

Review Article

Giant Cell Lesions –Histopathological Review

Dr. Ananjan Chatterjee^{1*}, Dr. Humaira Nazir²

¹Sr. Lecturer, Vananchal dental college & Hospital Garhwa, Jharkhand, India

²PG student, Sree Sidhartha dental College Hospital, Tumkur, Karnataka, India

***Corresponding author**

Dr. Ananjan Chatterjee

Email: ananjan15186@gmail.com

Abstract: Giant cells are large multinucleated cells of different lineage. Diagnosis of many lesions of the oral cavity is challenging to most clinicians because of their uncommon prevalence. A number of cystic, metabolic, osteodystrophic, microbial, tumour and tumour like lesions of the oral cavity present with characteristic giant cell lesions which makes their diagnosis and study simpler. We have attempted to classify the common giant cell lesions of the oral cavity with their histological picture.

Keywords: Giant cell lesions, tumour, oral cavity

INTRODUCTION:

There are a number of lesions that occur in the jaws that contain giant cells within them. Giant cells which are associated in many pathologies are referred to as pathologic giant cells.

CLASSIFICATION OF GIANT CELL LESION

According To Paul Auclair *et al* [3]

I. Entities in which giant cells are the predominant histologic finding and form the basis of their recognition:

- Central giant cell granuloma
- Giant cell tumor of bone
- Aneurismal bone cyst
- Cherubism
- Brown tumor of hyperparathyroidism

II. Lesions containing giant cells

1. Infectious diseases

Bacterial

- Tuberculosis
- Leprosy
- Syphilis
- Actinomycosis
- Cat scratch disease

Viral

- Herpes
- Measles

Mycotic

- Histoplasmosis
- Blastomycosis

II .Inflammatory diseases of unknown origin

- Wegener's granulomatosis

2. Metabolic

- Histiocytosis X

3. Neoplastic

Benign

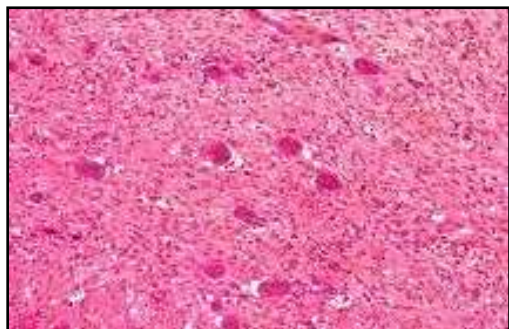
- Giant cell fibroma
- Osteoblastoma

Malignant

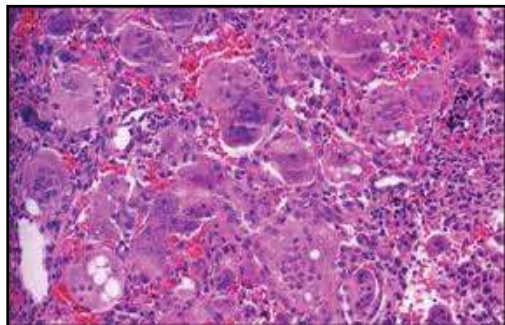
- Chondrosarcoma
- Hodgkin's disease
- Burkitt's lymphoma.

For the description of giant cell lesions, we are following Paul Auclair *et al's* classification.

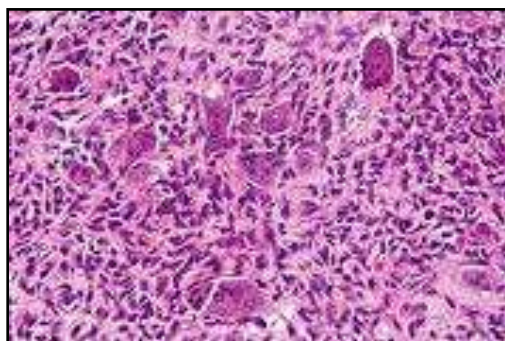
1)ENTITIES IN WHICH GIANT CELLS ARE THE PREDOMINANT HISTOLOGIC FINDING AND FORM THE BASIS OF THEIR RECOGNITION



