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Intracranial Complications of Chronic Suppurative Otitis Media with Cholesteatoma – A Retrospective Study.

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ABSTRACT

Background: Chronic suppurative otitis media is a common problem in our part of the world and few end up with intracranial complication. Brain abscess, meningitis and lateral sinus thrombosis are the most common intracranial complications. Emergency Multi-specialty Intervention can prevent mortality. Aim: The objective of the study is to determine various types of intracranial complications affecting adult population with of Chronic Suppurative Otitis Media with Cholesteatoma in our institution. **Methods:** All admitted cases of intracranial complications due to chronic suppurative otitis media with cholesteatoma of any age and gender were included. **Results:** The most common age group was between 11 and 20 years and males were 80% more affected than females. And 90% of patients presented with unilateral disease of ear and 73% of cases had attic pathology. Incidence of intracranial complication in patients with CSOM with cholesteatoma was 1%. The most common complication was brain abscess (20%) followed by meningitis (20%), lateral sinus thrombosis (13.3%) and extradural abscess (16%). **Conclusion:** Brain abscess is the commonest intracranial complication of chronic suppurative otitis media with cholesteatoma followed by Meningitis. Early surgical intervention in combination with broad spectrum antibiotics provides a good outcome.

Keywords: Chronic suppurative otitis media, Intracranial complication, Brain abscess, Lateral sinus thrombosis, and Extradural abscess.

INTRODUCTION

Chronic suppurative otitis media is the most common disease entity in otorhinolaryngology encountered in the out patient department of our hospital. Middle ear cleft which is separated by the thinnest shell bone from the dura of the middle cranial and posterior cranial fossa carries with it the potential for intracranial complication because of the strategic location. The tegmen tympani gets demineralized during acute infection and suffers resorption .Infection also spreads through infected clot with in the small veins through bone and dura to venous sinuses. Another way of spread is through the normal anatomical pathways that are through the oval or round window and into the internal auditory meatus the cochlear and vestibular aqueducts, dehiscence of the thin bony covering of the jugular bulb, dehiscence of the tegmen tympani and dehiscent suture line of the temporal bone.[1,2] Infection also spread through non anatomical bony defects caused by trauma accident or surgical or by neoplastic erosion, and through other surgical defects in particular the vestibular opening deliberately created at stapedectomy operation and possibly through a fenestration opening into the lateral semicircular canal. Another way of spread into brain tissue is along the periareolar space of Virchow –Robin. All patients with CSOM and cholesteatoma have to be surgically managed with mastoidectomy to prevent intracranial complications.[2] If not managed properly cholesteatoma will erode through the tegmen tympani and tegmen antrum and cause all kinds of intracranial complications. The most common intracranial complications are brain abscess, meningitis, lateral sinus thrombosis and extradural abscess.[3] Otitis media is potentially serious due to its life-threatening complications. The complications arising from this condition can be further divided into intracranial and extracranial. These complications, from being common with high morbidity and mortality rates, have become rare now with arrival of the antibiotic era.[4] A retrospective study by Lund talks of the mortality rate due to intracranial complications being at 36% between 1939 and 1949, 6% from 1950 to 1960, and 0% from 1961 to 1971, demonstrating the drastic change in the incidence.[5]

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Aim

The objective of the study is to determine various types of intracranial complications affecting adult population with of Chronic Suppurative Otitis Media with Cholesteatoma in our institution

MATERIALS AND METHODS

This retrospective study was conducted in a Department of Otorhinolaryngology at tertiary care hospital. A thorough history was taken and detailed otological, neurological, and general physical examination was carried out and recorded on a proforma. Pure tone audiogram, CT-Scan of brain & temporal bone, lumber puncture and complete blood count were done in all patients. Routine aural swab for C& S, X-ray of both mastoid lateral oblique view CT scan of mastoids and brain, Fundoscopy and CSF analysis have to be made in case of patients with signs of intracranial complications.

RESULTS

Out of the 2841 (28.4 %) patients attending our hospital 30 had intracranial complication (1%). Effective screening of all patients who complained of headache, vomiting, fever, meningeal signs with simple investigations like fundus examination, CT scan we were able to pick up 30 cases. 17 patients had brain abscess, 6 patients meningitis, 4 lateral sinus thrombosis, 3 extradural abscess. [Figure 1] Brain abscess was the commonest complication in this series followed by meningitis, lateral sinus thrombosis and extradural abscess. The commonest age group was between the ages of 11 to 20 years. Males are commonly affected than females. Intracranial complications commonly seen in lower socioeconomic group. In about 90% the disease was unilateral. 73% of cases were attic pathology. Radiological findings of the mastoid showed sclerosed mastoids in 76% of the cases and definite evidence of cavity in 23% of cases

