Aural Aspergilloma : An Unusual Delayed Complication of Tympanoplasty

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Abstract

Aural aspergilloma was first reported in 2001 by the authors[1]. Recently the authors discovered a second case presenting with chronic otorrhea *via* a fistulous tract in the tympanic membrane. The patient was treated by removal of the fistulous tract and part of the tympanic membrane, cleansing the middle cavity, leaving the tympanic membrane perforated until obtaining a dry ear and followed by a tympanomastoidectomy, without the use of an antifungal agent. Because both cases of aural aspergilloma had a history of successful tympanoplasty with a long quiescent period before the symptoms appeared, the authors postulate that aural aspergilloma may be considered as an unusual delayed complication of tympanoplasty.

Key word : Fungus, *Aspergillus* Species, Ear Surgery, Tympanoplasty, Complication

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In the year 2001, the authors reported a case of benign *Aspergillus* colonization or *Aspergillus* ball or aspergilloma presenting in the middle ear of a 56 year-old male patient who underwent a tympanoplasty in his right ear 21 years previously[1]. As the first reported case of this new entity, the patient presented with progressive conductive hearing loss for one year. The authors could not conclude that it was considered to be a surgical complication. Herein, the authors describe a case of delayed post-operative tympanoplastic otorrhea due to an aspergilloma in the middle ear. The purpose of this article is to raise the consideration of a correlation between the presence of aural aspergilloma and tympanoplastic procedures.

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CASE REPORT

A 31 year-old man presented to the ear nose throat (ENT) outpatient department of King Chulalongkorn Memorial Hospital in January 2001, complaining of right-sided otorrhea for two months. His present history dated back to April 8, 1991, when he first came to this hospital for treatment of chronic suppurative otitis media in his right ear. He subsequently underwent type I tympanoplasty (myringoplasty), a laterally placing technique, which resulted in complete healing of the graft with a closure of the air-bone gap (pre-operative: air conduction (AC) = 25 dB, bone conduction (BC) = 13 dB; post-operative: AC = 20 dB, BC = 16 dB) within two months.

Six years after tympanoplasty (1997), a slight localized retraction of right tympanic membrane was observed anteriorly. The audiograms showed conductive hearing loss with 12 dB air-bone gap (AC = 23 dB, BC = 11 dB) and a negative peak pressure, low-compliance tympanogram was noted with a negative ipsilateral stapedial reflex. The following week, the mucopurulent discharge developed from the right hyperremic but intact tympanic membrane. He was treated with oral ciprofloxacin 500 mg twice daily plus 0.3 per cent ofloxacin otic solution 5 drops 3 times a day for two weeks. A dry ear was obtained but the tympanic membrane was still thickened and dull.

Two years previously (1999), he came to the hospital with myringitis in his right ear which was conservatively treated with oral ciprofloxacin 500 mg twice daily plus Sofradex otic solution (Hoechst Marion Roussel) 5 drops twice daily.

In January 2001, the patient experienced prolonged otorrhea in his right ear for one month. Debris was removed from the ear canal and the surface of the eardrum. The tympanic membrane was thickened and after injection a small fistulous opening with pus coming out was noted in its antero-inferior portion. The patient was treated intermittently with a one-week course of oral ciprofloxacin 500 mg twice daily for four months but the discharge from that small fistula remained. An audiogram was obtained and demonstrated mixed hearing loss in the right ear (AC = 38 dB, BC = 18 dB, air-bone gap = 20 dB, speech reception threshold (SRT) = 35 dB and speech discrimination score (SDS) = 100%). In April 2001, the carbondioxide laser was used to open the fistula and its tract was followed to the middle opening. Portions of the tympanic membrane were removed which uncovered parts of the middle cavity. The muddy-clay debris was found filling the whole middle cavity. From the authors' previous experience, "fungus ball" in the middle ear was considered. Suspicious tissue was removed for histopathology and fungus culture. A large perforation was created, the middle ear cavity was toiletted. The middle ear mucosa was thickened and inflamed without granulation. The ossicular chain and eustachian tube opening appeared to be normal. The middle ear was left open until a dry ear with normal looking mucosa was obtained. Histopathologic report showed clumps of fungal hyphae with inflammatory cell infiltrates, dichotomous branching septated hyphae were highlighted with Gimelius Methenamine Silver (GMS) stain, morphology consistent with aspergillus ball. (Fig. 1)

