenchymal like properties, based on immunohistochemical studies investigators hypothesised that dysfunctional catenin-cadherin complex causing tumour cells to shift from squamous to spindle cells, increasing its infilrative behaviour.[4] Studies have found that immunohistochemical staining is helpful in predicting prognosis of disease. Thompson et al found that the survival rate of patients who showed a negative immuno histochemical profile for epithelial markers was significantly greater than that of patients with positive immuno reactivity for epithelial markers.[10]

Treatment includes radical surgery with neck dissection when nodes are positive. Regarding radiotherapy and chemotherapy many authors believe they are ineffective.[5]Recurrence rate is 70-75%. Regional metastasis occurs in 30% of intraoral cases.[11] Prognosis is poorer as compared to Oral squamous cell carcinoma.In 30% of oral cases patient dies within 1 year of diagnosis.[4] However, prognosis depends on various factors smaller size, absence of previous radiation, low stage and superficial location show good prognosis.[12]

Conclusion

Spindle cell carcinoma is a unique and a rare variety of squamous cell carcinoma. Its potentially aggressive nature makes it dangerous. Diagnosis is confusing as it mimics various spindle cell malignancies. As earlier said its prognosis depends on various factors its early diagnosis is important so that patient's life could be saved.

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