CLINICAL RESEARCH

MALIGNANT TUMOURS OF THE EXTERNAL AUDITORY CANAL AND OF THE MIDDLE EAR

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ABSTRACT

Objectives: To review our experience and results in the treatment of a low incidence pathology such as the malignant ear tumors. Methods: The study reviewed 36 patients with malignant tumors of the EAC and middle ear treated between 1977 and 2000 in our hospital, excluding cancer of the pinna, metastatic tumours and sarcomas. It was used the staging system proposed by the M.D. Anderson. Results: The most common histological type in our series is the squamous cell carcinoma, and the otorrhea and pain are the primary symptoms in 100% of patients. Surgery combined with radiotherapy obtained a 41% 5-year survival rate. Conclusions: The staging system is an important prognostic factor and it is important an early diagnosis to achieve a better therapeutical result.

KEY WORDS: Carcinoma of the external auditory canal and middle ear. Surgery. Radiotherapy.
INTRODUCTION

Malignant tumors of the external auditory canal and the middle ear are not common. They generally originate in the EAC\(^1,2\), although they often go on to invade the middle ear due to late diagnosis.

An estimated one to two in every million people are affected by this tumor. There is no predominance in either sex\(^3\), but patients are mainly of advanced age, the average age being 55\(^2,4\).

Squamous cell carcinoma\(^3\) is by far the most common histological type\(^3,5,6\), followed by basal cell carcinoma, cystic adenoid carcinoma, adenocarcinoma and rhabdomyosarcoma.

The rarity of these tumors, as well as the fact that the clinical symptoms are similar to those of other chronic ear complaints, means that diagnosis may be delayed. A history of persistent otorrhea (with or without otorrhagia) and associated otalgia can lead us to suspect this entity. The appearance of other symptoms, such as peripheral facial palsy, hearing loss, or cervico-facial adenopathies would suggest a higher grade of malignancy which is more difficult to treat.

The local lesion and the regional lymphatic extension of the tumor can be assessed by a proper head and neck exploration. A high resolution CT scan shows its localization, bone extension and extension to neighboring organs. MRI is used to evaluate lesions in the soft tissue. Cervical node involvement requires complementary cervical treatment.

MATERIAL AND METHODS

We carried out a retrospective study of 36 patients treated for malignant tumors of the external auditory canal and the middle ear in the ENT department of our hospital, between 1977 and 2000. They represent 0.5% of the head and neck cancers treated during this period. Pinna tumors, metastatic tumors and sarcomas were excluded from the study. These tumors represent 20% of 20,000 otological consultations\(^7,8\).

Our analysis focuses on the clinical presentation, histological type and treatment given in every case according to its stage.

Although a uniform staging system for ear tumors has not yet been introduced, for our study we used the system proposed by M. D. Anderson\(^5\) (fig. 1) for its simplicity and effectiveness from both surgical and prognostic viewpoints. Stage I corresponds to lesions affecting the pinna, the conchae, or the external cartilaginous auditory canal. Stage II corresponds to lesions affecting the cortical mastoid or the external auditory bone canal. Stage III corresponds to the deep affection of the temporal bone (the middle ear, the facial canal, the mastoid area or the skull base).

RESULTS

The study group consisted of 23 men and 13 women with an age range of between 42 and 81, and an average age of 48.

Of the 36 malignant tumors found, the histology corresponded to 25 squamous cell carcinomas (69%), four basal cell carcinomas (11%) and seven glandular carcinomas (19%).

At the time of the initial consultation the symptoms were otorrhea and pain in 100% of the cases, otorrhagia in 83%, facial palsy in 30%, vertigo in 19% and cervical metastasis in 11%.

According to the proposed staging system the distribution was as follows: Stage I (4 patients), Stage II (13 patients), and Stage III (19 patients) (fig. 2).

A partial resection of the EAC was carried out on Stage I patients. This resection was either of soft parts in the case of small tumors localized in the external part of the canal with no bone involvement, or resection of the bone canal in the case of tumors closer to the bone.

\(\text{Figure 1. Staging of tumors of the EAC and the middle ear as proposed by M. D. Anderson.}\)
A partial petrectomy, was carried out on Stage II patients. This consists of a total resection of the canal, including its osseous walls and the eardrum but respecting the facial nerve.

Of the patients in Stage III, ten underwent a subtotal temporal bone petrectomy (with almost complete resection of the petrous bone and the neighboring areas). Radiotherapy was the only possible treatment in five cases, whilst the remaining four received only palliative care (fig. 3).

Patients with stage II and III tumors that were treated surgically also received radiotherapy after surgery.

