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Case report

An extensive squamous cell carcinoma of the auricle: From curative to reconstructive treatment. A case report

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ABSTRACT

Squamous cell carcinoma (SCC) of the auricle is a rare and aggressive entity of cell carcinomas. It is mostly identified in older males with history of sun exposure. After histopathological confirmation, the initial assessment which consists of clinical and radiological evaluation will determine the therapeutic strategy. We report the case of a neglected SCC of the left pinna with parotid and temporo-mandibular infiltration. After surgical resection, the patient underwent a two staged reconstructive surgery. This was followed later on with radiotherapy and chemotherapy. The evolution was favourable for our patient during an 18 months follow-up. This case report underlines the importance of both curative and reconstructive surgery in successfully treating locally advanced tumors of the temporal bone.

1. Introduction

Squamous cell along with basal cell carcinoma are the most common histological types of the non-melanoma skin cancer group [1]. While they are mostly present on the skin of the head and neck (80 %), squamous cell carcinoma (SCC) of the auricle and periauricular region represents roughly 6 % of all skin neoplasm [2]. They are present almost exclusively in male patients over the age of 60 years old with history of extensive sun exposure [2,3]. The diagnostic include a clinical and histological confirmation followed by a well conducted assessment of tumor extension. The surgical excision is recommended in the majority of cases with clinical safety margins. It can extend, in locally advanced cases, to a temporal bone resection, parotidectomy and neck dissection. Surgical treatment of large tumors may need further surgeries to reconstruct the skin defect ensuing from the excision. We report the case of a 70 years old man with a neglected invasive squamous cell carcinoma of the left auricle.

This work has been reported in line with the SCARE criteria [4].

2. Case report

We present the case of a 70 years old patient with a 30 years' history of tobacco use who consulted in the otolaryngology clinic of Casablanca university hospital for an enormous mass of the left ear pavilion evolving for 8 months with purulent ear discharge, hearing loss and facial palsy.

On physical examination, there is a massive swelling of the left ear pavilion with purulent discharge and necrotic tissue (Fig. 1). The ear canal is stenotic. The tumor extends to the parotid region and the mastoid. He also presents a Grade VI facial paralysis (House and Brackmann). There were no cervical lymphadenopathies or other cranial nerve paralysis. The patient was in a good overall state.

CT scan found a budding mass of the auricle of the left ear, measuring 91 × 58 × 65 mm which extends to the outer and middle ear, the temporo-mandibular joint and the parotid (Fig. 2).

It was a squamous cell carcinoma on tumor biopsy. There were no metastases on the extension assessment thus the decision was to perform surgery with homolateral neck dissection and radiation therapy.

Surgical exploration found a deep extension to the infratemporal fossa and the parotid gland. The tumor invaded the facial nerve. Surgical removal was complete (Fig. 3). It consisted of a total auriculectomy, parotidectomy, ipsilateral neck dissection with multiple biopsies of the structures in vicinity of the tumor. The final histopathology report found a squamous cell carcinoma with 5 mm surgical margins while all biopsies were negative of the tumor. There was no nodal involvement in the 33 lymph nodes harvested. Perineural invasion and lymphovascular emboli were absent.

Reconstruction was performed in a second surgery using a skin

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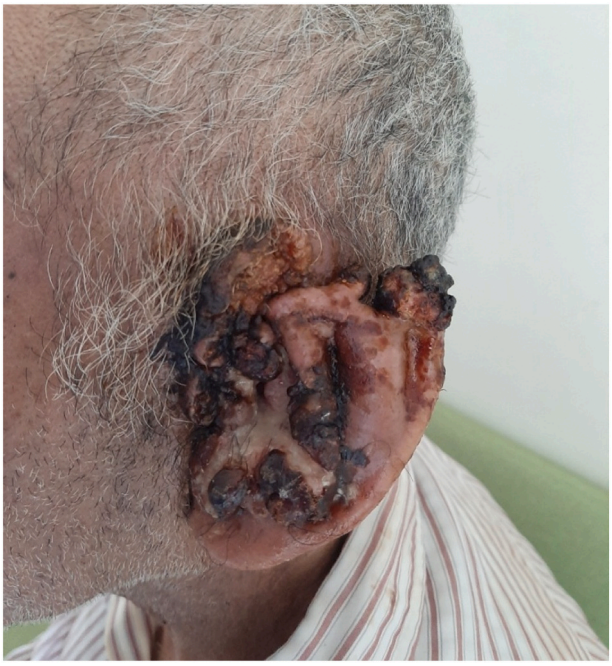

Fig. 1. Ulcero-necrotic lesion of the left pavilion obstructing the ear canal and destructing the cartilage.