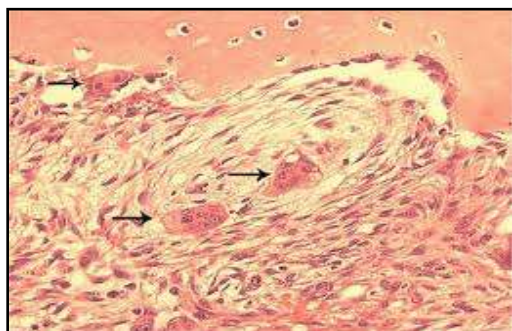
Fig(a) Central Giant cell Granuloma



Fig(b) Peripheral Giant Cell Granuloma showing Multinucleated giant cells .

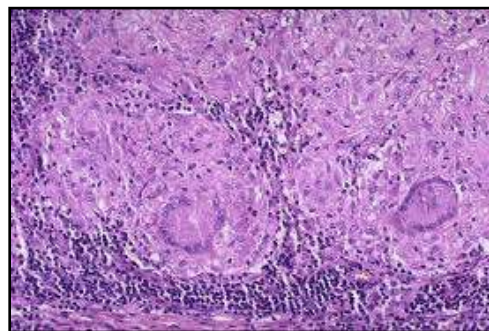


Fig(c) Giant Cell Tumor showing Numerous giant cells lying in a cellular matrix measuring about 40µ in diameter.

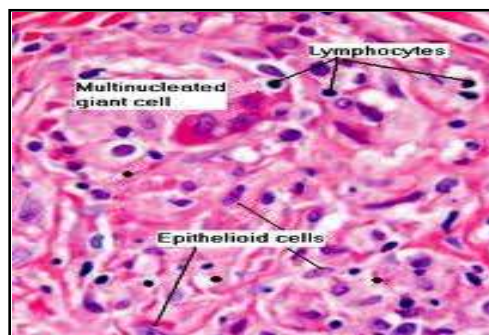


Fig(d) Cherubism showing Multinucleated giant cells (arrow)

2) LESIONS CONTAINING GIANT CELL
 I) INFECTIOUS DISEASES
 A. BACTERIAL LESIONS
 i) TUBERCULOSIS:



Fig(a) Tuberculosis showing Areas of necrosis surrounded



Fig(b) Areas showing multinucleated giant cell, lymphocytes and epithelioid cell by collars of epithelioid cells

ii) LEPROSY (Hansen's disease)[2]
 TUBERCULOID LEPROSY

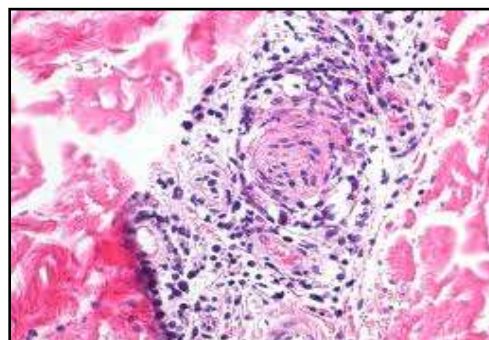
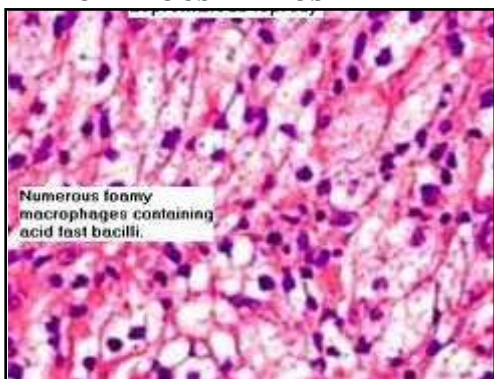
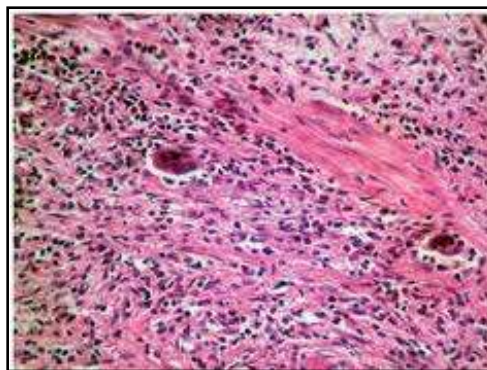


Fig (a) Well formed clusters of epithelioid histiocytes, lymphocytes and giant cells.