The global survival rate after five years was 29%; 41% for those treated surgically and 0% for those treated exclusively with radiotherapy.

DISCUSSION

The malignant tumor of the EAC and the middle ear is a low incidence pathology, for which reason the papers published on their treatment do not present a sufficient number of cases to allow us to draw any definite conclusions. A study of the literature on these tumors is fairly complicated due to the heterogeneity of the therapeutic and staging methods used.

Squamous cell carcinoma is the most common type of tumor in this localization and it has a worse prognosis due to its rapid growth and its tendency towards regional metastasis. It tends to appear as a granulomatous area, which fully or partially occupies the auditory canal, with areas of ulceration, otorrhagia and otorrhea. 10% of the patients tend to complain of adenopathies at the time of diagnosis. The subdigastic area and the parotid gland are affected frequently. Cystic adenoid carcinoma is the most common amongst glandular carcinomas and it generally appears as a painful mass in the EAC. The information gathered from 19 studies by Kuhel showed a squamous cell carcinoma in 82.2% of patients and a cystic adenoid in 6.4%. Studies by Manolidis and Conley show squamous cell carcinoma as the most common pathology. Our results are similar to those of the revised literature and represent close to 70% of the histological types found.

In our study, men were more commonly affected than women. In the literature, however, there is no clear predominance in either sex nor are there any reported differences regarding survival.

The average age at presentation is estimated to be 55 years, slightly higher than our average of 48. Testa and Fukuda found there to be better survival in younger patients, although this could be related to the less aggressive treatments used on older patients.

The common symptoms and clinical signs of this pathology are shown in table 1. The most common symptom is chronic and unilateral otorrhea of several months' evolution and frequently painful. Diagnosis is usually delayed due to the fact that the symptoms are similar to those of other common otological processes. Persistence of pain in spite of antibiotic treatment can be a warning sign. Hearing loss, progressive facial palsy, cervical adenopathies, and lesions of the low cranial
Pairs all suggest a locally advanced malignancy with a poor prognosis.

In the majority of the series studied the main symptoms are otorrhea and pain. 84% of patients showed signs of otorrhea at the time of diagnosis according to Pensak, 90% according to Kenyon, and 61% according to Kuhel. In our study 100% showed signs of otorrhea and pain, with otorrhagia being the second most common sign.

The difficulty in diagnosing this pathology leads to the extension and dissemination of the illness which makes treatment more difficult and reduces the survival rate of patients. The consequence of the delayed diagnosis is a higher number of patients in advanced stages, a worse response to treatment and a worse prognosis. Stage III represented over half of the cases in our study.

Although the treatment protocols according to different authors are contradictory, it would appear that combined treatment with surgery and radiotherapy offers the highest chance of survival, given the bad prognosis that these tumors have\[15-20\]. Radiotherapy has no effect on local control when the bone is affected or when the margins of the resection have been positive\[1,4,5,13\]. However, if resection has been complete, the use of both therapeutic tools is recommended by the majority of authors. Much higher survival rates as a result of combined therapy have been documented in studies by Korzeniowski and Pszon\[15\], Pfreundner\[16\] and Hahn\[17\].

The survival rate has risen from 25 to 50% over the last 50 years due to advances in the treatment of these tumors\[6,9-12,21,22\] (Table 2). Studies such as those by Hahn\[17\], Zhang\[20\], Manolidis\[9\] and Moffat\[12\] have shown a survival rate of approximately 50% obtained from a combination of surgery and radiotherapy; however, this figure drops drastically when the illness is at a very advanced local stage. The Stage I survival rate is much higher\[4,5,23\], but unfortunately the majority are diagnosed at advanced stages, and with a depressing prognosis. Our global survival rate was 29%, whilst for the group treated surgically it was 41% and for the group treated with radiotherapy it only was 0%. Such a low overall survival rate can be explained by the high number of patients (25%) seen at a very advanced (and therefore inoperable) stage.

From the data obtained from our patients, as well as from the literature consulted, we can conclude that the clinical stage has an obvious prognostic value and that the most serious therapeutic problem is the impossibility of complete resection of the tumor due to its localization\[5\]. Operable patients have a better prognosis than those who are not\[4\]. All of this highlights the importance of early diagnosis and a high index of suspicion required from the ENT specialist when first presented with the clinical symptoms.

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<th>Table 2: Survival Rates of Different Series</th>
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<td>Survival Rate</td>
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<td>Lewis 1975</td>
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<td>Pensak et al 1996</td>
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<td>Moffat et al 1997</td>
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<td>Manolidis et al 2000</td>
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<td>H. Gregorio Marañón 2000</td>
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*Survival of the group treated with surgery
REFERENCES


