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SALIVARY GLAND AMYLASE CRYSTALS: CYTOPATHOLOGICAL INSIGHT

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A 60 year old female presented to ENT OPD with a slightly painful swelling in left submandibular region since last 15-20 days. The patient also gave a brief history of swelling of whole left side cheek a week before the swelling developed with no history of weight loss, loss of appetite and fever. On examination the left submandibular swelling was about 3X2 cm in size, well circumscribed, tender, firm with slightly raised temperature of overlying skin and no skin changes. Patient was advised fine needle aspiration cytology. FNAC was done using a 22 gauge needle. A pus like aspirate admixed with blood was obtained. Smears were air dried, alcohol fixed and stained with Giemsa and papaniculaou. Ziehl Neelsen was also performed for acid fast bacilli to rule out tuberculosis. Multiple Giemsa stained smears were examined which showed dense admixture of inflammatory cells comprising of both acute and chronic inflammatory cells predominantly degenerated neutrophils, lymphomononuclear cells, clusters of histiocytes and multinucleated giant cells along with necrotic debris. Smears also showed numerous rectangular amylase crystals varying in size entrapped within these giant cells and macrophages as well lying singly (figure 1). Few cohesive clusters of reactive ductal cells were also seen. Background was dirty; showed necrosis and haemorrhage. ZN stain using 20% H2SO4 was non contributory. A few special stain along with polarizing microscopy was also done in view of abundant PAS stain showed positivity in amylase crystals (figure 2a). PAP stained smears showed abundant orangiophillic crystals (figure2b and 2c). Polarizing microscopy showed that these crystals were Non bifringent. No granuloma, atypia or malignancy was noted in the prepared smears. Patient follow up was done at 7th day and 14th day. The swelling had subsided to less than 1X1 cm and patient had no pain post treatment.

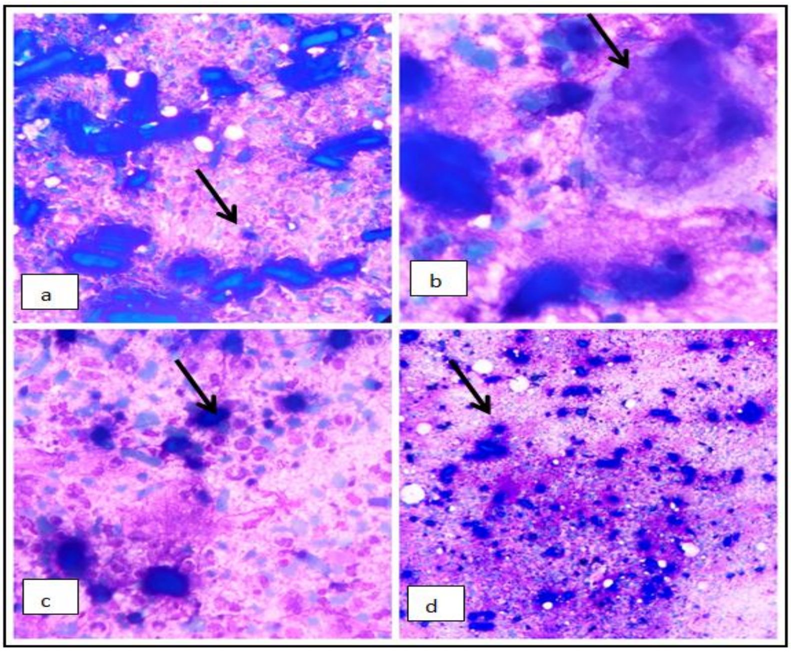

Figure 1: Large, rectangular, basophilic crystals on Giemsa stain. Giant cell engulfing crystal (b:Giemsa,40x). Background showing necrotic debris along will mixed inflammatory infilterate (c:Giemsa,10x).