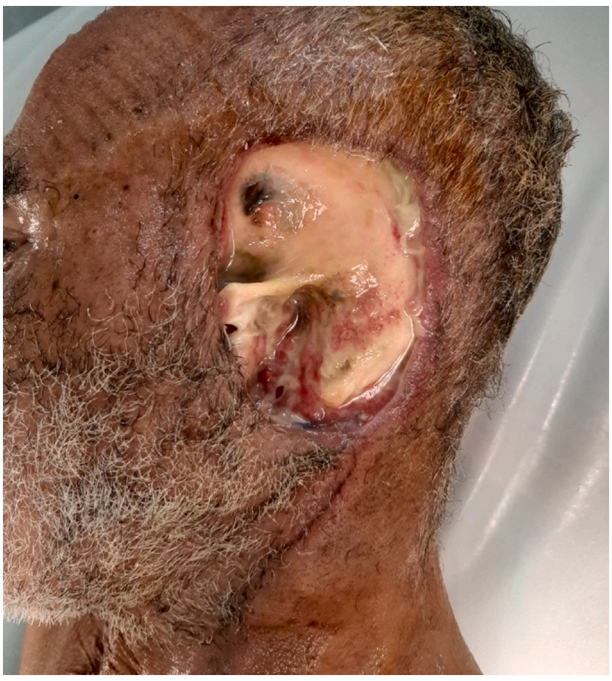

Fig. 3. The surgical removal of the tumor resulted in a large skin defect.

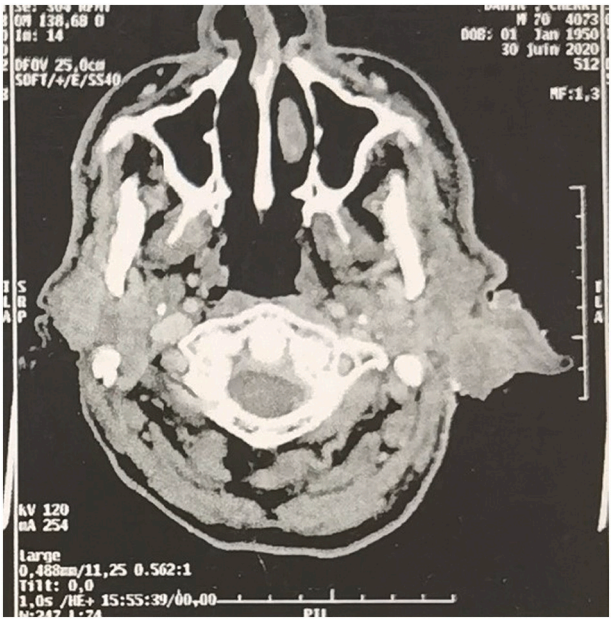

Fig. 2. CT scan showing the extension of an auricular mass the parotid and the temporo-mandibular joint.

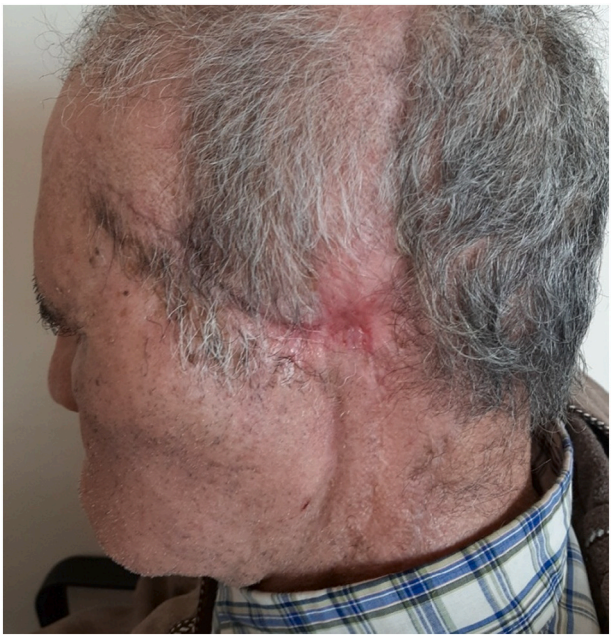

Fig. 4. The final result after 18 months follow up shows a completely healed up wound.

expander in the scalp. After a few weeks of tissue expansion, we performed a third surgery to cover the defect with a sliding flap from the scalp. All surgeries were performed by the same senior surgeon.

