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Otolaryngology International

July - December 2018
Volume 3, Number 2

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Original Article

Otolaryngology International
Volume 3 Number 2, July - December 2018

Fungal Rhinosinusitis with Orbital Involvement: A Successful Endoscopic Management

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Abstract

Aim: To know the different orbital manifestations and involvement of surrounding structures and their varied clinical presentations of fungal rhino-orbital sinusitis. *Materials and Methods:* 40 patients with orbital complications secondary to fungal rhino sinusitis from 2007 – 2017 were included in the study of 20 to 70 years of age. Endoscopic Sinus Surgery with orbital clearance / debridement were done as per the need with anti-fungal medications. Mucormycosis with orbital, palatal and intracranial involvement and Aspergillus with Abducens palsy were seen with histopathological evidence. Regular follow up and endoscopic suction clearance were done in all patients. Patients with suspected malignant involvement and traumatic injury. *Results:* Out of the 40 patients, 25 improved completely without any sequelae, 2 under went orbital exenteration, 5 had palatal perforation and 3 succumbed to death. *Conclusion:* Invasive rhino-sino-orbital mycosis is known to have a poor prognosis.Ocular involvement is an ominous sign but orbit can be preserved. The critical factor in treatment is the rapidity of diagnosis and early administration of antifungal therapy because some of these patients may have a stormy course or rapid progression. A high degree of clinical suspicion is required for diagnosis. However real time total surgical excision with an appropriate antifungal therapy will make a difference in the prognosis.

Keywords: Fungal rhino sinusitis; Mucormycosis; Orbital cellulitis; Amphotericin - B.

Introduction

Sinusitis or more accurately rhino sinusitis is a common disorder, affecting approximately 20% of the population at some time of their lives. However, fungal rhino sinusitis once considered a rare disorder, is being recognized and reported with increasing frequency over the last two decades worldwide [1,2].

Because of improved diagnostic methods, which enable us for more frequent recognition and an increase in those factors which predispose to fungal infections, diagnosis of the condition has become less cumbersome.

In this study, patients with orbital involvement, with suspected fungus infection have been evaluated to know the extent of involvement, their appropriate management, morbidity and mortality of the disease.

Aim: To know the different orbital manifestations and involvement of surrounding structures and their varied clinical presentations of fungal rhino-orbital sinusitis.

Study Design: Prospective Study

Materials and Methods

40 patients with orbital complication secondary to fungal rhino sinusitis from 2007–2017 were included in the study of 20 to 70 years of age.

- Endoscopic Sinus Surgery with orbital clearance / debridement were done as per the need with anti-fungal medications.
- Mucormycosis with orbital, palatal and intracranial involvement [Fig. 1] and Aspergillus with Abducens palsy [Fig. 2] were seen with histopathological evidence. [Fig. 3]
- Regular follow up and endoscopic suction clearance were done in all patients.

Results

Table 1:

Structures Involved	Number	Outcome
Isolated sphenoid with VIth nerve palsy	2	Improved – 02
Sino-nasal involvement with only orbital extension	25	Improved – 23 Orbitalexenteration – 02
Orbital + palatal involvement	5	Palatal perforation – 05
Orbital + intracranial Involvement	8	Death – 03

