

## Main Articles

# Auricular pseudocyst in the tropics: a multi-racial Singapore experience

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### Abstract

Endochondral pseudocyst of the auricle is an uncommon condition that affects predominantly Chinese males, with many reports studying this condition in homogenous Chinese populations. There have been few large-scale reports describing the features of this disease among the other Asian groups. In one of the largest series described to date, we report the epidemiological features, clinico-pathologic characteristics, and success of surgical treatment in 40 patients of different Asian groups presenting with pseudocyst of the auricle. Results showed a Chinese predominance (90 per cent), followed by Malays (five per cent) and Eurasians (five per cent). All had unilateral presentations apart from one patient. Most (55 per cent) presented within two weeks of auricular swelling. Few (10 per cent) had a history of trauma. The pseudocysts predominantly affected the concha (61 per cent). Surgery comprised excision of the anterior wall followed by local pressure application. Only 2.5 per cent had recurrence after surgery. These findings confirm earlier understood features of this disease while revealing some notable variations.

**Key words:** Ear Deformities, Acquired; Ear Cartilages; Ear, External

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### Introduction

Pseudocyst of the auricle is an uncommon benign condition characterized by intra-cartilaginous cyst formation. It typically presents as an asymptomatic, unilateral cystic swelling of the upper portion of the auricle. Since it was first described by Engel<sup>1</sup> in 1966, many reports have studied this condition among homogenous Chinese population groups.<sup>1–3</sup> There have been few reports describing this entity among members of the other Asian groups. Singapore, with its large numbers of Chinese, Malays, Indians and members of other racial groups from all over Asia, was chosen to study the characteristics of this disease among these Asian races. The purpose of this study, therefore, is to report the epidemiological features and clinico-pathologic characteristics of this condition as it occurred among the various ethnic groups in Singapore and to examine the success of its surgical treatment.

### Materials and methods

Forty patients who presented with the clinical diagnosis of pseudocyst of the auricle to Changi General Hospital, Singapore from 1995–1998 were

retrospectively studied. These 40 patients were traced using the hospital's computer records, which were able to identify, using the assigned operation code, all patients who underwent the standard surgical procedure of choice performed for the treatment of this condition. The standard operation of choice involved the excision of the anterior wall, followed by buttoning with silastic cushioning to apply local post-operative pressure. The case-records of these 40 patients were then reviewed to determine the epidemiological features, clinico-pathologic characteristics, histological findings and the surgical outcomes.

### Results and analysis

The following epidemiological and clinico-pathologic features of auricular pseudocysts were studied and the results reported here.

The mean age of patients was 38 years. The youngest patient was 20 years old and the oldest was 62 years old. Most patients (80 per cent) were within the 20–45-years-old age group. Thirty-five patients (87.5 per cent) were male while five patients (12.5 per cent) were female. The large majority (90 per

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cent) of patients were Chinese. Five per cent were Malays while another five per cent were Eurasians. There were no Indians among those affected.

All except one patient, had unilateral presentations (97.5 per cent). Of these, 25 (64.1 per cent) had pseudocysts on the right ear; 14 (35.9 per cent) had pseudocysts on the left ear. Only one patient (2.5 per cent) had an asynchronous bilateral presentation, with the second pseudocyst presenting on the opposite ear 14 months after the initial pseudocyst.

Pseudocysts affected the following sites of the auricle: concha (61 per cent), triangular fossa (19.5 per cent), scaphoid fossa (12.2 per cent) and anti-helix (7.3 per cent). In three cases, the affected anatomical sites were not clearly documented in the clinical case-sheets. Four swellings (9.8 per cent) were so large as to be confluent and involve two adjacent anatomical sites within the auricle.

Only four patients (10 per cent) had a recorded positive history of preceding trauma to the ear. There was a recorded negative history of trauma in 17 patients (42.5 per cent). In the remaining 19 patients (47.5 per cent) the history of trauma was not recorded in the case sheets.

The duration of swelling was defined as the duration of swelling prior to first presentation to our otolaryngologists. The mean duration of swelling was 16.6 days. The shortest duration was three days while the longest duration documented was two months. The cystic swelling was painful for only seven patients (17.5 per cent). There was no documentation of pain among the remaining patients.

Ten patients (25 per cent) had a recorded history of prior oral antibiotic therapy prescribed by the family physician. Of these, eight had been given penicillin-based antibiotics, one was given ciprofloxacin and the last patient did not have the prescribed antibiotic group recorded.

Eleven patients (27.5 per cent) had at least one attempt at therapeutic aspiration of the pseudocyst prior to surgery. Of these, two patients had undergone multiple prior aspirations. One patient underwent an incision and drainage procedure prior to surgery. All these patients had re-accumulation of the cystic swelling and had to undergo definitive surgery.

Surgery was performed for all 40 patients as the definitive form of intervention. The operation of choice was an excision of the anterior cyst wall followed by buttoning with silastic cushioning (for local pressure application post-operatively).