The patient was tumor free at his 18 months follow up (Fig. 4).

3. Discussion

Squamous cell carcinoma is a very common skin cancer. It is frequently located in the ear [5], and mostly found in men over the age of 60 with a history of sun exposure. SIRUNYA SILAPUNT and al found, in a study of 167 case of SCC of the auricle, a male to female ratio of 22:1 [2]. This male dominance, found in the majority of studies [6,7] is presumably due to women benefiting from their hair to reflect the sunlight [3]. SCC of the auricle initially presents as an indurated or crusted lesion, with or without keratinization, that can misdiagnosed with other benign conditions which can delay the diagnostic and affect the prognosis [1]. This happens to be the case in our patient who neglected the lesion for months applying topical creams before consulting in our establishment.

The diagnostic is initially clinical, followed by a histological confirmation [1]. The clinical course of invasive SCC of the auricle is described to be aggressive [2]. It was reported that metastasis rate can reach up to

16 %, higher than other cutaneous SCC of different localization [8,9]. The destruction of the cartilage is considered to a high risk factor to metastasis [8,10]. This underlines the importance of a clinical and radiological investigation, to evaluate the extension of the tumor and to stage it using the TNM classification of cutaneous squamous cell carcinoma (Table 1). In our case, the patient presented an extension to the parotid gland with facial paralysis, external auditory canal and temporo-mandibular joint with no cervical lymphadenopathy. Our patient was stage T3N0 according to the classification.

Surgical excision with clean margins is the universal recommendation in SCC of the pinna [1,11]. The choice of surgical intervention depends on the stage of the pathology. It can go from a simple excision or Mohs Micrographic Surgery in very early stages [2] to lateral, subtotal or total temporal bone resection that can be combined with neck dissection and parotidectomy in advanced cases [12,13]. While parotidectomy and neck dissection are indicated in patients with clinical and radiological signs of regional metastasis, their place is very controversial amongst authors in the absence of these signs [11]. Several studies have reported the association of parotid extension and auricular carcinoma in up to 18 %. The risk of parotid metastasis has increased by 50 % in patients who only received minimal surgical excision [6,14]. The parotidectomy in our case has a clear indication but the selective neck dissection was performed per-operatively in excess. Bingbin Xie and al, in accordance with many authors, concluded in his study that total parotidectomy should be mandatory for all advanced-staged (T3 and T4) patients [13].

The surgical resection of the temporal bone can result in a large skin especially in locally advanced cases. Reconstruction is a crucial step of the therapeutic process that requires careful evaluation before deciding the adequate intervention [15]. Histological confirmation of clean margins is of paramount importance, either by using extemporaneous examination or delaying the reconstruction to another surgery until histological results are available [1]. Jason B and all used a pertoralis major flap to reconstruct a large defect that resulted after a lateral temporal bone resection [12]. In our case, we opted for a sliding flap of the sculp. The reconstruction was performed in a two-staged surgery. The first surgery consisted of placing an expander under the scalp and the second one to reconstruct the defect. The results were satisfactory.

Reconstruction of the auricle has been peeking the interest of head and neck surgeons, maxillofacial surgeons, and prosthetic specialists. Techniques such as autologous costal cartilage, silastic frameworks, porous polyethylene implants and prosthetic implants, are all available for this purpose [16]. Multiple factors including the size, the age, the amount of adjacent supporting tissue around the defect as well as appropriate expectations and patient-centered goals, must be taken into consideration before deciding on the most suitable technique [17]. In our case, the patient was satisfied with the result and didn't show any interest in total reconstruction. However, an additional surgery is yet to be scheduled for a bone-anchored hearing aid in the upcoming months.