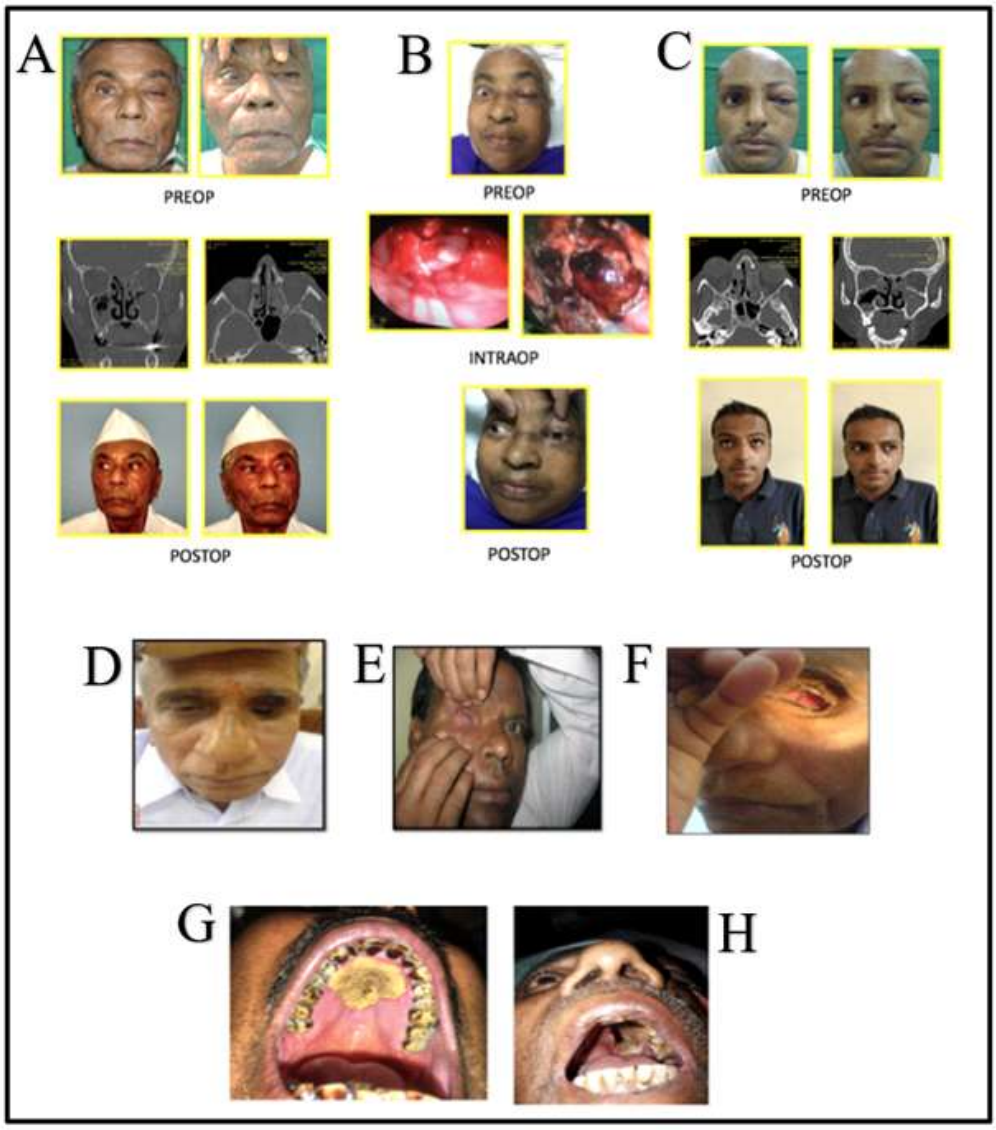

Fig. 1 A,B,C: Fungal rhino sinusitis with left orbital cellulitis
D,E,F: Orbital exenteration
G,H: Palatal involvement with perforation