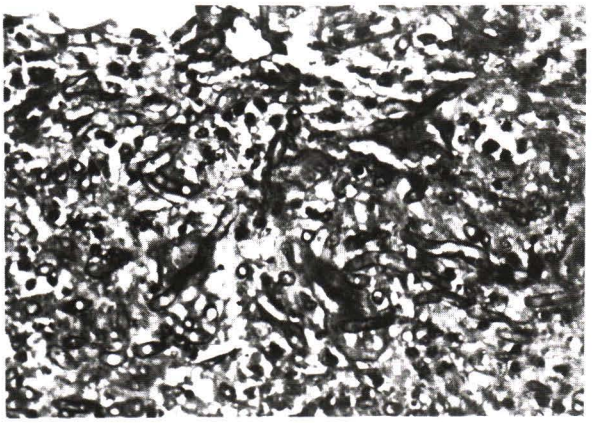

Fig. 1. GMS stain highlights the branching septate hyphae, morphology consistent with Aspergillus sp (original magnification x 400).

Three months later (July, 2001) the patient underwent a right tympanomastoidectomy. Cholesterol granuloma was found filling the mastoid antrum and air cells due to an obstruction at the additus. The middle ear, attic and mastoid were cleansed until a free ventilation system connecting the eustachian tube, middle ear and the mastoid was created. The ossicular chain and eustachian tube were identified and found to be intact. The tympanic membrane was repaired with temporal fascia and free canal skin graft. Postoperatively, the tympanic graft healed completely within one month. Serviceable hearing with mild sensorineural hearing loss was obtained (AC = 33 dB, BC = 33 dB, SRT = 35 dB and SDS=100%) and without any complication. The patient remained well at six months follow-up.

DISCUSSION

Tympanoplasty is the procedure of choice for treatment of chronic suppurative otitis media without cholesteatoma by 1) eradication of the middle ear infection 2) reconstruction of the ossicular chain and 3) repairing the tympanic membrane. Type I tympanoplasty or myringoplasty is designed to solely repair the perforated tympanic membrane either with laterally or medially placed grafting technique[2,3]. Common complications include blunting of the anterior tympanomeatal angle, lateralization of the graft, reperforation, stenosis of the ear canal, epithelial pearl, cholesteatoma, chronic suppuration in association with perforation and granulation and high frequency hearing loss[3]. Aspergilloma or aspergillus ball has not been mentioned as a complication of tympanoplasty or myringoplasty.

In 2001, the authors described the first reported case of aural aspergilloma in a 56-year-old man. He underwent tympanoplasty in his right ear 21 years prior to a one-year progressive hearing loss with localized retraction of a dull tympanic membrane in the postero-superior quadrant. Exploratory tympanotomy disclosed a muddy clay-like substance which was comparable to the more familiar aspergilloma in the maxillary antrum[1]. Comparing between the present case to the previous one, some differences exist. First the patient's age in the present case is much younger (31 years and 56 years). Second, the time interval from tympanoplasty to disclosure of the disease is shorter in the present case (10 years *vs* 21 years) than in the previous one. Third, the chief presenting symptom in this case was delayed post-operative otorrhea *via* a fistulous tract in the tympanic membrane. However, progressive conductive hearing loss was the major complaint in the previous case. Lastly, management of the present case was to uncover and toilet the middle ear, leave the middle ear open until obtaining a dry ear and followed by tympanomastoidectomy to remove granulation and mastoid obstruction. However, in the previous reported case, an exploratory tympanotomy with middle ear toilet was the only procedure performed which later proved to be adequate at the second operation 8 months later. Although many differences exist, these two cases also share some similarities. Both cases had a the history of tympanoplasty with long quiescent periods. The route of entry of the fungus to the middle ear is unclear. It may have accessed through the eustachian tube from the nasopharynx, or it may have entered the middle ear through the perforated tympanic membrane and stayed silent as a saprophyte for years. These two patients had chronic otitis media and had undergone a tympanoplasty many years ago. Fungus, especially aspergillus species, may be introduced into the middle ear from the external ear canal skin during the surgical procedures. For years the fungus keeps on growing and leads to the chief presenting symptoms. For this reason the authors postulate that an aural aspergilloma is one of the delayed complications of tympanoplastic procedures.

