CASE REPORT

Ceruminous Pleomorphic Adenoma: A Comprehensive Clinicopathologic Report

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Pleomorphic adenoma of the ceruminous glands is a rare benign tumour. Less than thirty cases have been described. The authors present a new patient, providing clinical and radiological data, along with histopathology, inmunohistochemistry and ultrastructural morphology. Electron microscopy findings related to decapitation secretion are shown.

There is confusion on description of external ear glands neoplasms in the literature. Most recent publications on ceruminal glands tumours deal with its histopathological classification, which is reviewed in this paper. A comprehensive pathological study and a detailed clinical description are basic to progress in the knowledge of these unusual lesions.

Ceruminous glands are modified sweat glands. Along with sebaceous glands, located more laterally, they compose the glandular apparatus of the external ear canal (EEC). United secretion of ceruminous and sebaceous glands makes the cerumen, a substance with important antimicrobial properties due to its composition of lisozime and inmunoglobulins. In the rest of the body sweat glands are eccrine glands but ceruminous glands are anexial structures specialised in apocrine secretion. It implies the apical fragmentation of the cell, which histologically is represented by the presence of cellular detritus in the glandular lumen. Besides, electron microscopy (EM) studies have demonstrated the co-existence of an eccrine secretion similar to that found in sweat glands. As such, it has been proposed they should be renamed "apoeccrine" glands. Accepting "apoeccrine" secretion in ceruminous glands has important implications, as it would justify the histogenesis of ceruminal tumours with eccrine differentiation or purely eccrine tumours.

Neoplasms originating in the ceruminal glands have been traditionally named under the collective term ceruminoma. The term is ambiguous and it does not differentiate between benign and malignant lesions, although it suggests benignity. Actually, most ceruminal gland neoplasms described are malignant, with an aggressive behaviour and a high recurrence rate. Therefore ceruminoma is a misleading denomination, insufficient for describing the histopathological and evolutive profile of these neoplasms. This is the reason why it has tended to be rejected by publications in recent years although the term is still commonly used.

Up to date the most accepted classification of ceruminous glands tumours is based on that proposed by Welti in 1972[1]. It originally included four categories: ceruminous adenoma, pleomorphic adenoma (mixed tumour), adenoid cystic carcinoma and ceruminous adenocarcinoma. Other authors[2, 3] have added benign eccrine cylindroma and syringocystadenoma papilliferum among benign lesions, and mucoepidermoid carcinoma among the malignant ones[4], although it has been argued that the latter of these is not of glandular origin in the EEC. Proposed classification is shown in Table 1.

Pleomorphic adenoma is the most frequent neoplasm found in major salivary glands, particularly in the parotid gland. It has rarely been described without being related to major or minor salivary glands of the oral cavity. On the other hand, neoplasms arising from ceruminous glands are frequent in some animals, like the dog, but unusual in man. Thereafter, pleomorphic adenoma of the ceruminous glands is a rare lesion. There have been no ultrastructural descriptions of ceruminous pleomorphic adenoma in recent literature[5] although there are reports on other ceruminous tumours[6, 7].

CASE REPORT

A 34 year old male patient attended the outpatient otolaryngology clinic for occasional draining in the right ear. He did not present otalgia, tinnitus, dizziness or any other symptoms of ear disease except for fluctuant hearing loss with episodes of aural discharge. Medical history was unremarkable. On otoscopic examination, a polipoid mass was identified in the floor of the EEC, close to the external meatus. A CT confirmed the location without osseous wall involvement. It also confirmed the lesion to be independent of the parotid gland and the middle ear (Figure 1). Local excision was performed with wide margins. No recurrence has been detected after seven years of follow-up.

The surgical specimen was 1.7 x 1.1 x 0.8 cm. Optic microscopy showed a non encapsulated neoplasm,

Table-I: Histological types of ceruminous glands neoplasms.

Benign	Malign
Ceruminous Adenoma	Ceruminous Adenocarcinoma
Ceruminous Pleomorphic Adenoma	Ceruminous Adenoid Cystic Carcinoma
Ceruminous Syringocistadenoma Papilliferum	Ceruminous Mucoepidermoid Carcinoma *
Ceruminous Benign Eccrine Cylindroma	
Neoplasms of uncertain malignant potential **	

* The inclusion of mucoepidermoid carcinoma is controversial.

** Some authors recommend the term "uncertain malignant potential" if benignity of the lesions has not been accurately documented.