Common histology types reported include: chronic inflammation (25 per cent); granulation tissue (25 per cent); fibrosis (15 per cent); cystic degeneration (10 per cent) and others such as myxoid degeneration.

Recurrence was defined as the re-accumulation of a fluid swelling in the same ear post-surgery at any time during the follow-up period. Four patients (10 per cent) had recurrence after surgery. Two of these underwent further needle aspiration; one patient underwent a repeat excision; the last patient had the button repositioned and thereafter the fluid accu-

mulation subsided on the subsequent follow-up. No further recurrence was noted in two of these patients following the further interventions, while the other two defaulted further follow-up or had no further outcome recorded in their case-sheets.

## Discussion

Our study confirms many previously understood epidemiological features about pseudocyst of the auricle. At the same time, our findings also revealed a few variations compared with other previous studies.

The overwhelming majority of patients (90 per cent) were Chinese. This was despite the significantly large non-Chinese population (30 per cent) in Singapore. Worldwide literature has already revealed that the Chinese are the most frequently affected,<sup>4</sup> although most reports in Asia have studied this condition in homogenous Chinese populations. This may suggest that the Chinese have a genetic predisposition to this disease. Alternatively, there could be certain cultural or lifestyle habits of the Chinese that predispose them to developing this condition. Our findings also suggest that a migrant Chinese population such as that in Singapore has as frequent an incidence of this condition as the Chinese in mainland China.

The majority of our patients (87.5 per cent) were male. Most studies<sup>3-5</sup> also report a very strong male predominance of between 90–93 per cent. The question arises then, of whether there is a genetic predisposition amongst men for this disease or whether the hormonal differences between males and females is somehow related to the pathophysiology of this disease.

This is a disease that commonly affects the young adult. Four out of five patients were between 20–45 years old in our study, with a mean age of 38.2 years old. Similar reports by Choi<sup>3</sup> (mean age: 42.8 years old) and Cohen<sup>4</sup> (most patients between the ages of 30 and 39 years old) verify this finding. However, this condition rarely affects those younger than 20 years old. It also seldom affects those older than 60 years old,<sup>3,4</sup> indicating that a degenerative aetiology may be less likely.

Our study revealed that the mean duration of the swelling prior to presentation to an otolaryngologist was 16.6 days. This is consistent with other studies where the duration of swellings was between seven to 22 days duration.<sup>6</sup> The longest duration reported in our study was two months, but pseudocysts have been known to be present for up to six months<sup>2</sup> or even two years<sup>3</sup> before patients seek medical consultation.

Almost all our patients (97.5 per cent) presented with a unilateral swelling. Other studies<sup>3,4</sup> have also reported that approximately 87 per cent of pseudocysts present as solitary unilateral swellings. Bilateral simultaneous lesions almost never happen, occurring in only 1.8 per cent of all patients.<sup>4</sup> In those that do have bilateral lesions, these usually occur asynchronously from the first lesion.

Previous studies have noted that right-sided lesions are one and a half times more common than left-sided ones.<sup>4</sup> This concurs well with our findings where right-sided lesions were more common (64.1 per cent) i.e. close to 1.8 times as frequent as left-sided ones. Is there a reason why right-sided lesions are more common, given that systemic influences such as hormonal profiles should affect both sides equally? Is it perhaps somehow related to the repeated minor trauma inflicted during sleep, especially among the Chinese who used to have a habit of sleeping on hard pillows as already previously postulated by Choi?<sup>3</sup> Herein lies a further assumption that more people sleep on their right than the left, which so far has not been verified in large-scale studies. Interestingly, Choi previously postulated that pseudocysts of the auricle may somehow be related to the carrying of hampers and large sacks on the shoulder, which would cause minor repeated trauma to the ear. Given that most people are right hand dominant and would choose to carry heavy objects on their right shoulders if they had to, it may also indirectly help explain the higher right-sided incidence.

The majority (61 per cent) of pseudocysts in our study affected the concha. Similar findings were reported by Zhu,<sup>2</sup> in the largest one-centre series described so far on this condition, where 71.1 per cent of the swellings were in the concha. However, other studies<sup>3,4,7</sup> have reported that the most commonly affected site was either the scaphoid fossa or the triangular fossa. This difference in observation is difficult to explain. However, it is clear from all studies done so far that this condition affects only the anterior portion of the ear. There have been so far no reports of this condition affecting the posterior aspect of the auricle. Why is there this difference when the cartilage makeup is the same both anteriorly and posteriorly? It would also stand to reason that systemic factors and influences should affect both the anterior and posterior aspects of the auricle equally. Does this therefore point to more local factors at work in the pathogenesis? Clearly the posterior aspect of the ear is less exposed and is ultimately much less prone to direct trauma. This indirectly suggests that trauma, minor or otherwise, may be a necessary precursor for the development of this condition.

