Scholars Journal of Applied Medical Sciences (SJAMS)
Abbreviated Key Title: Sch. J. App. Med. Sci.
ISSN 2320-6691 (Online)
ISSN 2347-954X (Print)

A Unit of Scholars Academic and Scientific Society, India
www.saspublishers.com

ENT

Clinicopathological Profile and Outcome of Patients with Intracranical Complication Secondary to Otitis Media: 4 Year Retrospective Analysis

Devdatt P. Kotnis*
Associate professor, Department of ENT, DVVPF's medical college, Ahmednagar, Maharashtra, India

Original Research Article

***Corresponding author**
Devdatt P. Kotnis

Article History
Received: 14.06.2018
Accepted: 27.06.2018
Published: 30.06.2018

DOI:
10.36347/sjams.2018.v06i06.050

Abstract: Chronic suppurative otitis media (csom) is, defined as a chronic inflammation of the middle ear and mastoid cavity. India falls in category of highest prevalence of CSOM requiring urgent attention. The reported overall extra- and intracranial complication rate in CSOM varies from 0.7% to 3.2%; extracranial complications alone from 0.5% to 1.4% and intracranial complications from 0.3% to 2.0%. Present study is undertaken to study demographic, clinical profile and treatment outcome of patients of otitis media associated with intracranial complications (ICC). This retrospective observational study was carried out in department of ENT, DVVPF's medical college & Hospital from May 2014 till April 2018. Clinical profile and outcome of treatment were analysed in patients of otitis media with associated intracranial complications. During study period 24 patients of otitis media with intracranial complication were included in study. The mean age of presentation of these patients with icc in present study is about 22 years. Extradural abscess was the most common ICC (n=9, 31%) followed by brain abscess in 6 patients (20.7%). 9 (31%) patients had meningitis with or without associated intracranial abscess. We saw 3 (10.4%) patients with lateral sinus thrombosis. The mean duration of hospital stay in this patient were 51 days. Satisfactory recovery was seen in most of the patients (82%) with no neurological sequele. 3 patients developed deafness. Neurological deficit was more common in patients with cerabral abscess ($p< 0.05$). Otitis media is disease of childhood, if not treated adequately can lead to serious complication in early adulthood causing permanent deafness & neurological deficit. Patients with intracranial complications have longer hospital stay. A multidisciplinary approach is required to maximize recovery once complication occurs.

Keywords: acute otitis media, cerebral abscess, chronic suppurative otitis media, intracranial complications, meningitis.

INTRODUCTION

Chronic suppurative otitis media (CSOM) is, defined as a chronic inflammation of the middle ear and mastoid cavity, which presents with recurrent ear discharges or otorrhoea through a tympanic perforation[1]. The disease usually begins in childhood as a spontaneous tympanic perforation due to an acute infection of the middle ear, known as acute otitis media (AOM), or as a sequel of less severe forms of otitis media [2]. The point in time when AOM becomes CSOM is not clear. Generally, patients with tympanic perforations which continue to discharge mucoid material for periods of from 6 weeks to 3 months, despite medical treatment, are recognized as CSOM cases. The WHO definition requires only 2 weeks of otorrhoea, but otolaryngologists tend to adopt a longer duration, e.g. more than 3 months of active disease [3] the prevalence of CSOM varies widely. Across the globe countries with CSOM prevalence rates of less than 1% are classified as lowest prevalence & more than 4% are highest. India falls in category of highest prevalence requiring urgent attention [4]. CSOM is associated with serious extracranial and intracranial complications. The reported overall extra- and intracranial complication rate in CSOM varies from 0.7% to 3.2%; extracranial complications alone from 0.5% to 1.4% and intracranial complications from 0.3% to 2.0%. The most frequent extracranial complications are facial paralysis, subperiosteal abscess, mastoiditis, and labyrinthitis, with reported incidences of 13–58%, 40–68%, 14–74%, 7–34% of all extracranial complications, respectively. The most common intracranial complications of CSOM are meningitis, cerebral abscess, lateral sinus thrombosis, extradural abscess, otic hydrocephalus, and encephalitis, with reported incidences of 21–72%, 18–42%, 2–26%, 7–16%, 5–11%, and 2% of all intracranial complications, respectively[5]. In 1990, about 28 000 deaths all over the world and largely among developing countries were due to otitis media. Mortality and disabilities due to otitis media are primarily related to the complications of CSOM, particularly brain abscess[6]. The frequency of

life-threatening complications from CSOM has been dramatically reduced by more than 10-fold with the modern antibiotics.Acute exacerbations usually lead to rapid intracranialextension of disease[7]. Routes to cranial spread include direct erosion of bone, blood borne infection and diffusion, through anatomical or traumatic pathways[8].