LEPROMATOUS LEPROSY



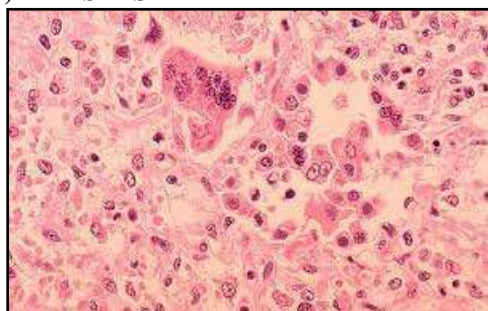
Fig(b)Sheets of lymphocytes



Fig(b)Multinucleated giant cells with the chronic inflammation

B:VIRAL LESIONS[3]

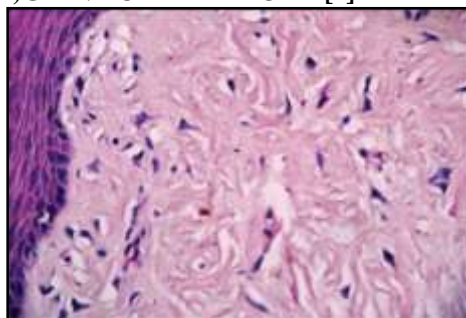
i) MEASLES



Fig(a)Characteristic multinucleated macrophages, known as Warthin Finkeldey gaint cells.

D:BENIGN NEOPLASTIC LESIONS

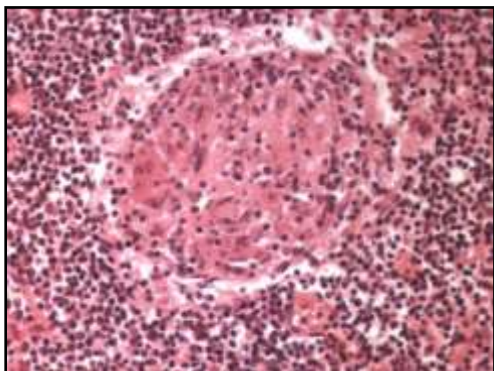
i)GIANT CELL FIBROMA[4]



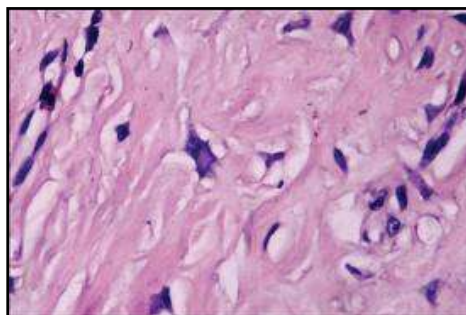
Fig(a)Vascular fibrous connective tissue, which is usually loosely arranged.

C:FUNGAL INFECTIONS[3]

i)HISTOPLASMOSIS:



Fig(a)Macrophages organized into granulomas



Fig(b)Large stellate and multinucleated fibroblasts

ii) OSTEOLASTOMA:

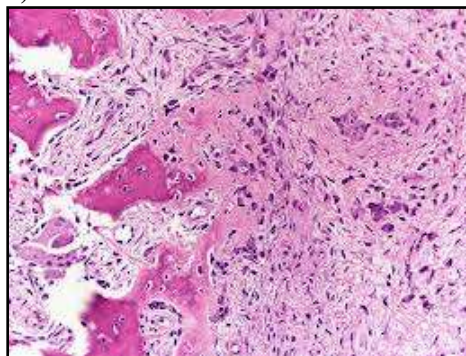


Fig (a)Foci of osteoid with multinucleated giant cells.

