

## Case Report

# Seborrheic Keratosis or Squamous Carcinoma? Clinical Examination versus Biopsy: The Importance of Criticism

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We compare the results of clinical observation and histopathology analysis for developing a differential diagnosis of seborrheic keratosis (SK) of the external auditory canal (EAC). A 46-year-old man with a history of a recurrent lesion in the EAC underwent clinical observation of the skin lesion's appearance, computed tomography (CT) scan, magnetic resonance imaging (MRI), and several biopsies. Initially, a benign form of SK was diagnosed based on several biopsies performed over a 10-year period. The lesion's appearance was consistent with a malignant disease, which led the clinician to perform a CT scan and an MRI scan. The patient underwent partial petrosectomy to completely remove the lesion as CT and MRI scans showed an infiltrative process. Squamous carcinoma was the final histological diagnosis. The patient was disease free at 1 year of follow-up after petrosectomy. In conclusion, if there are inconsistencies between clinical observation and histological report, additional tests should be performed to exclude the malignancy of a lesion.

**KEYWORDS:** Seborrheic keratosis, biopsy, clinical, carcinoma, diagnosis

## INTRODUCTION

Seborrheic keratosis (SK) is a common, benign cutaneous lesion commonly observed in the elderly, in particular it affects trunk, head and neck areas<sup>[1]</sup>. SK in the external auditory canal (EAC) is extremely rare<sup>[2,3]</sup>.

Malignant transformation of SK is possible, although uncommon<sup>[4]</sup>. Furthermore, a concomitant tumors grow in SK lesions very rarely<sup>[4,5]</sup>. In clinical practice, dermoscopy is most commonly used to assess SK malignancy<sup>[6]</sup>. However, this instrumental investigation is only possible in exposed areas, such as the concha<sup>[2,3]</sup>. Otoscopy and/or microscopy are necessary to observe the lesion directly and to perform a biopsy in the internal portion of the EAC. SK typically presents with brown/brown-blackish<sup>[2,7]</sup>, slightly elevated<sup>[3]</sup> lesions, rarely with verrucous nodular elevations<sup>[7]</sup>. Seborrheic keratosis can present in three majors subtypes<sup>[5]</sup>, which can be identified via histological examination, namely, acanthotic, hyperkeratotic, and adenoid. The acanthotic subtype is the most common and is characterized by exophytic papillomatous growth of basaloid (or squamoid) cells with horn cyst or pseudocysts and hyperkeratosis<sup>[2,7]</sup>. The appearance of basaloid (or squamoid) cells can be no frankly atypical with clear mitotic figures. The absence of a clear atypia and the presence of respected immunohistochemical characteristics<sup>[8,9]</sup> can lead the clinician to misdiagnose "in situ" cancer as SK.

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We present a case of SK of the EAC with atypical clinical features more indicative of cancer than of a benign lesion. Although histological data suggested a benign lesion, the clinician suspected cancer, a diagnosis that was confirmed by the final histological testing that was performed after the surgical removal of the lesion.

### CASE PRESENTATION

The study was approved by the institutional review board regulations in accordance with the Declaration of Helsinki. Informed consent was obtained from the patient.