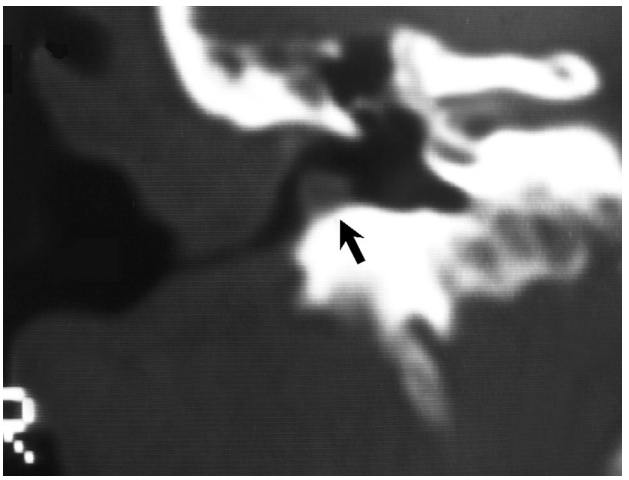

Figure-1: Coronal CT of the right ear. A polipoid lesion of soft density is shown implanted in the floor of the EEC and partially occluding it (arrow).

consisting of tubular and glanduloid structures (Figure 2a) covered by two rows of cells. Those closer to the glandular lumen had an oval or polygonal eosinophilic cytoplasm with a central vesicular nucleus. Under these epithelial cells lay myoepithelial cells: more elongated or cubical in shape, with few cytoplasm and a rather hypercromatic nucleus. In tubular areas epithelial cells showed decapitation (apocrine) secretion (Figure 2b). Some areas had squamous metaplasia (Figure 2c). Stroma surrounding these components was variable: it was either strongly hyalinized or had a condromixoid appearance, with was highlighted with alcian-blue, showing cells alone or in solid cordons. Neither nuclear polymorphism, nor hypercromasia or mitosis could be detected in the tumoral cells. PAS tintion showed mucin in the cytoplasm of epithelial cells and in the glandular lumens. No tumoral cells were found in the resection margins.

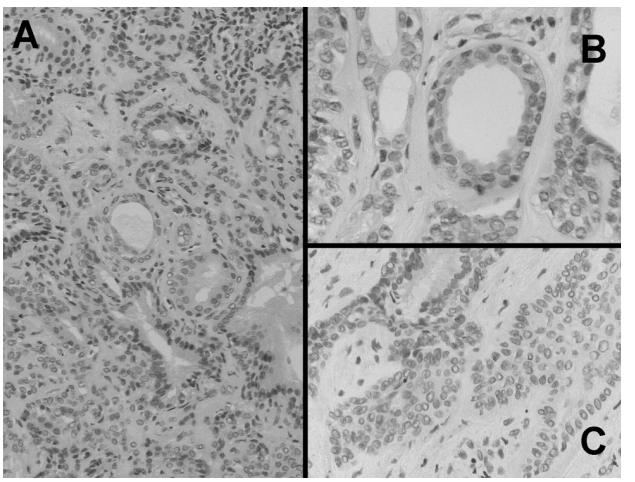

Figure-2: Optic microscopy of different aspects of the glandular component of the neoplasm with haematoxylin-eosin. 2a: Tubular and glanduloid structures (20x). 2b: Apocrine secretion (63x). 2c: Focus of squamous metaplasia (40x).

Inmunohistochemistry

Epithelial cells were positive for AE1/AE3 cytoqueratines and for CK-7 cytoqueratine. Cytoplasmic membrane edge also expressed epithelial membrane antigen (EMA). The presence of myoepitelial cells was demonstrated with S-100 and muscle-specific actine.

Ultrastructure

Ultrastructural morphology was studied with paraffin embedded material. Intercellular areas had an irregular border, star-shape or polygon, corresponding to solved material when the specimen was processed for optic microscopy and which could be partly lipids or cholesterol. This luminal contain was also observed in electron microscopy as empty or electron-lucid spaces with a geometric shape. This material in glandular lumens had cellular fragments, most probably apical fragments of decapitation secretion (apocrine caps) (Figure 3). Tubuloglandular structures had one or two lines of cells. Epithelial cells had a number of tonofilaments. The number and size of desmosomes varied from cell to cell. Free edges had many short microvilli. In same areas intracytoplasmic lumina were observed. Basal lamina was rather thick.