E: MALIGNANT NEOPLASTIC LESIONS

i) CHONDROSARCOMA [3,5]:

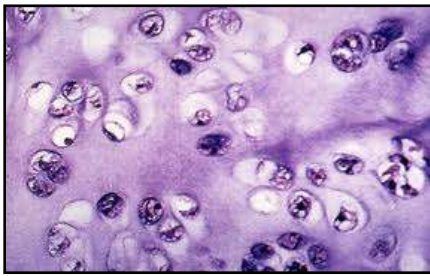
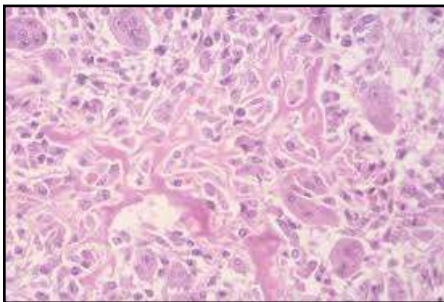
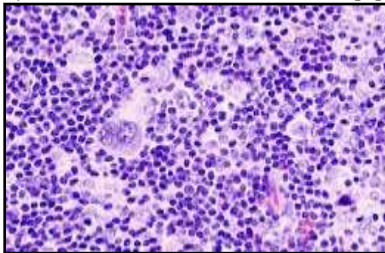


Fig (a) Binucleated cartilaginous cells with pleomorphism.

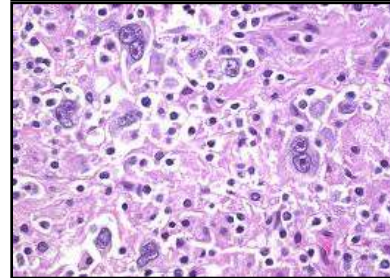
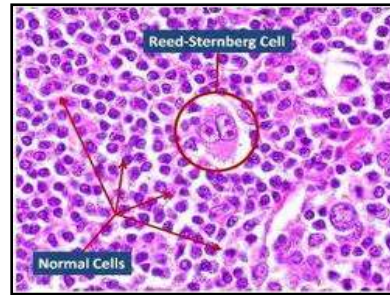


Fig(b) Clustered benign giant cells

ii) HODGKIN'S LYMPHOMA [6]:



Fig(a) Owl-eye appearance



Fig(b) Mixed cellularity by Hodgkin's disease is characterized by lymphocytes, plasma cells, eosinophils and easily identified Reed - Stern berg cells.

iii) BURKITT'S LYMPHOMA:

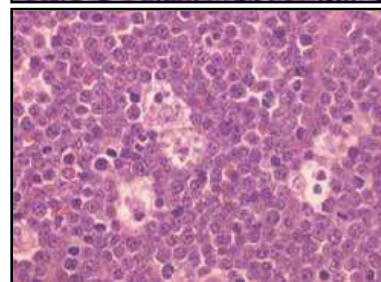
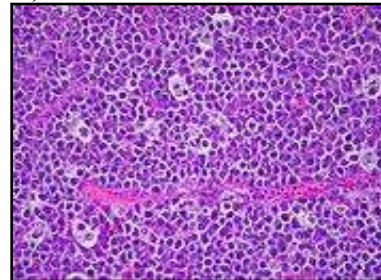
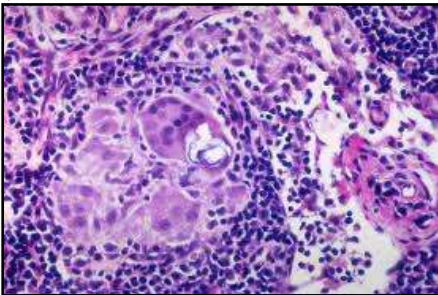


Fig (a) Sheets of tumor cells that exhibit round nuclei with classic starry sky pattern.

