Improvised Venous Canula Myringostomy in Acute Otitis Media: Analysis of outcome in Nigeris.

F. Olatoke[1], O.A. Lasisi[2], S. B. Alabi[3], A.A. Aluko[4]

[1] Consultant ENT Surgeon, Federal Medical Centre Lokoja, Nigeria,
[2]Senior Lecturer and Consultant ENT Surgeon, University College Hospital, Ibadan, Nigeria,
[3]Senior Lecturer and Consultant ENT Surgeon, College of Medicine, University of Ilorin, Nigeria.
[4]Lecturer and Consultant ENT Surgeon, Aminu Kano University Teaching Hospital, Nigeria

Correspondence to: Dr. OA Lasisi, University Of Ibadan, Email:akeemlasisi@gmail.com

Background: This case control study was based on the hypothesis that myringostomy done on an a bulging but inflamed tympanic membrane before perforation might improve healing of the middle ear and tympanic membrane, thus reducing the probability of progression to chronic suppurative otitis media.

Our objective was to compare outcome of tympanic membrane healing in acute otitis media (AOM) patients who had myringostomy and those presenting with perforation and suppuration. In this study we also examined the suitability of a venous canula as an improvisation in the absence of conventional myringostomy tube.

Methods: This prospective study, carried out in the Otolaryngology Unit, Department of Surgery, Federal Medical Center, Lokoja between February 2006 and August 2008, included consecutive AOM patients who presented with excruciating otalgia and bulging, hyperaemic tympanic membrane and another group with ruptured tympanic membrane both within 2 weeks duration.

The patients with bulging tympanic membrane had venous canula myringostomy done in the local anaesthesia and the canula was kept in situ until the ear became dry and until the myringostomy site closed up. While the group with tympanic membrane perforation at presentation had ear suction toileting and daily ear dressing, until ear became dry. The 2 groups were followed up daily to determine duration of stay of the improvised myringostomy tube and the closure of the myringostomy site or tympanic membrane perforation and they were compared using Pearson's correlation test at 0. 05 significance.

Results: Subjects comprised of 42 AOM (15 males and 27 females (M: F = 1.7:3) and 26 with tympanic membrane perforation (11 males and 15 females), aged between 3 years to 48 years (mean± SD = 13± 6 years). Relief of otalgia was seen all the subjects in the myringostomy group (100%).

The mean number of days to achieve dry ear after myringostomy tube was 3 days after myringostomy while it was 3 weeks in the perforation group (P = 0.002). The mean number of days to achieve closure of the myringostomy was 3.7 days after dryness while among the perforation group, it was 3 months (P= 0.000).

Conclusion: Venous canula, which is cheap and readily available, could be an improvisation for myringostomy in AOM; and this aided early relief of otalgia, resolution of disease and significant reduction in treatment durations.

Introduction

The interactions of the risk factors associated with the persistence of acute (non – suppurative) otitis media (AOM) into chronic suppurative otitis media (CSOM) remain poorly understood, although, it is known that AOM is often a precursor of CSOM[1]. The clinical features of AOM are often that of fever and excruciating otalgia which could be relieved surgically or conservatively. Conservative means include administration of analgesics, antibiotics and decongestants while surgical treatment of uncomplicated acute otitis media includes tympanocetensis and myringtomy[2, 3]. This study is informed by the scientific speculation that healing of the middle ear and tympanic membrane might be improved with associated benefits of reduced duration of clinic visits if clean surgical myringostomy is done promptly before outright perforation of tympanic membrane. Our objective was to compare the treatment outcomes in acute suppurative otitis media in terms of perforation healing in patients treated with myringotomy and insertion of venous canula versus those treated with antibiotics alone.

Patients and Methods

This prospective study was carried out at the Otorhinolaryngology Department of the Federal Medical Centre Lokoja, Nigeria between February 2006 and August 2008. The inclusion criteria were consecutive acute otitis media patients who presented with excruciating otalgia and otoscopic finding of hyperaemic and bulging tympanic membrane and another group with ruptured tympanic membrane both less than 2 weeks duration. The patients with bulging tympanic membrane had venous canula myringostomy was done in the Outpatient Otorhinolaryngology treatment Room with the patient in supine position. The procedure was done using a hand – held otoscope stabilized onto the ear. Under this illumination, the ear canal and tympanic membranes were inspected and the local anaesthesia applied. This involved the instillation of 2%xylocaine in 1:200,000i.u adrenaline into the ear canal and allowed to stay for 10 minutes. A size 18FR medicut canula (-with beveled edge of the needle cut off) was inserted into the middle ear cavity through the anterior inferior segment of the tympanic membrane. The needle was removed leaving the canula inside and the middle ear cavity was suctioned dry; the ears with thick secretions were gently irrigated using normal saline until the content suctioned dry.