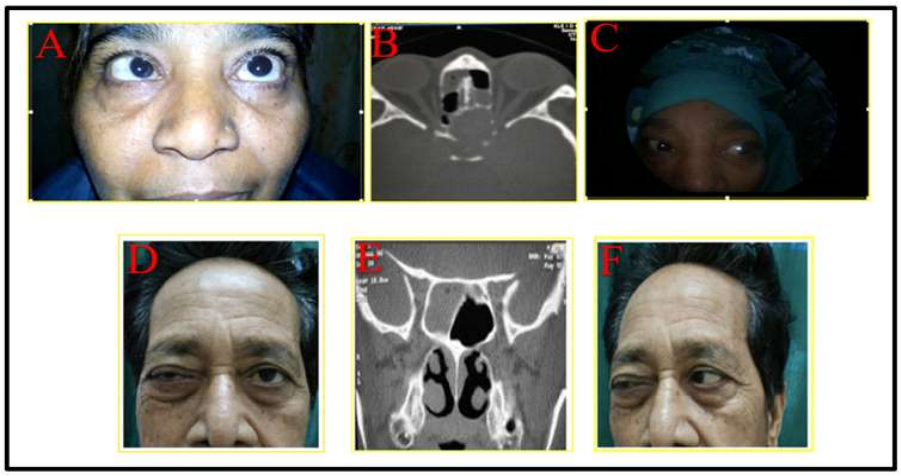

Fig. 2 A,B,C: Isolated left sphenoid sinusitis (Aspergillus) with left VIth nerve palsy and complete improvement post orbital decompression.
D,E,F: Isolated right sphenoid sinusitis with right lateral rectus palsy and complete improvement post orbital decompression.

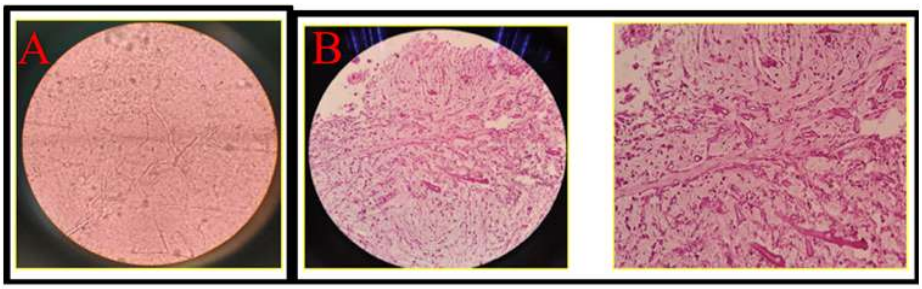

Fig. 3A: KOH positive for fungal filaments
3B: Histopathology of the mucosa showed edema, congestion and diffuse inflammation with necrotic material showing numerous hyphae branching at right angles suggestive of mucormycosis.

Discussion

Due to close proximity of the orbit with sinuses, any sino nasal infection, if not diagnosed early and treated adequately, can lead to the spread of infection. It has been estimated that 5–10% of upper respiratory infections are complicated by sinusitis. Orbital complications include edema, orbital cellulitis, subperiosteal abscess, orbital abscess, cavernous sinus thrombosis and intracranial complications.

Rhino/sino-orbital mycosis is most often caused by the saprophytic moulds - aspergillus and mucorales [3]. These are found worldwide in a variety of habitats like soil, on decaying vegetation, in the air, and also in water supplies. Their thermo-tolerance permits a wide range of suitable host conditions [4,5,6,]. There are about 400,000 known fungal species of which 400 are human pathogens and 50 of which cause systemic or CNS infection.

Clinical presentation, imaging features, and treatment differ based on type of fungal sinusitis.

Fungal rhino sinusitis occurs in two distinct forms –

1. The fulminant invasive disease - immunosuppression
2. Chronic fungal rhino sinusitis - apparently healthy hosts [3].

Nasal cavity and paranasal sinuses being dark, wet and closed spaces form friendly environment for the fungus to grow. Frequently, the disease spreads to adjacent areas [7] including the central nervous system and the mortality in these cases is high [8,9]. Orbital complications are the most common complications and account for 61% of all complications.

It carries a high residual morbidity and mortality due to the angioinvasive property of fungi, causing vascular occlusion and extensive

tissue necrosis. Impaired delivery of the antifungal drugs to the site of infection because of vascular thrombosis and complex anatomy of the rhino orbito cerebral region frequents the need for early diagnosis and aggressive management [10]. Medical treatment is indicated for the first 48 hours with positive KOH results, if patient does not improve then surgical intervention is indicated with antifungal management following histopathological evidence.

Amphotericin B remains the only antifungal agent approved for the treatment of this infection [4]. The lipid formulations of amphotericin B are significantly less nephrotoxic than amphotericin B deoxycholate and can be administered at higher doses for a longer period of time. Several case reports of patients with mucormycosis document successful treatment with up to 15 mg/kg/day of a lipid formulation of amphotericin B [11].

Though azoles have not been found to be effective for treating mucormycosis, combination of suboptimal doses of liposomal amphotericin B and posaconazole/fluconazole given concurrently had a significantly better efficacy in comparison with either monotherapy [12].