F:INFLAMMATORY DISEASE OF UNKNOWN ETIOLOGY

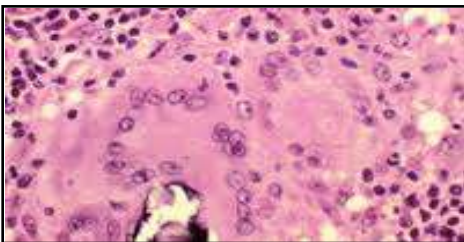
i)SARCOIDOSIS[3]



Fig(a)Schaumann bodies.

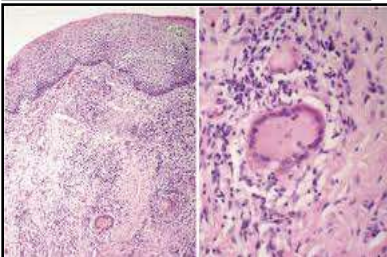
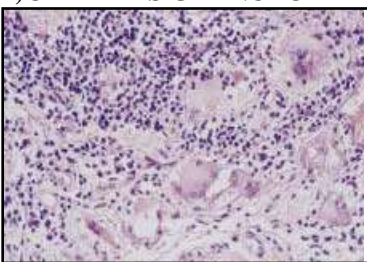


Fig(b) Asteroid bodies.



Fig(c)Langhan's type of giant cell.

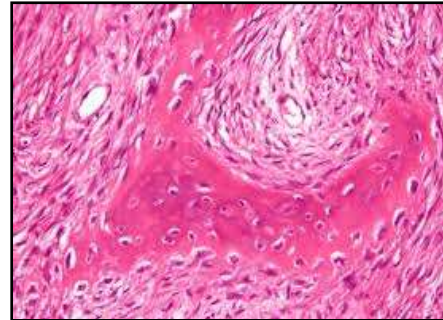
ii)CHEILITIS GRANULOMATOSA



Fig(a)Dense infiltrate of the submucosal connective tissue with focal non-necrotizing granulomas with langhan's type of giant cell.

G:FIBRO-OSSEOUS LESIONS[3,6]

i)FIBROUS DYSPLASIA



Fig(a)Cellular fibrous connective tissue containing irregular trabeculae of immature bone which are not lined by osteoblasts in Fibrous Dysplasia.

ii)PAGETS DISEASE

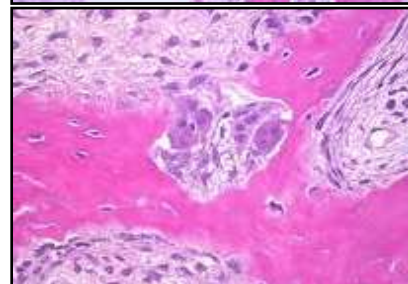
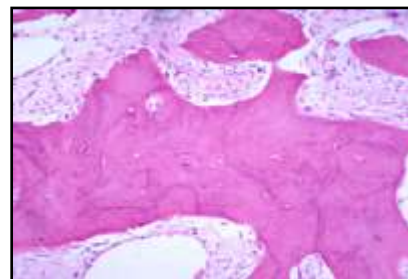


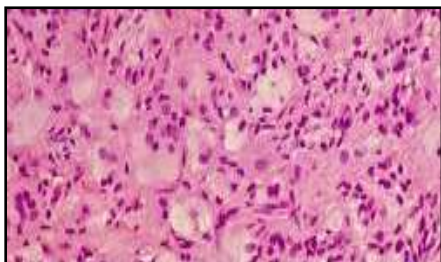
Fig (a,b)Basophilic reversal lines in the bone with large multinucleated osteoclasts seen in Pagets disease of bone.