Present study is retrospective analysis of patients admitted with us with intracranial complications secondary to chronic otitis media.

MATERIALS & METHODS

This retrospective observational study was carried out in department of ENT, DVVPF's medical college & Hospital from May 2014 till April 2018 after getting institutional ethical committee clearance.

A total of 751 patients with otitis media (OM) presented in OPD, of which 24 patients had associated intracranial complications. All these 24 patients were included in present study. Detailed clinical history, examination and investigations such as complete haemogram, X-ray were carried out. Computerized tomography (CT) scan, magnetic resonance imaging (MRI), magnetic resonance (MR) angiography and lumbar puncture were advised as per patient presentation.

All patients recieved IV antibiotics, steroids and antiepileptic drug if necessary. Surgical management was needed in some patients.

Following parameters were analysed in each patient.

- Demographic profile: age at presentation, gender
- Clinical profile: Type of otitis media, age of diagnosis, duration of disease, type of intracranial complication, treatment received
- Outcome: Mortality, permanent sequele, total hospital stay.

Results were tabulated and OPEN EPi software was used for statistical analysis.

OBSERVATIONS

During study period total 751 patients with otitis media presented to ENT OPD. 439 patients had acute otitis media, while remaining 312 were suffering from CSOM. 24 patients were having associated intracranial complications. 4 patients had intracranial complication secondary to acute otitis media, while 20 patients suffered from CSOM with intracranial complications. Thus incidence of ICC was 0.9% in acute otitis mrdia and 6.41% in patients with CSOM. Such high incidence in present study is attributed to many referred patients to our institute.

The mean age of presentation of these patients with ICC in present study is about 22 years(Table: 1) The mean age of diagnosis of otitis media in these patients is about 5-7 years. Thus there is lag of about 15 years between diagnosis of otitis media and development of ICC. 17 (71%) Patients in our study were male, 7 (29%) were female.

Table-1: Demographic profile of patients

	No. of cases	%
Age at presentation with ICC		
< 10 years	3	12.5
10-20 years	8	33.4
20-30 years	11	45.8
> 30 years	2	8.3
Male	17	71
Female	7	29
Mean age at presentation with ICC- 22 years		
Mean age of diagnosis with otitis media- 5 years		

Among 24 patients with ICC 3 patients had two or more ICC at the time of presentation causing total 29 various intracranial complications. 17 (58.6%) patients had intracranial abscess. Extradural abscess was the most common ICC (31%) followed by brain abscess in 6 patients (20.7%). 3 patients had cerebral abscess in area of petrous bone, 2 patient had temporal lobe abscess and 1 had cerebellar abscess. 2 patients had subdural abscess. 9 (31%) patients had meningitis with or without associated intracranial abscess. We saw 3 (10.4%) patients with lateral sinus thrombosis. None of our patient had associated hydrocephalus.

Persistent headache, chronic otorrhoea and features of space occupying lesion were commonest mode of presentation in these patients. Some cases of extradural abscesses were asymptomatic diagnosed on imaging. On clinical examination external auditory canal granulations and cholesteatoma was seen in 75% of patients. Proteus mirabilis, Enterococcus, Pseudomonas aeruginosa, Pneumococcus, Haemophilus and Staphylococcus were the most common microorganism isolated.

Table-2: Types of intracranial complications

	No. of cases	%
Abscess	17	58.6
Extradural	9	31
Brain	6	20.7
Subdural	2	6.9
Meningitis	9	31
Thrombosis	3	10.4

All patients recieved IV antibiotics for 4- 6 weeks depending on culture & sensitivity report. Most patient received third/fourth generation cephalosporins and metronidazole. Some patients required vancomycin, imipenem or meropenem. 19 (79%) patients required surgical intervention for either treatment of primary disease or for management of complication such as drainage of cerebral abscess.

The mean duration of hospital stay in this patient was 51 days, ranging from 35- 74 days. Satisfactory recovery was seen in most of the patients (82%) with no neurological sequele. 3 patients developed deafness. Neurological defecit was more common in patients with cerabral abscess ($p< 0.05$). 2 patients had facial nerve palsy, of which 1 patient had hemiparesis as well. 1 patient with meningitis and cerabral abscess presented in septic shock and could not be revived.