Conclusion

Invasive rhino-sino-orbital fungal infection has a poor prognosis.

These patients need surgical procedures that combine otolaryngological expertise.

A multidisciplinary approach by otolaryngologists, opthalmologists, nephrologists and neurosurgeons is required. Ocular involvement is a more ominous sign but orbit can be preserved. As the critical factor in treatment is the rapidity of diagnosis and early administration of antimycotic therapy because of some of these patients may have a stormy course or rapid progression, a high degree of clinical suspicion is required for diagnosis. However real time total surgical excision with an appropriate antimycotic drug will make a difference in the prognosis.

Compliance with Ethical Standards: Ethically approved.

Conflicts of Interest: Nil.

Informed Consent: Written informed consent was taken from participants included in the study.

References

1. Holt GR, Standefcl JA, Brown WE. Gates Ga Infectious diseases ot the sphenold sinus Laryngoscope. 1984;94:330-35.
2. Stammberger H, Jakse R, Beanfort F Aspergillosis of paranasal sinuses Ann OtolRhinolLaryngol. 1984;93:251-56.
3. Hora JF Primary aspergillosis of the paranasal sinuses and associated areas Laryngoscope. 1965;75:768-73.
4. Dubey A, Patwardhan RV, Sampth S, Santosh V, Kolluri S, Nanda A. Intracranial fungal granuloma: Analysis of 40 patients and review of the literature. Surg Neurol. 2005;63:254-60.
5. Murthy JM, Sundaram C, Prasad VS, Purohit AK, Rammurti S, Laxmi V. Aspergillosis of central nervous system: a study of 21 patients seen in a university hospital in south India. J Assoc Physicians India. 2000;48:677-81.
6. Murthy JM, Sundaram C, Prasad VS, Purohit AK, Rammurti S, Laxmi V. Sinocranial Aspergillosis: A form of central nervous system aspergillosis in south India. Mycoses. 2001;44:141-5.
7. Mauriello JA Jr, Yepez N, Mostafavi R, Barofsky J, Kapila R, Baredes S, et al. Invasive rhinosino-orbital aspergillosis with precipitous visual loss. Can J Ophthalmol. 1995;30:124-30.
8. Cagatay AA, Oncü SS, Calangu SS, Yildirmak TT, Ozsüt HH, Eraksoy HH. Rhinocerebral mucormycosis treated with 32 gram liposomal amphotericin B and incomplete surgery: a case report. BMC Infect Dis. 2001;1:22.
9. Lowe J, Bradley J. Cerebral and orbital Aspergillus infection due to invasive aspergillosis of the ethmoid sinus. J Clin Pathol. 1986;39:774-8.
10. Jayalakshmi SS, Reddy RG, Borgohain R, Subramanyam C, Panigrahi M, Sundaram C, *et al.* Predictors of mortality in rhinocerebral mycosis. Neurol India. 2007;55:292-7.
11. Seiff SR, Choo PH, Carter SR. Role of local amphotericin B therapy for sino-orbital fungal infections. OphthalPlastReconstr Surg. 1999;15:28-32.
12. Clemons KV, Espiritu M, Parmar R, Stevens DA. Comparative efficacies of conventional amphotericin b, liposomal amphotericin B (AmBisome), caspofungin, micafungin, and voriconazole alone and in combination against experimental murine central nervous system aspergillosis.s. Antimicrob Agents Chemother. 2005;49:4867-75.