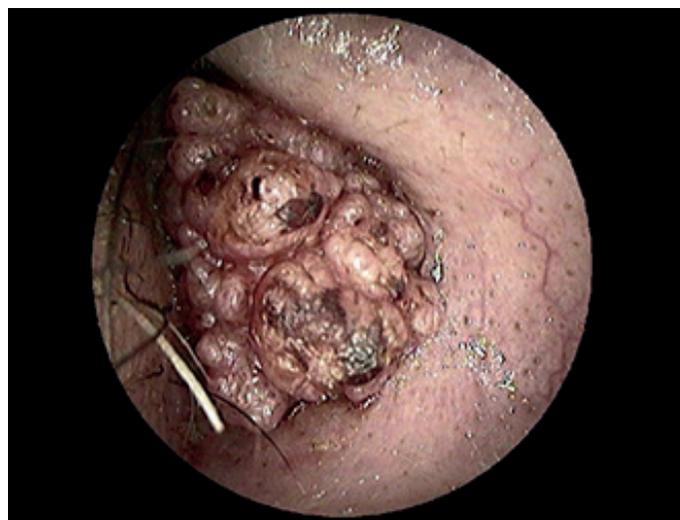
In 2007, a 46-year old man came to our attention due to persistent itching associated with fullness in his left ear. The patient had undergone surgical removal of an epidermoid carcinoma in the left EAC in 1999 and had been disease free until 2007. On clinical examination, we observed a brown-pinkish verrucous mass that fully occupied the left EAC. The mass was surgically removed and sent to the pathologist. SK was diagnosed based on the histological report. In 2008, the patient was followed up again. He reported a sensation of “having an ant inside the ear” that was associated with a persistent pain in the left ear. Otoscopic evaluation showed the presence of a mass occupying one-third of the EAC. A biopsy of the lesion was performed to exclude the recurrence of epidermoid carcinoma. The pathologist’s report described epidermal proliferation of basaloid cells mixed with squamous cells and pseudocysts, which are typical SK features.

In 2014, the patient was followed up again for recurrence of fullness. We performed a microscopic examination of the ear that showed a flat brown-gray lesion occupying half of the EAC; we also performed a biopsy that indicated a benign form of SK. We consulted with a dermatologist for excluding the patient’s genetic predisposition to develop SK owing to the recurrence of the disease. SK was not observed in any other parts of the patient’s body.

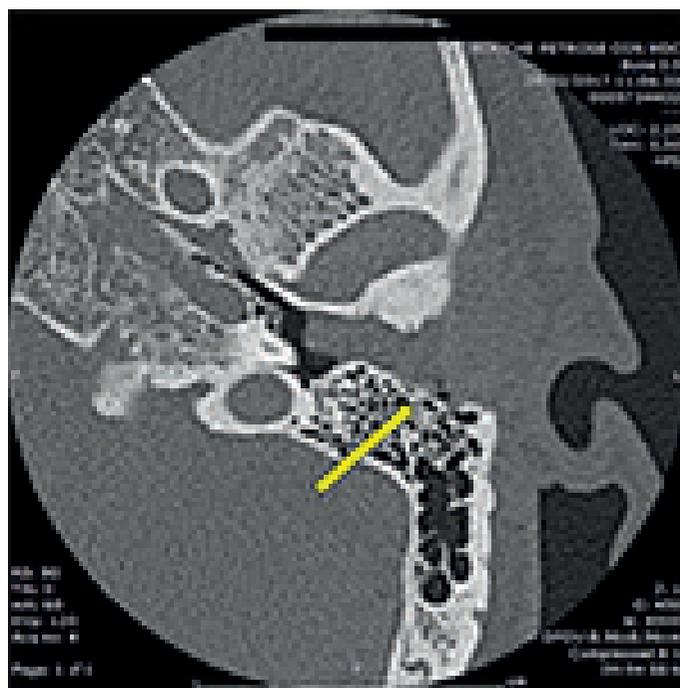
In 2017, the patient consulted our department again due to the recurrence of fullness and pain, which were exacerbated by unilateral asymmetric hearing loss (HL). We performed a pure tone auditory (PTA) test that showed the patient suffered from a left conductive HL; then, we performed an endo-otoscopic examination of the left ear and found a vegetating partially ulcerative pink mass that fully occupied the EAC (Figure 1). A computed tomography (CT) scan (Siemens, Erlangen, Germany) of the EAC and temporal bone was performed as the lesion appearance made the clinician suspect malignant SK. CT showed soft tissue obliterans the EAC that squeezed the tympanic membrane (TM), partially dislocated the bone chain, and eroded the bone portion of the canal (Figure 2). Magnetic resonance imaging (MRI) (Hitachi; Chiyoda, Tokyo, Japan) with contrast was then performed to further assess the lesion. MRI confirmed the presence of a soft mass enhanced contrast that occupied the EAC and partially infiltrated the TM. A new biopsy was performed, which supported our clinical suspect of a malignant lesion of the EAC. The pathologist identified a lobular blunt edged architecture with the presence of epithelial pearls without dermal infiltration and abnormal mitoses; these findings are typical of inverted SK. Owing to the inconsistencies between clinical observation, CT/MRI, and histological report and guided by the awareness that if there is diagnostic doubt, a thorough study of a lesion is