H:METABOLIC

i)XANTHOMA[7]

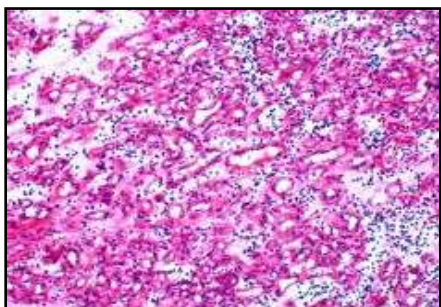


Fig (a)Foamy histiocytes with central small, round nucleus



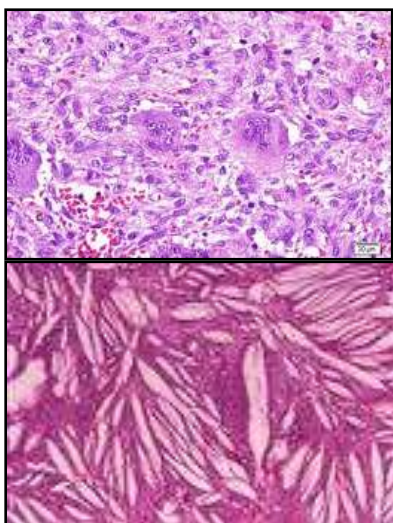
Fig(b) Multinucleated giant cells.

D) REACTIVE LESIONS[3]

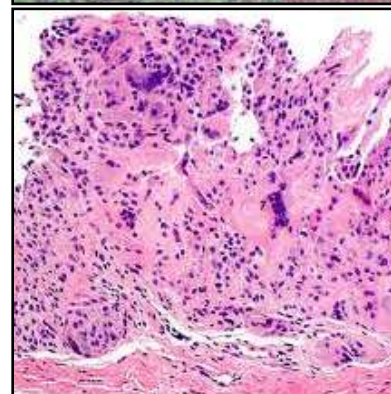
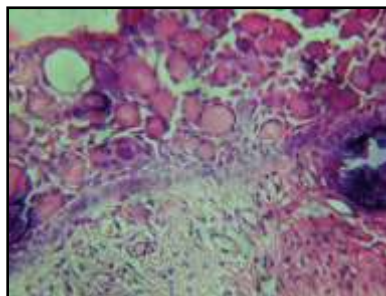


Fig(a) Various sized endothelium lined channels with mixed inflammatory cell in filtrate in Pyogenic granuloma.

J: CYSTS[8]

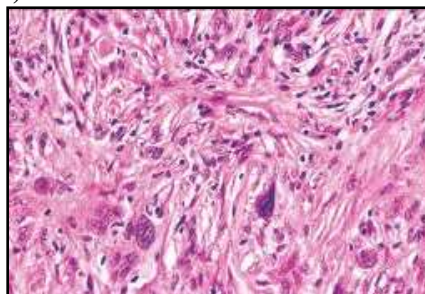


Fig(a) Cholesterol clefts with multinucleated giant cells in Radicular cysts.

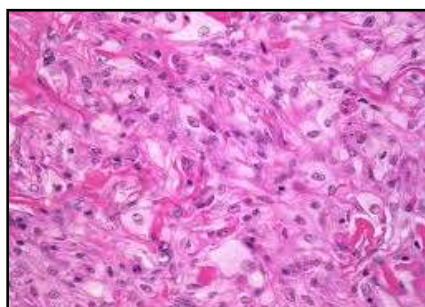


Fig(b) Cystic lumen lined by odontogenic epithelium and areas of "Ghost" epithelial cells projecting into the lumen with areas showing calcification and giant cell formation in Calcifying Odontogenic cyst