Original Article

Otolaryngology International
Volume 3 Number 2, July - December 2018

Study on Nasal Columellar Show with Photographic Technique

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Abstract

Aims: Thorough knowledge of an Indian nose is vital for performing corrective nasal surgeries. Hence the present study was taken up with the aim to determine nasal columellar show of Tamil ethnic group; and also to statistically analyse gender wise difference in findings. *Settings and Design:* The present cross-sectional study, approved by the Institutional Ethics Committee, was done on Tamil speaking medical students of Velammal Medical College, Madurai, Tamil Nadu. *Methods & Material:* 118 Tamil speaking medical students from Velammal Medical College Hospital & Research Institute, Madurai, Tamil Nadu, participated in the study. Consenting Tamil speaking medical students were included. Individuals with noticeable facial disfigurement and with history of previous facial surgery were excluded. *Statistical Analysis used:* Unpaired t test & Chi-square test. *Results:* The present study reports Normal Columellar Show as 2-5 mm for males; 1.5-4 mm for females; and 1.5-3.5 mm for the whole group. *Conclusion:* The present study reports significant difference in male and female columellar show; and Normal columellar show, Excess columellar show, and Insufficient columellar show as 1.5-3.5 mm, greater than 3.5 mm and lesser than 1.5 mm respectively for the study group.

Keywords: Otolaryngology; Nasal Columellar Show; Rhinoplasty; Photographic Technique.

Introduction

Columellar show (*CS*) is an assessment of how much of the inner nostril is visible when viewing the nose on a profile view. It is normal to see 2 to 4 mm of the columellar sidewall from profile view. A nose is said to have excess "columellar show" when more than this amount of nostril is visible [1,2,3]. Excess columellar show, is a result of alar rim retracted too high (*excessively arched*) and/ or a columella that is too low (*hanging columella*). In either case, rhinoplasty should be planned to restore a more ideal configuration and shape [4]. Columellar show affects nostril configuration. Hence, it is important to understand individual, racial and ethnic variations in columellar show [5,6]. The present study was taken up with the aim to determine nasal columellar show of Tamil ethnic group; and also to statistically analyse gender difference in findings.

Material & Method

The present cross-sectional study was done during January to April 2017. The study was approved by Institutional Ethics Committee. Written informed consent was taken from the participants before data collection. 118 (*43 males and 75 females*), Tamil speaking medical students from a medical college in Tamil Nadu participated in the

study. Consenting Tamil speaking medical students were included (*Inclusion Criteria*). Individuals with noticeable facial disfigurement and with history of previous facial surgery were excluded (*Exclusion Criteria*). Sample size was calculated using Sample Size Calculator presented as a public service of Creative Research Systems: Survey software, 'The Survey System'. Sample size was 118 (*Confidence Level at 95%, and Confidence Interval of 4*) of total 142 students (population).

Participants were positioned in anatomical posture with head positioned in *Frankfurt horizontal plane (FH)* as described by Uzun et al. [7]. *Photographic technique* was used to record data. *Lateral view* photograph of face of each participant was taken, which was later converted to *pencil sketch photograph (using Android software)* as in Fig. 1. Measurements were taken using *Marcus Bader–Ruler* software.

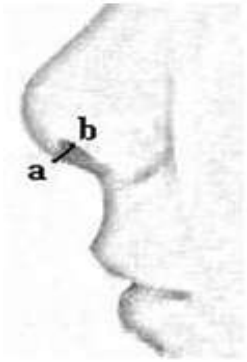

Fig. 1: Pencil sketch photograph indicating columellar show (ab)

Observations were recorded in millimeters (*mm*). Columellar show was further categorized into Excess columellar show (*CS>4 mm*), Insufficient columellar show (*CS<2 mm*) and Normal columellar show (*CS=2-4 mm*). The measurements were taken in millimeters. *Mean and standard deviation*s were calculated. Statistical analysis was done by the application of *unpaired t test* using *Graphpad software*. Significance level was assessed with p value<0.05.

Results

Mean, Standard Deviation (SD), Standard Error of Mean (SEM), and 95% Confidence interval ($CI._{95}$) of the difference in mean of male (m) and female (f) participants was estimated using unpaired t test. Intermediate values in calculation were t value, and standard error of difference (SED). Gender difference was significant at p<0.05. Table 1 indicates Statistical findings on gender difference in Columellar show with unpaired t test & Table 2 indicates Chi square test result on Columellar show types.

CS-Columellar show, n (118)-total participants, m (43)-males, f (75)-females, M-Mean, SD-Standard Deviation, CI.95- 95% Confidence interval of the difference in mean of male (m) and female (f) participants, SE -Standard Error of Difference (Table 1).