SUMMARY

The second reported case of aural aspergilloma is described in a patient with delayed post-tympanoplastic otorrhea *via* a fistulous tract in the tympanic membrane. Combined with the previous reported case, both patients had a history of tympanoplasty with a long quiescent period. The authors postulate that the aspergillus species was introduced into the middle ear during tympanoplastic procedures. The fungus kept on growing for years and lead to the chief presenting symptoms. Aural aspergilloma should be considered as a delayed complication of tympanoplasty.

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REFERENCES

1. Supiyaphun P, Sampatanukul P, Sukumalpaiboon P. Benign Aspergillus colonization (Aspergilloma) in the middle ear. Otolaryngology-Head and Neck Surgery 2001; 125: 281-2.
2. Fisch U. Tympanoplasty/Myringoplasty. Stuttgart, New York, Georg Thieme Verlag, Thieme Medical Publishers, Inc.; 1994: 1-41.
3. Kurkjian JM. Perforations of the tympanic membrane. In: Nadol JB Jr, Schuknecht HF, eds. Surgery of the Ear and Temporal Bone. New York: Raven Press; 1993: 127-37.

ก้อนแอสเปอร์จิลโลมาของหูชั้นกลาง : โรคแทรกซ้อนในระยะยาวที่พบไม่บ่อยของการผ่าตัดซ่อมเยื่อแก้วหู

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ก้อนแอสเปอร์จิลโลมา (aspergilloma) ของหูชั้นกลางพบและรายงานครั้งแรกในปี ค.ศ. 2001 โดยคณะผู้รายงานนี้ ในช่วงที่ผ่านมาผู้รายงานได้พบผู้ป่วยรายที่ 2 ซึ่งมีอาการน้ำหนวกเรื้อรังออกมาทางช่องทางเล็ก ๆ (fistula) ในเยื่อแก้วหูเชื่อมกับหูชั้นกลาง ผู้ป่วยได้รับการผ่าตัดในขั้นต้น ด้วยการผ่าตัดเอาช่องทางนั้นออกไป และพบก้อนแอสเปอร์จิลโลมา ซึ่งมีลักษณะสกปรกอยู่ภายในโพรงหูชั้นกลาง และได้ทำความสะอาดโพรงหูชั้นกลาง จนกระทั่งไม่มีน้ำหนวก จึงทำการผ่าตัดโพรงหูชั้นกลางและโพรงมาสตอยด์ (tympanomastoidectomy) โดยไม่ได้ใช้ยาต้านเชื้อราเลย ซึ่งผู้ป่วยหายดีในช่วง 1 ปี

โดยที่ผู้ป่วยรายนี้และรายที่เคยรายงานไว้แล้วมีประวัติการทำผ่าตัดซ่อมเยื่อแก้วหู (tympanoplasty) ที่ประสบผลสำเร็จอย่างดีมาก่อนเป็นเวลานานนับปี หลังจากนั้นจึงเริ่มมีอาการ ดังนั้นผู้รายงานจึงตั้งสมมติฐานว่า ก้อนแอสเปอร์จิลโลมาของหูชั้นกลางนี้อาจจะเป็นโรคแทรกซ้อนในระยะยาวอย่างหนึ่งของการทำผ่าตัดซ่อมเยื่อแก้วหู

คำสำคัญ : เชื้อรา, เชื้อแอสเปอร์จิลลัส, การผ่าตัดหู, การผ่าตัดซ่อมเยื่อแก้วหู, โรคแทรกซ้อน

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