**K: BENIGN NEOPLASTIC LESION
i) BENIGN FIBROUS HISTIOCYTOMA[3]:**

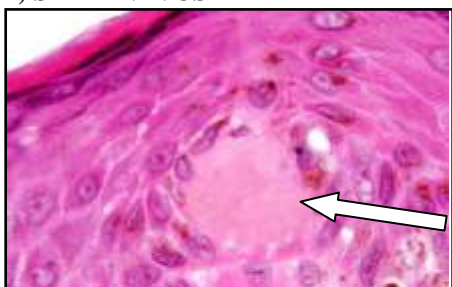


Fig(a) Multinucleated giant cells

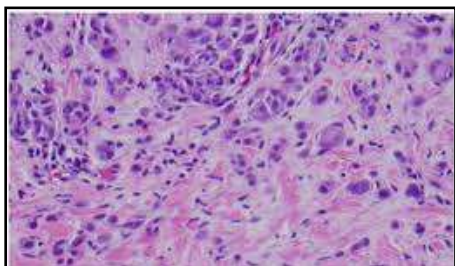


Fig(b) Scattered/ foamy histiocytes

ii) SPITZ NEVUS



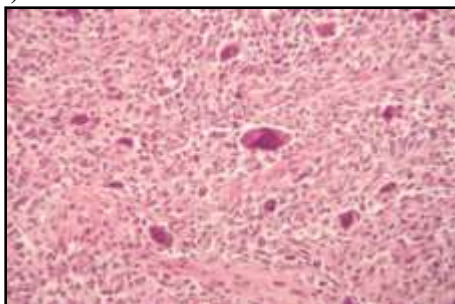
Fig(a) Kamino bodies



Fig(b) Bizarre type of giant cells

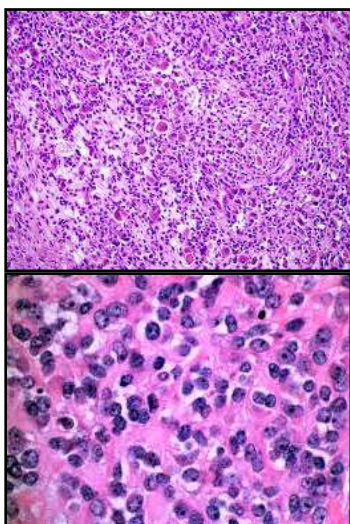
L: MALIGNANT NEOPLASTIC LESIONS

i) OSTEOSARCOMA:



Fig(a) Multinucleated giant cells

ii) RHABDOMYOSARCOMA [3,6]



Fig(a) Alveolar type with multinucleated giant cells.

CONCLUSION

A variety of oro-facial lesions contain multinucleated giant cells. Some giant cells forming within the body are pathognomonic and some are not pathognomonic of their respective lesions. For example, in giant cell lesions like Hodgkins’s lymphoma, peripheral and central giant cell granulomas and giant cell tumor the multinucleated giant cells are found to be pathognomonic. In lesions like tuberculosis, HIV, measles, xanthoma multinucleated giant cells are characteristic but are not pathognomonic.

Currently, there are no steadfast histopathologic criteria for distinguishing between aggressive and non aggressive giant cell lesions. Documentation of such criteria would be of great assistance in planning excision and in predicting surgical program.

With diligence and endurance this is an attempt to assemble all the giant cell containing lesions of the oral cavity under one cover, which would help us to report a definitive diagnosis for these lesions for an exact treatment so that recurrence and perplexity can be conquered which in the long run leads to the wellbeing of the patients.

REFERENCES

1. Auclair P; Oral and maxillofacial surgery clinics of North America; 1997;9;655-675.
2. Motta ACF, Komesu M C, Silva C HL, Arruda D, Simão JC; Leprosy-specific oral lesions: A report of three cases; Med Oral Patol Oral Cir Bucal. 2008; 13(8):E479-82.
3. Shafers WG, Hine MK, Levy BM; Text book of Oral pathology. 4th Edition, W.B. Saunders Company, Philadelphia, 1997
4. Robert M Berve, Mathew N Levy; Text book of Physiology, 5th edition; Saunders Elsevier Science; Pennsylvania. 2005; 38- 62
5. Creighton C; The physiological type of the giant-cells of tubercles and granulations; Journ of Anat and Phys; 12; Plate 17; 183-195
6. Khalighi HR, Hamian M, Abbas FM, Farhadi S; Simultaneous existence of giant cell fibroma and squamous papilloma in the oral cavity; Indian Journal of Medical Specialities, 2011;2(2):153-156
7. Ivkovi T, Gajanin R, Karali M, Stojiljkovi B, Panjkovi M.; Benign Osteoblastoma of the Mandible; Archive of Oncology 2000; 8(2):73-4.
8. Doweiko J, Dezube BJ, Pantanowitz L; Hodgkin’s lymphoma of the CNS masquerading as meningioma; Journal of Clinical Oncology; 2012;22(20): 4228-30.