The canula was removed and excess length was cut using clip cuter. The canula was supported by a strip of gauze gently inserted round the canula. The ear was examined daily and the canula removed once there was no evidence of drainage. Patients were instructed not to allow water to enter the ear by blocking the ear canal with Vaseline painted cotton wool ball any time they took their birth and to avoid swimming during the time. While the group with tympanic membrane perforation at presentation had ear suction toileting, daily ear dressing, nasal vasoconstrictor and systemic antibiotics. The dressing was done daily until dry ear was achieved.

The patients in the 2 groups were subsequently reviewed daily until the myringostomy site healed up and then monthly for 6 months.The duration of stay of the improvised myringostomy tube and the closure of the myringostomy site or tympanic membrane perforation were analysed using simple statistics. The number of days it took to achieve dry ears and closure of tympanic membranes were compared using the Pearson's correlation test at 0.05 significance.

Results

Acute otalgia with bulging hyperaemic tympanic membrane accounted for 42 out of 1900 (2.2%) patients seen at the Otorhinolaryngology Clinic in the period under study. These comprised of 15 males and 27 females (M: F = 1.7:3), aged between 3 years to 48 years (mean$\pm$ SD = 13$\pm$ 6 years).

Immediate relief of pain following insertion of improvised myringostomy tube was seen in all the subjects (100%). Dry ear was achieved and the improvised myringostomy tube was removed in 8 patients in 2 days, 18 patients in 3 days and 16 patients in 4 days with a mean of 3 days after myringostomy.
There was complete healing of the tympanic membrane with closure of the myringostomy site in 7 in 2 days, 8 patients in 3 days, 15 in 4 days, 3 patients in 5 days and 5 patients in 14 days, with a mean of 3.7 days after achieving dry ears. Perforated tympanic membrane with AOM was seen in 26 patients
(11 males and 15 females), dry ear was achieved in 10 at 2 weeks, in 9 at 3 weeks and in 6 at 5 weeks with a mean of 3 weeks after ear dressing. Tympanic membrane healing and closure of perforation was seen in 7 after 2 months, in 10 after 4 months while 11 remained as persistent perforation after 6 months with a mean greater than 3 months after achieving dry ears. Chi square showed significant difference in the mean number of day it took to achieve dry ear (P=0.002) and the mean duration of days to achieve closure of tympanic membrane (P=0.00).

Discussion

The main findings from this study are the closure of the tympanic membrane perforation in all the subjects who had myringostomy and the significant difference in the number of days to achieve cessation of suppuration and healing of tympanic membrane. In addition, was the immediate relief of otalgia,

further, confirming the added benefits of myringostomy in acute (non - suppurative) otitis media. Our findings could be explained by the fact that in suppurative AOM the edges of the perforation might be ragged and necrotic, thus delaying tympanic membrane healing recovery. There might also be a chance that there was extension of disease out of the middle ear into the mastoid bone requiring longer treatment before healing. However, we feel that the 2 groups had similar disease in terms of the clinical presentation and duration was comparable. The most common medical treatment options include the use of decongestants, mucolytics, steroids, antihistamines and antibiotics[4]. Thus attributing the benefits to myringostomy was real. Although, this might also raise need for further research into the factors predisposing to early perforation in one group compared to the other. Antibiotic treatment is complemented by myringostomy in all patients where acute mastoiditis is associated with an intact tympanic membrane[4, 5, 6].

The conventional myringostomy tubes are still relatively unavailable and unaffordable in our practice, hence the improvisation with a venous canula. Our impression was that while waiting for the availability of this contemporary practice, our patients could still have these benefits. We did not encounter any complications of myringostomy tube insertion, within the follow – up period of 6 – 18 months. This is similar to the report of van Buchem et al[7]. In the report of koko and Palva[5] healing was seen in 65% of the ears, purulent discharge and recurrence of the glue ear was noted in 5% and 3% respectively, while cholesteatoma was seen in 4 ears. The average tube treatment time was 11.3 months. The other complications of myringostomy tube insertion reported included permanent tympanic membrane perforation and myringosclerosis[8 - 12]. In our methodology of treatment of patients with tympanic membrane perforations in this study, we appreciate that the use or otherwise of topical/ systemic antibiotics introduces some uncontrolled variable. In addition, irrigating the ear with normal saline creates a second uncontrolled variable in the same way as the denial of antibiotics to patients with myringotomy. These issues can be resolved in subsequent studies to reinforce credence to the study results, however they do not invalidate this study.

Conclusion

We conclude from this study that venous canula, which is cheap and readily available, could be an improvisation for myringostomy in AOM; and this aided early relief of otalgia, resolution of disease and significant reduction in treatment durations.

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