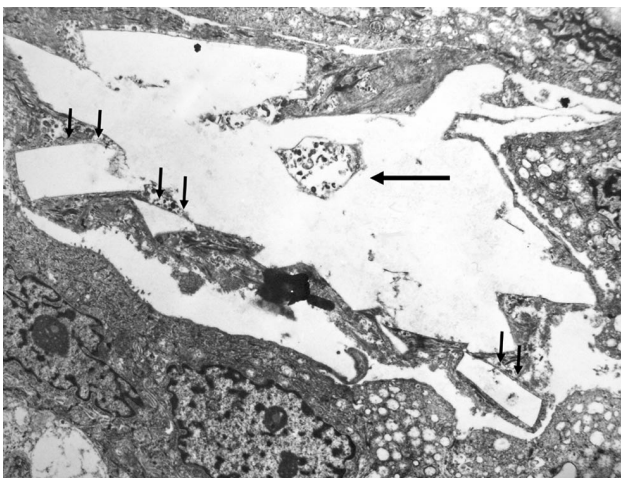

Figure-3: Electron microscopy (20.000x). Geometric shapes (double small arrows) are related to the material preparation. Cellular fragments are shown in the glandular lumen (single arrow).

DISCUSSION

EEC neoplasms of glandular origin are rare and its description in the medical literature is confusing. The knowledge of secretion mechanisms of ceruminous glands allow for the histogenetic justification of these glandular tumours and for a rational classification, something which has been a subject of concern in recent years. About two hundred tumours of ceruminal glands have been described, including benign and malignant lesions. Until recently no large clinicopathologic study of benign ceruminous neoplasms had been reported[8]. To our knowledge less than thirty cases of pleomorphic adenoma of ceruminous glands have been published.

Mixed tumour of ceruminous glands have been given different names including mixed tumour with apocrine differentiation or myoepithelioma. Nowadays the accepted term is mixed tumour of ceruminous glands (ceruminous pleomorphic adenoma), as it is generally thought to derive from ceruminous glands. Some authors have hypothesised about the presence of ectopic salivary tissue[3], but ectopic salivary tissue has never been demonstrated in the external ear. Mixed tumour of ceruminous glands usually grows in the cartilaginous portion of the EEC, but adenomas arising from the osseous EEC have also been described, although in this area ceruminous glands are rare[9]. Histologically it is identical to mixed tumours of salivary glands, so independence from the parotid gland should always be checked. It is also relevant to assure separation from the middle ear, as ectopic salivary tissue has been described in the middle ear.

The age of presentation ranges widely from 12 to 85 years. Symptoms are related to total or partial occlusion of the EEC; apart from that, they are usually poorly symptomatic and similar, irrespective of the histological type. It presents as a solitary and soft painless lesion, slowly growing; it can be sessile or polipoid, and covered by an intact epithelium if there is no associated infection. In small lesions clinical assessment is usually easy. If any doubt is raised, CT or MRI should clarify local extension.

Prognosis is excellent provided that a complete local excision is performed, although local recurrence

may occur. A long-term follow-up is advisable, as recurrences may occur even 4 to 5 years after extirpation[10]. Malignant transformation in the recurrence has been reported, even with distant metastases of both cellular types[11], as can happen in pleomorphic adenomas of the salivary glands. Recurrence is usually attributed to an extirpation with inadequate margins, which is not unusual. As they are small lesions with benign appearance, they tend to be managed as banal diseases and it is not infrequent that the pathologist receives fragmented material, which is difficult to evaluate. Some authors have underlined the importance of the adequacy of the initial biopsy in the long-term outcome[8]. Fine needle aspiration cytology (FNAC) may render typical findings of pleomorphic adenoma[12], so an adequate resection may be programmed. If FNAC is not feasible an incisional biopsy is advisable to obtain enough tissue to examine the typical components of the neoplasm.

CONCLUSION

For a correct pathological diagnosis of the pleomorphic adenoma of the ceruminous glands a detailed description of histopathological features is necessary combined with histochemistry and immunohistochemistry or even with ultrastructural techniques when possible, in order to identify the epithelial, myoepithelial and stromal components. Of course, electron microscopy is not routinely used for clinical diagnosis but it is particularly demonstrative in identifying cellular fragments in the lumen of neoplasic glands, as demonstrated in this paper, and as such it is a valuable tool for investigation purposes. Publications on ultrastructure of glandular tumours of the EEC are few, and in recent years none have been published on ceruminous pleomorphic adenomas.

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