necessary to achieve a correct diagnosis<sup>[10]</sup>. We performed a subtotal left petrosectomy with the preservation of the medial portion of the EA as suggested by Sanna<sup>[11]</sup>.

The surgical procedure was performed under general anesthesia with a preincision retroauricular infiltration with a solution of lidocaine and adrenaline. A wide retroauricular incision with a cold scalpel was performed. A musculo-periosteal flap was sculpted with an electric scalpel. The skin of the EAC was transected after the flaps were elevated and the meatal skin was separated from the underlying subcutaneous tissues. The meatal skin was then everted out through the canal and sutured with absorbable sutures. The anterior



**Figure 1.** The otoscopy view shows the vegetating lesion in the EAC that has mainly a normal pink appearance with several small ulcerations covered by fibrin.



**Figure 2.** The CT section shows that the mass pushes the TM and starts eroding the bone of the EAC as indicated by a yellow arrow. The pressure exerted by the mass on the TM partially dislocated the bone chain without disarticulation.

and posterior edges of the underlying cartilages (tragus and concha) were sutured together to form a second layer of closure. The medial part of the skin was elevated completely up to the level of the annulus, and the tympanomeatal flap was covered with aluminum foil. A canal down mastoidectomy was performed that involved all visible cell tracts sparing the otic capsule, fallopian canal, and dura plates. The elevated tympanomeatal flap was then excised completely, ensuring that there was no squamous epithelium left behind. The ossicular chain, except for the stapes infrastructure, was removed. The eustachian tube was obliterated with periosteum reinforced with muscle or cartilage and cemented in place with bone wax. Autologous fat harvested from the abdomen imbibed with antibiotic solution was used to obliterate the cavity. The skin was closed in flayers with point-by-point sutures. At the end of the surgical removal, the wide operative mass was sent to the pathologist for final histological diagnosis.

The pathologist's report indicated the histopathological appearance of a squamous carcinoma (SQ), with dermal infiltration and frayed jagged margins. Many mitoses and nuclear and cytologic pleomorphisms were identified inside the analyzed tissue (Figures 3a and b). The patient was discharged 10 days after surgery with a diagnosis of SQ of the left EAC.

Microscopic examination of the lesion showed no local recurrence at 1 year of follow-up. Radiological imaging (CT and MRI) was negative for recidivism of cancer. PTA testing (Optometrics, Littleton, MA, USA) performed during clinical examination showed normal hearing threshold in the right side and a conductive form of HL in the left side (average sloping threshold was 40 dB) (Figure 4), consistent with the sequel of left petrosectomy.

## DISCUSSION

The final histopathological analysis performed on the whole mass surgically removed confirmed the suspect of SQ, which had been hypothesized based on the outcome of a clinical examination. Otomicroscopic examination of the vegetating lesion prevalently showed a pink appearance and superficial small ulcerations (Figure 1), which are atypical findings for SK, and suggested that additional investigation was needed. The imaging (CT and MRI) results confirmed our hypothesis of malignant lesion and showed erosive action of the mass on the bone of the EAC (which is typical of cancer) with an invasive process that involved both TM and (indirectly) the ossicular bone chain due to the pressure exerted by the mass on the TM. This data convinced us to perform a petrosectomy. Furthermore, as we were aware of the limitations of using a biopsy to diagnose pathologies that may not be histologically clear, such as inverted SK<sup>[10, 12]</sup>, after several partial resections of the lesion, we removed it. We decided to wait to perform a petrosectomy (which was performed only in 2017) because we thought that the lesion was benign based on its clinical appearance (more similar to SK) and on the results of the histopathology report that was also consistent with typical SK.

