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Amylase crystalloids: A diagnostic clue in salivary gland lesions

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Abstract
Crystalline structure in salivary gland lesions is a rare occurrence. Amylase crystalloids are a type of crystalline structure observed in salivary gland lesions. We report a case of a 67 year old male with detection of amylase crystalloids in the parotid gland. Since amylase crystalloids are not found in malignant conditions, their occurrence indicates a benign entity.

Introduction
Amylase crystalloids are non-birefringent geometric, rhomboid shaped structures that are seen in benign conditions of salivary glands [1-3]. Their size range from 5 -500 micrometer and stain pink to orange color by papanicolau and deep blue color by giemsa stains [4]. The detection of crystalloids in salivary gland lesions is uncommon and can provide a diagnostic clue towards the etiology of the lesion [5]. Herein, we report a case of amylase crystalloids in an elderly male in parotid gland.

Case Report
A 67 year old male presented with swelling over the left preauricular region measuring 1 x 1 cm for 2 weeks. Ultrasound examination revealed a cystic lesion in the parotid gland and the fluid was aspirated following which the swelling subsided. Cytological evaluation of the smears showed dense aggregates of geometrical crystalloid structure of rectangular and rhomboid shape with parallel sides. Papanicolaou stain showed bright orange stain with parallel ends and Giemsa stain showed deep blue color staining of the crystalloids (Figure 1, 2). Admixed were some neutrophils. Occasional acinar structures were observed. It was reported as cystic sialadenitis with amylase crystalloids.

Discussion
Crystalloids in salivary gland lesions are rare occurrence but are found in different salivary gland pathologies like sialadenitis, sialolithiasis, cystic and neoplastic conditions [4]. The types of salivary gland crystalloids are amylase, tyrosinase, collagenous and intraluminal [2, 5, 6].
Amylase crystalloids were first discovered by Takeda and Shikawai in salivary duct cyst in 1983 [7]. They are also referred to as non-tyrosine crystalloids or oncocyte/cyst associated crystalloids [2]. They are non-birefringent and may be present in various geometric sizes and shapes ranging from needle to rod shaped or may be seen in groups or dispersed singly [1, 3, 7]. They are formed due to supersaturation of saliva and appear deeply basophilic on giemsa stain and orangeophilic on pap stain.

Amylase crystalloids are seen in benign lesions only such as benign cystic lesions, Warthin tumor and oncocytic cystadenoma [5, 6]. Likewise, the presence of amylase crystalloids in FNA smears of sialadenitis and sialolithiasis has been well established in literature [6]. There are no evidence of detection of amylase crystals in malignant tumors till date, therefore the presence of these crystalloids favor a benign entity [1, 3, 4]. Hence, it is essential to determine the type of crystalloid as it helps in differentiating benign and malignant nature of the lesion [1, 5].

Morphologically, amylase crystals can be distinguished from tyrosine crystalloids that are petal shaped with blunt ends and collagenous crystalloids which are radially arranged collagen fibers around central area [2, 3, 5]. They are seen in pleomorphic adenomas and myoepitheliomas [4]. Tyrosine crystalloids are also be observed in malignant tumors like pleomorphic ex carcinoma, Polymorphous low grade adenocarcinoma and collagenous crystalloids in basal cell carcinomas, basaloid squamous cell carcinomas and myoepithelial carcinomas [7]. Intraluminal crystalloids are identified by the presence of geometrical structures embedded in amorphous eosinophilic material and are usually observed in malignant tumors [8].

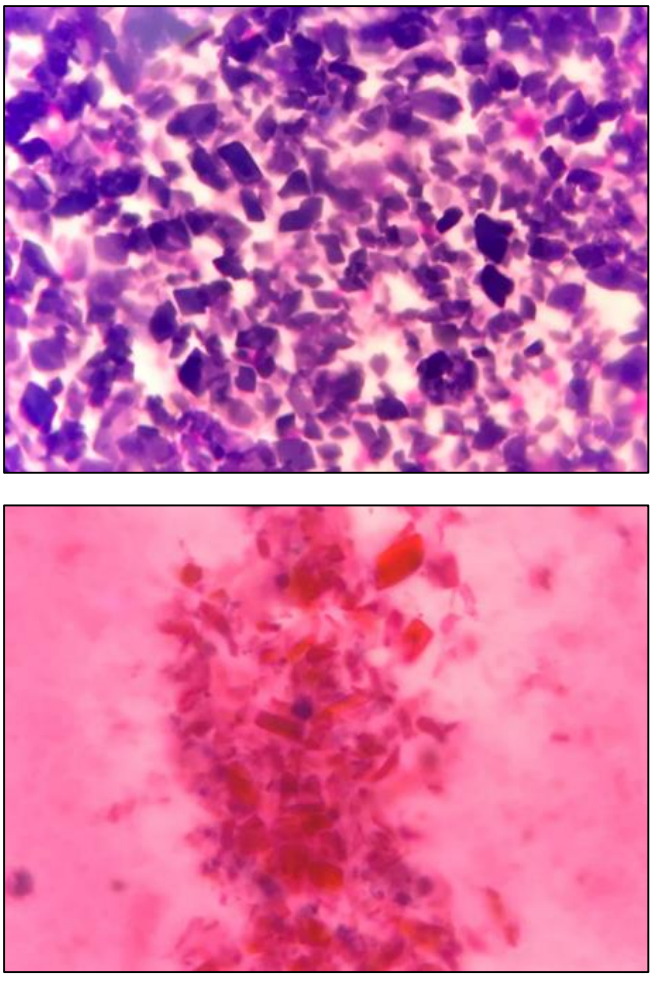


Fig 1: Smears showing numerous amylase crystalloids a) Giemsa stain; b) Papanicoulau stain

Conclusion

An awareness of amylase crystalloid is important for cytopathologists as it provides a diagnostic clue towards the benign nature of lesion since it has not been seen in malignant condition till date.

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