SCC of the auricle is linked with a high recurrence rate [18,19]. This can be reduced with post operative radiotherapy which is recommended by many papers in all cases [20]. Chemotherapy's in the management of SCC of the auricle is undefined. It is mostly used in patients with distant metastasis, inoperable or residual tumors due to its poor benefit-risk balance [12]. However, Karl R. Aigner and al demonstrated in a recent study, that Short-term intra-arterial infusion chemotherapy can be an effective treatment for patients with head and neck cancers [21].

4. Conclusion

SCC of the auricle is a rare but highly recurrent skin cancer. It is often diagnosed late which can result in a poor prognosis. Surgery with negative margins along with radiotherapy is the cornerstone of management of this pathology. Reconstructive surgery is needed to cover up the defect and can only be performed on disease free margins. While there is no consensus regarding the management of SCC of the head and neck, particularly the auricle, the role of a multi-disciplinary team including oto-rhino-laryngologists, oncologists and anatomo-pathologists to set forth a proper therapeutic plan.

Table 1
T staging for CSCC and other cutaneous carcinomas.

TX	Primary tumor cannot be assed
T0	No evidence of primary tumor
Tis	Carcinoma in situ
T1	Tumor 20 mm or less in greatest dimension with less than two high-risk features
T2	Tumor >20 mm is greatest dimension or any size and with two or more high-risk features[a]
T3	Tumor with invasion of maxilla, mandible, orbit or temporal bone
T4	Tumor with invasion of skeleton (axial or appendicle) or peri-neural invasion of skull base

[a] High risk features: size >2 cm, immunosuppression, peri-neural invasion, primary site ear or hair-bearing lip, poorly differentiated or undifferentiated.

Ethical approval

Written consent was obtained from the patient and his family for publication of this case report and accompanying images.

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CRediT authorship contribution statement

Halily Sara: data collection
youssef Oukessou: data analysis
Sami Rouadi: interpretation
Redaallah Abada: interpretation
Mahtar Mohamed: interpretation
Roubal Mohamed: interpretation.

Declaration of competing interest

The authors declare no conflict of interest.

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References

[1] C. Newlands, R. Currie, A. Memon, S. Whitaker, T. Woolford, Non-melanoma skin cancer: United Kingdom National Multidisciplinary Guidelines, J. Laryngol. Otol. 130 (S2) (2016), https://doi.org/10.1017/S0022215116000554 p. S125-S132, mai.
[2] S. Silapunt, S.R. Peterson, L.H. Goldberg, Squamous cell carcinoma of the auricle and Mohs micrographic surgery, Dermatol. Surg. Off. Publ. Am. Soc. Dermatol. Surg. Al 31 (11 Pt 1) (nov. 2005) 1423–1427, https://doi.org/10.2310/6350.2005.31208.
[3] S.R. Beaty, M. Colome-Grimmer, R.F. Wagner, Bilateral auricular squamous cell carcinomas with perineural invasion, Dermatol. Surg. Off. Publ. Am. Soc. Dermatol. Surg. Al 27 (2) (févr. 2001) 203–205, https://doi.org/10.1046/j.1524-4725.2001.00250.x.
[4] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, SCARE Group, The SCARE 2020 guideline: updating consensus Surgical CAse REport (SCARE) guidelines, Int. J. Surg. Lond. Engl. 84 (déc. 2020) 226–230, https://doi.org/10.1016/j.ijsu.2020.10.034.
[5] J. Boisen, C.H. Malone, B. Kelly, R.F. Wagner, Cutaneous squamous cell carcinoma with invasion through ear cartilage, Case Rep. Dermatol. Med. 2016 (2016), 9067428, https://doi.org/10.1155/2016/9067428.
[6] E. Freedlander, F.F. Chung, Squamous cell carcinoma of the pinna, Br. J. Plast. Surg. 36 (2) (avr. 1983) 171–175, https://doi.org/10.1016/0007-1226(83)90085-1.