Seborrheic keratosis (SK) (and inverted SK) of the EAC is commonly treated by surgically removing the lesioned skin (in our case in the EAC) with or without skin graft<sup>[2]</sup>. Occasionally, laser CO<sub>2</sub> is used, thereby making surgical excision unnecessary<sup>[13]</sup>. Guided by the

results of the histological report, we treated the lesion with skin excision only, as recommended for benign pathologies.

In 2017, we decided to change our approach to the pathology driven by several points: (1) clinical atypical aspect of the lesion, (2) multiple recurrences of SK, (3) the patient's history of cancer, and (4) the mass infiltrative process shown by the CT scan and confirmed by the MRI scan. Suspicion that the lesion was malignant was also supported by the following: (1) symptoms' recurrence and increasing severity (a pattern typical of tumors)<sup>[4-6]</sup>, (2) the age of the patient (46 years old) inconsistent with the typical age of SK onset (60 years old)<sup>[1]</sup>, and (3) the lesion's location (internal portion of the EAC), which is an uncommon location for SK differently from the external portion of the EAC. It is well known that SK can be caused by ultraviolet light<sup>[3]</sup> and rarely by a genetic mutation<sup>[3]</sup>; in the latter case, lesions are present in multiple locations in the body<sup>[1]</sup> that did not occur in our patient.

We speculate that the the patient's lesion, definitively diagnosed as SQ, was caused by a malignant mutation of a benign form of SK<sup>[6, 7]</sup>. Alternatively, the SQ might have grown into the SK lesion<sup>[4-6]</sup>. The latter hypothesis may explain the histopathological report, which always indicated a benign SK (the superficial SK masked the underlying tumor). The complete removal of the mass by petrosectomy allowed a thorough analysis of the mass.

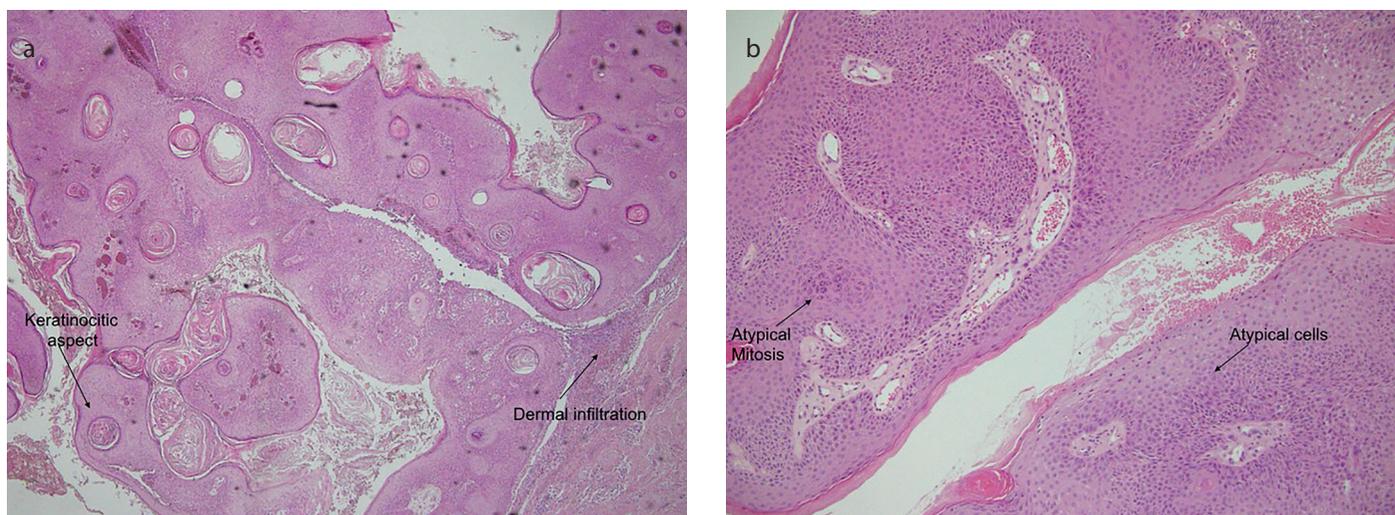
Owing to their similarities, SQ can be misdiagnosed as SK, especially when biopsy is performed only on parts of a lesion. Misdiagnosis is more likely to occur in early stage cancer when the tumor presents few mitoses, and the infiltrative process has not reached the dermis<sup>[1]</sup>. Misdiagnosis of SK as SQ is also possible. In particular, an inflammatory form of SK may be confused with SQ<sup>[10]</sup> due to the maturation of keratinocytes and increasing mitosis<sup>[1]</sup>. Thus, clinicians should always consider the possibility that skin cancer may be present and carefully approach diagnosis when there is a clear discrepancy between clinical appearance and symptomatology, as in our case<sup>[4-6]</sup>.