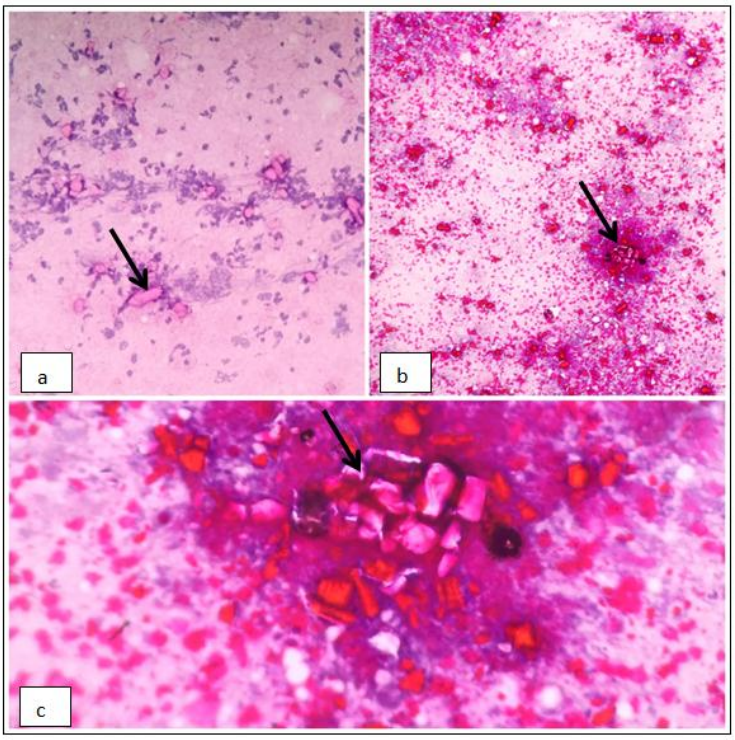

Figure 2: PAS positive crystals (a:PAS,10x). Orangeophilic crystals on Papaniculaou stain (b and c:PAP, scanner and 40x repectively).

Neoplastic and non neoplastic pathologies can result into salivary gland enlargement. FNAC is a quick, cost effective, safe and sensitive diagnostic tool to differentiate from neoplastic and non neoplastic causes. Crystals can be seen in different salivary gland lesions including 1) neoplastic conditions 2) Inflammatory lesions 3) Cystic lesions etc, but still is not a very usual finding.[1][2] Salivary gland crystals can be of various types such as amylase-rich, tyrosine, collagenous, oxalate and intraluminal crystalloids.[2][3][4][5] These have specific shape and associations. The geometrical shaped, translucent and non bifringent amylase -richcrystals can be easily differentiated from radially arranged needle shaped collagenous crystals and floret shaped tyrosine crystals; the later two being found in neoplastic conditions such as pleomorphic adenoma and malignant tumors of salivary gland.[2][6][7] The amylase crystals that were demonstrated in our case were first reported by Takeda, Ishkawa et al and they rationalized it to be due to crystallized amylase in supersaturated saliva.(1) Till now amylase rich crystals have been reported only in benign and non neoplastic conditions; thus their presence ruling out any malignant lesion. Their presence initiated an acute inflammatory response with giant cell reaction culminating into sialomegaly. Nasuti et al have also said in their study that presence of amylase crystals should not be taken as acellular marker for salivary gland lesions, thus setting up one more criteria for cellular adequacy in amylase crystal rich lesions falling short of presence of acinar and ductal cells. They have also reported that these have also been found in warthin's tumor and oncocytic papillary cystadenoma.[2] Lopez-Rios et all have documented presence of amylase rich crsytalloids in lymphoepithelial cysts wich is also benign.[7]

Since our patient was elderly female with short history of sialomegaly, it was important to rule out malignant lesions. The amylase crystals not only are helpful for cellular adequacy but also point towards a benign lesion even in absence or paucity of acinar and ductal cells. The study of these crystals and their associations give us insight into the type and course of salivary gland lesions whoever the other cytomorphological features, clinicoradiological correlation and follow up of patient still remains important for diagnosis.

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REFERENCES

1. Takeda Y, Ishikawa G: Crystalloids in salivary duct cysts of the human parotid gland. Scanning electron microscopical study with electron probe X-ray microanalysis. Virchows Arch A Pathol Anat Histopathol, 1983; 399: 41-48. (7)
2. Nasuti JF, Gupta PK, Fleisher SR, LiVolsi VA: Nontyrosine crystalloids in salivary gland lesions: report of seven cases with fine-needle aspiration cytology and follow-up surgical pathology. Diagn Cytopathol, 2000; 22: 167-171. (19)
3. Tabbara SO: Salivary Glands. In Sidawy MK, Ali SZ (Eds): Fine Needle Aspiration Cytology: Foundations in Diagnostic Pathology. Philadelphia, Churchill Livingstone-Elsevier, 2007; 1-36. (2)

4. López-Ríos F, Díaz-Bustamante T, Serrano-Egea A, Jiménez J, de Agustín P: Amylase crystalloids in salivary gland lesions: report of a case with a review of the literature. Diagn Cytopathol, 2001; 25: 59-62. (3)
5. Sáenz-Santamaría J, Catalina-Fernandéz I, Fernandez-Mera JJ: Sialadenitis with crystalloid formation. Fine needle aspiration cytodiagnosis of 15 cases. Acta Cytol, 2003; 47: 1-4. (16)
6. Bellizzi AM, Mills SE: Collagenous crystalloids in myoepithelial carcinoma: report of a case and review of the literature. Am J Clin Pathol, 2008; 130: 355-362.(18)
7. López-Ríos F, Ballestín C, Martínez-González MA, Serrano R, de Agustín PP: Lymphoepithelial cyst with crystalloid formation. Cytologic features of two cases. Acta Cytol, 1999; 43: 277-280. (20)