Journal of Plastic, Reconstructive & Aesthetic Surgery (2015) 68, 883—894

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

REVIEW

A systematic review on external ear melanoma

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Received 25 April 2014; accepted 6 April 2015

KEYWORDS
External ear;
Melanoma;
Ear melanoma;
Melanoma treatment

Summary *Background:* External ear melanoma accounts for only 1% of all cutaneous melanomas, and data on its optimal management and prognosis are limited.
Aim: We aim to review the literature on external ear melanoma to guide surgeons in the treatment of this uncommon and peculiar pathology.
Materials and methods: A systematic review of English language studies on ear melanoma published from 1993 to 2013 was performed using the PubMed electronic database. Data on epidemiology, oncological treatment (tumor resection and regional lymph nodes management), and reconstruction were extrapolated from selected papers.
Results: The total number of patients was 858 (30 studies). The helix was the most common location (57%); superficial spreading melanoma was the most common histopathological subtype (41%). The mean Breslow thickness was 2.01 mm, with 88% of stage I—II patients. Sentinel lymph node biopsy was performed in 45% of patients, with 8% of positive nodes. Available data on its prognosis are fragmentary and contrasting, but the Breslow thickness appears to be the main prognostic factor. There is a tendency towards reduced resection margins and preservation of the underlying perichondrium and cartilage. Local flaps are the most popular reconstructive option.
Conclusion: To the best of our knowledge, this systematic review presents the largest data series on external ear melanoma. There is no general agreement on its surgical management, but a favorable prognosis seems to justify the tendency towards conservative treatments.

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http://dx.doi.org/10.1016/j.bjps.2015.04.003

Introduction

External ear melanomas are relatively rare, representing approximately 1% of all cutaneous melanomas.[1] A limited number of papers address this topic, and most of them include a small number of patients.[2–9]

The external ear presents peculiar characteristics with respect to anatomy and lymphatic drainage: the presence of a thin skin and of a cartilaginous framework requires a specific approach for tumor resection and reconstruction; lymphatic drainage — as for other head and neck regions — is unpredictable and often reaches multiple basins.[4,9]

Furthermore, there is no agreement on the biological behavior of melanoma of this region: some authors claim a better prognosis and propose less invasive treatments,[8,9] while others consider external ear melanoma more aggressive.[2] As a consequence, its treatment is not standardized, which often differs from standard treatment for melanomas of other regions.[10]

The aim of this study was to review the literature on the epidemiology and surgical treatment of external ear melanoma in order to provide guidelines for its clinical management.

Materials and methods

Search methodology

A systematic review of the studies on ear melanoma was performed using the PubMed electronic database. Initial keywords included "ear melanoma." Extended search using the Medical Subject Headings (MeSH) terms "malignant melanoma" and "ear" and the keywords "melanoma pinna" and "melanoma ear reconstruction" was performed.

A review of abstracts was performed on articles published from 1993 to 2013. The year 1993 was chosen as a starting point because of the introduction of sentinel lymph node biopsy (SLNB) procedure in the clinical practice.[11]

Data on (a) epidemiology, (b) oncological treatment, and (c) reconstruction of external ear melanoma were extrapolated.

Selection criteria

Studies in languages other than English, on animal models, and/or not concerning external ear melanoma were excluded based on abstract review; letters to the editor were also excluded. Papers containing no basic data (at least on the Breslow thickness, tumor resection, lymph node management, or defect reconstruction) were excluded based on full-text article review (Figure 1).

Data collection and analysis

For each paper, we collected and analyzed data on the following variables (when available):

1. Epidemiology: study type, number of patients, sex, mean age, tumor location, mean Breslow thickness, ulceration, histopathological subtypes, TNM stage, follow-up time, survival rate, recurrence type, and rate (Table 1);
2. Oncological treatment: tumor resection (excision margin, resection/preservation of perichondrium and/or cartilage, Table 2) and management of regional lymph nodes (SLNB: number of procedures, lymph node basins, number of sentinel lymph node (SLN) per patient, and positive SLN; lymph node dissection: number and type of procedure, and positive dissections-, Table 1); and
3. Reconstruction: defect location and size, and reconstructive technique (Table 3).

Results and discussion

The initial search returned 448 papers; an extended search did not return any additional reference. Four hundred and ten papers were excluded and 38 papers were selected based on abstract review; four further papers were excluded because we were not able to find them despite consulting the archives of other institutions as well. Thirty-four full-length papers were reviewed and four further articles were excluded based on the lack of basic data. A total of 30 papers were eventually selected for the review (Figure 1).

Of the selected 30 papers, 23 provided data on ear melanoma epidemiology, 19 on tumor resection, and 18 on reconstruction techniques. Most studies were incomplete with regard to the collected data.

Epidemiology

Of the selected 23 papers, 12 were retrospective studies, two were prospective studies, and nine were case reports. Table 1 shows the total number of studies and patients for each investigated variable, and the present data in detail.

The total number of patients was 845, with a strong male predominance (78%); the mean age was 59.4 years. The helix was the most common location (57%), followed by the lobule (17%). Interestingly, only three cases of melanoma of the external auditory canal were reported. The mean Breslow thickness was 2.01 mm; the most common histopathological subtype was the superficial spreading melanoma (41%), followed by the nodular melanoma (22%) and the lentigo maligna melanoma (LMM, 21%). The occurrence of ulceration was reported in 20% of patients.

Data on the TNM stage were explicitly stated only in three papers[3,12,13]; however, we were able to extrapolate data on the melanoma stage in 15 additional studies (total of 18 studies, 731 patients), which contain in their text relevant data on the Breslow thickness and eventual nodal or systemic metastases.

Of note, despite a high mean Breslow thickness, most patients were in stage I—II at initial diagnosis (88%), and 7.1% were in stage III; stage 0 and IV accounted for only 1.4% and 0.1%, respectively.

Follow-up ranged between 1 and 298.8 months (mean 45.3 calculated on 11 studies; median range 24—39.5).

The literature data on the prognosis of external ear melanoma are fragmentary and not conclusive.