If trauma is essential to the pathogenesis, then it is peculiar that it is often not a well-recorded symptom. Only 10 per cent of our patients had a positive recorded history of trauma. This is corroborated by many studies where the majority of patients with pseudocyst of the auricle did not sustain prior trauma to the lesional area.<sup>2,4,7,8,9</sup> However, in most of these reports, no specific mention of whether a detailed questioning for instances of repeated minor trauma to the ear (such as rubbing of the ears, sleeping on hard surfaces on the affected side etc.) was performed. In only one study, by Choi,<sup>3</sup> was such a detailed questioning mentioned. His study revealed that a substantial number of patients sustained a history of repeated minor trauma, e.g.

workers carrying a hamper or a large sack on the shoulder where it rubs against the auricle. It could therefore stand to reason that a history of mild repeated trauma to the auricle may well be critical to the pathogenesis of this condition but has so far not been reported as most patients are not directly asked for such a history and are unlikely to volunteer such information.

Numerous modalities have been proposed for the treatment of pseudocysts of the auricle. These range from repeated aspirations, administration of systemic steroids, intra-lesional injections of steroids or tincture of iodine, incision and curettage, incision and drainage with application of a compression dressing and subtotal excision.

Needle aspiration of the pseudocyst can be successful, but it has been shown in many studies<sup>1,3,4,10</sup> that unless the cystic space becomes completely obliterated post-operatively, the fluid often accumulates rapidly. In our study, up to 27.5 per cent of our patients had failed needle aspiration prior to definitive surgery. At the same time, it can also be argued that many more pseudocysts may have responded to initial aspiration by general practitioners or Emergency Department physicians and patients subsequently never required any further treatment. Thus, only the failures would ultimately present to the otolaryngologists working in a secondary/tertiary hospital. The same applies to the use of prior antibiotic therapy. Patients presenting to our department probably represented only those that failed such antibiotic therapy.

Recently, new methods combining aspiration with additional measures such as application of pressure sutures post-aspiration<sup>11</sup> or the use of pressure dressing by a plaster of Paris cast over the pinna for two weeks<sup>12</sup> have been described. Recently, Zhu<sup>2</sup> also described a new technique of treatment involving the insertion of a drainage tube into the pseudocyst followed by application of a pressure dressing. These have apparently met with good success in terms of resolution of swelling and minimal recurrence thereafter. It also serves to confirm the importance of completely obliterating the cystic space post-operatively.

Incision and drainage of the pseudocyst without additional intervention almost always results in the prompt reaccumulation of fluid within the lesion.<sup>4,13</sup> Packing the cavity with iodoform gauze and painting the interior with one per cent iodine tincture have been used with varying results.

The role of steroids in treatment is controversial. Medical management of pseudocysts using systemic steroids was successful in a study by Job<sup>14</sup> but unsuccessful in another by Glamb.<sup>15</sup> Intra-lesional injections of steroids has been reported by Hideaki<sup>16</sup> to have limited success, with most patients requiring more than one injection and having at least one recurrence. Yet the same method has met with greater success in another study by Kunachak<sup>17</sup> where only a small percentage of patients actually had recurrences or required second injections.

In terms of operations available for the treatment of this condition, surgical excision of the anterior wall followed by contour pressure dressing is often a standard operation of choice. This method of treatment has met with significant success with 90 per cent of patients achieving satisfactory results in terms of cosmesis and recurrence.<sup>3</sup> This is similar to our experience, where excision of the anterior wall followed by buttoning with silastic cushioning met with only a 10 per cent recurrence rate. Rare complications with surgical excision include inadvertent excision of the posterior wall leading to a 'floppy' ear. However, none have been noted in our experience.

- **Endochondral pseudocyst of the auricle is an uncommon condition predominantly affecting Chinese males**
- **This paper reports the condition in 40 patients of different Asian races**
- **The lesions predominantly affected the concha**
- **Surgery comprised excision of the anterior wall followed by local pressure. Only 2.5 per cent had a recurrence after surgery**

At present, there is no clear consensus on the ideal modality of treatment. The underlying principle of treatment involves at the very minimum, a removal of the pseudocyst fluid followed by complete obliteration of the cystic space. As long as this principle is obeyed, we recommend that surgeons employ the treatment modality they are most comfortable with.

### Conclusion

This study highlights many of the epidemiological and clinico-pathologic features of pseudocyst of the auricle. Despite having a significantly large non-Chinese population in Singapore, the Chinese are by far still the most commonly affected (90 per cent of our patients). In line with worldwide literature, this seems to suggest either a genetic or cultural and lifestyle predisposition among the Chinese. The aetiology still remains elusive. Yet, repeated minor trauma may well prove to be a critical stimulus in the pathogenesis of this condition and this possible aetiological factor warrants further exploration in future studies. Numerous treatment modalities have been described so far. The underlying principle of treatment appears to be the removal of the pseudocyst fluid followed by complete obliteration of the cystic space. Provided this principle is obeyed,

we recommend that surgeons use whichever treatment method they are most experienced and comfortable with. In our experience, surgical treatment with excision of the anterior wall and buttoning with silastic cushioning to apply local pressure post-operatively has been shown to be a highly effective form of treatment with minimal recurrence.

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Dr B. Y. B. Tan takes responsibility for the integrity of the content of the paper.

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