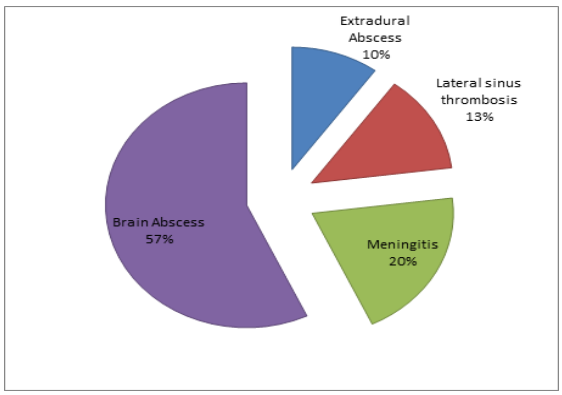

Figure 1: Distribution of Various Intracranial Complications

Brain abscess patients; Emergency burr hole and drainage was done in the Neurosurgery department. Modified Radical mastoidectomy was done at the earliest opportunity. Lateral sinus thrombosis patients; For all our cases of lateral sinus thrombosis emergency mastoidectomy was done. The sinus was opened and the thrombus material removed till there was free flow of blood. All our cases of meningitis were managed conservatively by the neuro physician by appropriate antibiotics. Mastoidectomy was done after all the signs of meningitis subsided and C.S.F. analysis become normal.

Table 1: Operative Findings.

Erosion Of	No .of cases
Sinus plate	8
Tegmen/dura exposed	7
Sinodural angle	3
Granulations over the sigmoid sinus	5
Lateral semicircular canal	2
Sigmoid sinus –thrombus material	4
Associated findings	1
Facial canal eroded	1

The bony barrier most commonly eroded by cholesteatoma was the sinus plate which was found to be in eight cases. [Table 1] The Mortality rate of intracranial complications of chronic suppurative otitis media with cholesteatoma was 3.34%.

DISCUSSION

In the present study, the maximum incidence of CSOM with Cholesteatoma was in the age of 11-20 years with male predominance with matches with study done by Radheshyam M et al.[6] Brain abscess was the commonest complication in this series followed by meningitis, lateral sinus thrombosis, and extradural abscess. Study done other authors Radheshyam M et al and Baig MM et al.[6,7] meningitis was the commonest complication followed by brain abscess. Maximum patients had attic perforation 22 out of 30, and 8 had marginal perforation. 73% presented with attic pathology. Sclerosis of the cavity was seen in the radiological studies in 23 cases (76%). Audiogram was routinely done in for all patients, and 17 (56.67%) patients showed conductive hearing loss, 3(10%) patients had mixed hearing loss& 2 (23%) had sensorineural hearing loss. CT scan both mastoids and brain done in all suspected intracranial complications cases. Brain abscess and extradural abscess cases diagnosed and intervened early. During mastoid surgery granulations over eroded sigmoid sinus were seen in 5 cases only. But erosions of sinus plate were seen in 8 cases Tegmen in 7 cases, sinodural angle in 3 cases, Lateral semicircular canal in 2 and cases sigmoid sinus thrombus in 4 cases and facial canal erosion in 1 case. Thrombus material was seen in sigmoid sinus in 4 cases. All patients with lateral sinus thrombosis were operated immediately after doing MR Venogram. Emergency modified radical

mastoidectomy was done.[3] Conservative management by removal of granulation tissue from sigmoid sinus and aspiration of sinus are the best procedures. All patients recovered well and discharged and followed up till mastoid cavity was dry. Otogenic Brain abscess of patients were managed by neurosurgeon with emergency burr hole drainage& modified radical mastoidectomy at the earliest opportunity. Similar cases were managed by Korien et al. in CMC Vellore by concurrent craniotomy & mastoidectomy.4 They have managed 36 patients with this procedure and all recovered well. The remaining 6 patients with meningitis were treated by neuro-physicians medically and mastoidectomy was postponed till C.S.F analysis became normal. All recovered well. This was the most successful conservative management supported by SJ Kopetzy et al study.[9] Extradural abscess of remaining 3 cases were managed by craniotomy and subsequent modified radical mastoidectomy .This procedure was endorsed to be the most ideal procedure by Feuerman T et al. in his study.[10]

CONCLUSION

Brain abscess is the commonest intracranial complication of CSOM with cholesteatoma followed by Meningitis. CT-Scan is the most relevant investigation in establishing diagnosis and follow-up. Complication should be treated first followed by treatment of the ear. Early surgical intervention in combination with broad spectrum antibiotics provides a good outcome.

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