DISCUSSION

Mean age of presentation of patient was 22 years in our study. Maximum patients were in age group of 20-30 years (45.8%). 11 patients presented before the of 20 years. 71% of patients were male. Similar finding is seen in study by Penido NO *et al*. [9] and Miura Maurício S *et al*. [10]. Mean age of diagnosis of otitis media was 7 years in our patients. Thus there was lag of about 15 years between diagnosis of otitis media and development of intracranial complications. This emphasises on correct diagnosis and management of these patients at early age to prevent serious morbidity later. External auditory canal granulations and cholesteatoma were main predisposing factors associated with ICC in our study. Brown *et al*. [11] and Schwager *et al*. [12] made similar observation.

Intracranial abscesses (58.6%) were the most common complication among our patients, as seen in Penido NO *et al*. [9] with 66.7% cases of intracranial abscesses; this was followed by meningitis in 31% patients in our series. Meningitis was the most common ICC in Miura *et al.* [10] series.

Neurosurgical drainage of the intracranial abscess, with removal the causative cholesteatoma,by Bondy's modified radical mastoidectomy, or Zaufal's radical mastoidectomy or Schwartze's cortical mastoidectom was the most common surgical intervention needed in our study. Prolonged hospitalisation is needed for patients requiring surgical intervention, thus increasing economic burden. Mean hospital stay in Penido NO *et al*. [9] study was 34.3 days (1-180 days).

Once intracranial complication has occurred, a multidisciplinary approach is required to ensure rapid recovery with minimal permanent damage. Higher parenteral antibiotics, adjuvent therapy and timely surgical intervention in our study resulted in complete recovery in 82% of cases. Such high cure rate is seen in other studies as well [10,11].

Deafness and neurological deficit was more common in patients with cerebral abscess in our study. Penido NO *et al*. [9] had meningitis more commonly associated with deafness. Permanent sequelae occurred in 15 patients (29.4% of all ICC cases). Cranial nerve VII and VI nerve palsies were the most common permanent consequences seen. Three patients with CSOM developed 2 or more neurological sequelae including hemiparesis, reduced intellectual ability, dysmetria and dysarthria.

CONCLUSION

Otitis media is disease of childhood, if not treated adequately can lead to serious complication in early adulthood causing permanent deafness & neurological defecit. Patients with intracranial complications have longer hospital stay. Even after major advances in antibiotic therapy, imaging modalities and neurosurgical therapy these patients have significant morbidity and high mortality rate. High index of suspician is required in any patient with intracranial disease. A multidisciplinary approch is required to maximize recovery once complication occurs.

REFERENCES

1. Acuin J, World Health Organization. Chronic suppurative otitis media: burden of illness and management options.
2. Jahn AF. Chronic otitis media: diagnosis and treatment. Med Clin North America, 1991,75 (6): 1277-1291.
3. Goycoolea MV, Hueb MM, Ruah C. Definitions and terminology. Otolaryngol Clin North America, 1991, 24 (4): 757-761
4. Bluestone CD. Epidemiology and pathogenesis of chronic suppurative otitis media: implications for

prevention and treatment1. International journal of pediatric otorhinolaryngology. 1998 Jan 1;42(3):207-23.
5. Kangsanarak J, Fooanant S, Ruckphaopunt K, Navacharoen N, Teotrakul S. Extracranial and intracranial complications of suppurative otitis media. Report of 102 cases. The Journal of Laryngology & Otology. 1993 Nov;107(11):999-1004.
6. Murray CJ, Lopez AD. Global and regional descriptive epidemiology of disability: incidence, prevalence, health expectancies and years lived with disability. The global burden of disease. 1996 Aug;1:201-46.
7. Kangsanarak J, Navacharoen N, Fooanant S, Ruckphaopunt K. Intracranial complications of suppurative otitis media: 13 years' experience. The American journal of otology. 1995 Jan;16(1):104-9.
8. Bluestone CD, Klein JO. Intracranial suppurative complications of otitis media and mastoiditis. Pediatric otolaryngology. 1990;1:537-46.
9. Penido ND, Chandrasekhar SS, Borin A, Maranhão AS, Testa JR. Complications of otitis media-a potentially lethal problem still present. Brazilian journal of otorhinolaryngology. 2016 Jun;82(3):253-62.
10. Miura MS, Krumennauer RC, Lubianca Neto JF. Intracranial complications of chronic suppurative otitis media in children. Revista Brasileira de Otorrinolaringologia. 2005 Oct;71(5):639-43.
11. Brown M. Ossicular damage in chronic middle ear infections. Excerpta Media Otorhinolaryngol Esp. 1999;45.
12. Schwager K, Carducci F. Endocranial complications of acute and chronic otitis media in children and adolescents. Laryngo-rhino-otologie. 1997 Jun;76(6):335-40.