Several clinical observations supported our clinical suspicion that the lesion was malignant and were keys to guide our clinical decision-making and diagnosis process. Our clinical criticism and attention to the patient's medical history guided us to correctly treat the patient, despite the fact that multiple biopsies performed over a 10-year period suggested that the lesion was benign.

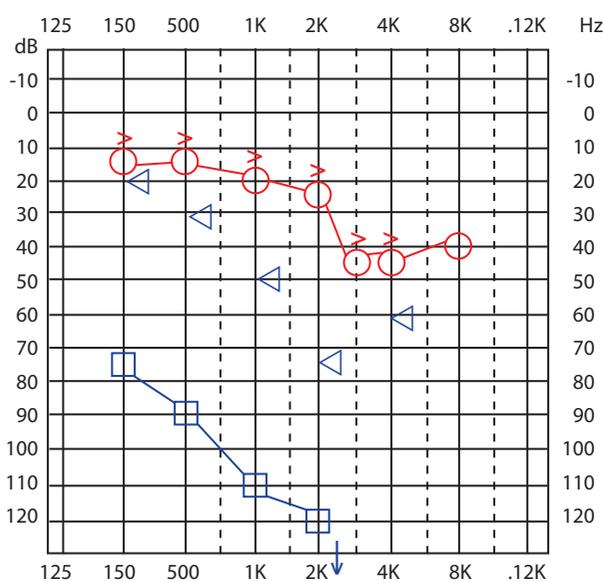
## CONCLUSION

In summary, SQ should always be considered in the differential diagnosis of SK. In fact, SQ could be caused by a genetic mutation of SK or grow within the lesion. Clinical criticism and attention to the patient's medical history are necessary, especially when there are inconsistencies between clinical observation and histological reports; when this occurs, an MRI with and without contrast can help exclude malignancy.

Future studies should focus on evaluating the prevalence of SK in the head and neck areas, assessing the risk of malignant transformations of lesions in these particular areas and investigating if these particular areas are at an increased risk of developing cancer despite their relative low exposure to sunlight, such as due to the specific features of the skin that is thinner and more sensitive than other areas.



**Figure 3. a, b.** Histological analysis on the tissue removed during petrosectomy shows several squamous cells that infiltrate the derma (a). The derma has frayed jagged margins. There are an increased number of mitoses and several nuclear and cytologic pleomorphisms in the cells (b). This picture is indicative of SQ.



**Figure 4.** PTA at 1 year of follow-up shows a conductive HL in the side of the petrosectomy.

**Informed Consent:** Written informed consent was obtained from the patient who participated in this study.

**Peer-review:** Externally peer-reviewed.

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