[7] N.J. Shiffman, Squamous cell carcinomas of the skin of the pinna, Can. J. Surg. J. Can. Chir. 18 (3) (mai 1975) 279–283, p. S125-S132, mai.
[8] R.R. Clark, D.S. Soutar, K.D. Hunter, A retrospective analysis of histological prognostic factors for the development of lymph node metastases from auricular squamous cell carcinoma, Histopathology 57 (1) (juill. 2010) 138–146, https://doi.org/10.1111/j.1365-2559.2010.03593.x.
[9] M. Yoon, P. Chougule, R. Dufresne, H.J. Wanebo, Localized carcinoma of the external ear is an unrecognized aggressive disease with a high propensity for local regional recurrence, Am. J. Surg. 164 (6) (déc. 1992) 574–577, https://doi.org/10.1016/s0002-9610(05)80709-3.
[10] K. Wermker, J. Kluwig, S. Schipmann, M. Klein, H.J. Schulze, C. Hallermann, Prediction score for lymph node metastasis from cutaneous squamous cell carcinoma of the external ear, Eur. J. Surg. Oncol. J. Eur. Soc. Surg. Oncol. Br. Assoc. Surg. Oncol. 41 (1) (janv. 2015) 128–135, https://doi.org/10.1016/j.ejso.2014.07.039.
[11] S. Kadakia, M. Saman, E. Gordin, D. Marra, Y. Ducic, The role of parotidectomy in the treatment of auricular squamous cell carcinoma, Otolaryngol.–Head Neck Surg. Off. J. Am. Acad. Otolaryngol.-Head Neck Surg. 152 (6) (juin 2015) 1048–1052, https://doi.org/10.1177/0194599815579885.
[12] J.A. Beyea, A.C. Moberly, Squamous cell carcinoma of the temporal bone, Otolaryngol. Clin. N. Am. 48 (2) (avr. 2015) 281–292, https://doi.org/10.1016/j.otc.2014.12.003.
[13] B. Xie, M. Wang, S. Zhang, Y. Liu, Parotidectomy in the management of squamous cell carcinoma of the external auditory canal, Eur. Arch. Oto-Rhino-Laryngol. Off. J. Eur. Fed. Oto-Rhino-Laryngol. Soc. EUFOS Affil. Ger. Soc. Oto-Rhino-Laryngol. - Head Neck Surg. 278 (5) (mai 2021) 1355–1364, https://doi.org/10.1007/s00405-020-06191-5.
[14] J. Conley, D.E. Schuller, Malignancies of the ear, The Laryngoscope 86 (8) (août 1976) 1147–1163, https://doi.org/10.1288/00005537-197608000-00007.
[15] R. Byers, K. Kesler, B. Redmon, J. Medina, B. Schwarz, Squamous carcinoma of the external ear, Am. J. Surg. 146 (4) (oct. 1983) 447–450, https://doi.org/10.1016/0002-9610(83)90228-3.
[16] K. Ali, J.G. Trost, T.A. Truong, R.J. Harshbarger, Total ear reconstruction using porous polyethylene, Semin. Plast. Surg. 31 (3) (août 2017) 161–172, https://doi.org/10.1055/s-0037-1604261.
[17] J. Klimczak, Prosthetics in facial reconstruction, Craniomaxillofacial Trauma Reconstr. 11 (1) (mars 2018) 6–14, https://doi.org/10.1055/s-0037-1603459.
[18] A.R. Madsen, Cancer of the external auditory canal and middle ear in Denmark from 1992 to 2001, Head Neck 30 (10) (oct. 2008) 1332–1338, https://doi.org/10.1002/hed.20877.
[19] P.W. Gidley, D.B. Roberts, E.M. Sturgis, Squamous cell carcinoma of the temporal bone, The Laryngoscope 120 (6) (juin 2010) 1144–1151, https://doi.org/10.1002/lary.20937.
[20] N. Hashi, The role of radiotherapy in treating squamous cell carcinoma of the external auditory canal, especially in early stages of disease, Radiother. Oncol. J. Eur. Soc. Ther. Radiol. Oncol. 56 (2) (août 2000) 221–225, https://doi.org/10.1016/s0167-8140(00)00220-6.
[21] K.R. Aigner, E. Selak, K. Aigner, Short-term intra-arterial infusion chemotherapy for head and neck cancer patients maintaining quality of life, J. Cancer Res. Clin. Oncol. 145 (1) (janv. 2019) 261–268, https://doi.org/10.1007/s00432-018-2784-4.