ECS-Excess columellar show, NCS-Normal columellar show, ICS-Insufficient columellar show, m (43)-males, f (75)-females, n (118)-total participants (Table 2).

Discussion

A hanging columella can be natural (*some patients are born with a hanging columella*). It can be secondary to a long septum that pushes the columella downwards. It can be also due to orientation and positioning of the columellar cartilages (*medial and intermediate crura*). It can happen after a previous rhinoplasty too. A columella strut, caudal extension graft, plumping graft or shield graft can all push the columella too far downwards. Alar and nostril retraction, due to excessive cartilage resection after rhinoplasty, can also cause excess columella show. However, alar retraction could be a natural occurrence as a result of nasal tip cartilage orientation. Post rhinoplasty, patients can have a

Table 1: Statistical findings on gender difference in Columellar show with unpaired t test

	n (118)		m (43)		f (75)		CI.95	t value	SED	p value	Statistical Inference
	M	SD	M	SD	M	SD					
CS	2.67	0.9	3.56	1.7	2.85	1.2	0.18-1.23	2.66	0.265	0.0088	significant at p < .05

Table 2: Chi-square test result on Columellar show types

	ECS	NCS	ICS	chi-square statistic	p value	Statistical Inference
m (43)	11	28	4			
f (75)	5	58	12	8.6751	0.013068	significant at p < .05
n (118)	16	86	16			

hanging columella due to scar tissue that pushes medial crura downwards. Revision rhinoplasty surgery is required in such cases where excess scar tissue is excised and plunging intermediate crura repositioned to create a more balanced, natural tip. What's more important is to determine if the excess columella show is due to excess columella tissue or a retracted nostril rim [2,8,9].

A hanging columella can be corrected by trimming the end of the long nasal septum. The two nasal tip cartilages that sit within the columella, can also be moved upward and stitched to the septum (*tongue in groove setback technique)*. This creates a very stable nasal tip. The tongue in groove setback technique includes trimming some excess septal cartilage (*depending on how long the septum is*). The technique mainly involves separating the two medial crural cartilages that make up the columella, advancing them in the proper upward position, and then overlapping the medial crura over the long septum which acts as a great columellar strut; followed by suturing that secures the columella cartilages in place. In mild alar retraction cases, an alar rim graft will often be sufficient. In severe alar retraction cases, lower lateral cartilage repositioning with a lower lateral cartilage strut graft is recommended [1].

There haven't been studies of similar kind before. Surgeons need to know the demarcation between Normal, Excess & insufficient columellar show for a particular gender, ethnic and geographical area; to plan an optimal approach for corrective nasal surgeries.

Conclusion

The present study reports significant difference in male and female columellar show. Considering mean and standard deviation of columellar show of the study group, it is concluded that Normal columellar show, Excess columellar show, and Insufficient columellar show are 1.5-3.5 mm, greater than 3.5 mm and lesser than 1.5 mm respectively. Demarcation between Normal columellar show, Excess columellar show & insufficient columellar show is different for a particular gender, ethnic and geographical area; which requires attention while planning corerective nasal surgeries. The present study results will help surgeons in planning an optimal approach for corrective nasal surgeries.

Key message

Surgeons need to know the demarcation between Normal, Excess & insufficient columellar show for a particular gender, ethnic and geographical area; to plan an optimal approach for corrective nasal surgeries.

Source(s) of support: None

Conflicting Interest: None

References

1. Excessive columellar show rhinoplasty [Internet]. Lamperti Facial Plastic Surgery. [cited 2018 Jun 9]. Available from: https://www.drlamperti.com/blog/news-and-updates/uncategorized/excessive-columellar-show-rhinoplasty.
2. Hanging Columella [Internet]. Lamperti Facial Plastic Surgery. [cited 2018 Jun 9]. Available from: https://www.rhinoplastyinseattle.com/service/seattle-plastic-surgery-treatments/rhinoplasty-treatments/hanging-columella.
3. Turkmani MG, Boulle KD. Excessive Columellar Show: Causes, Presentations and a New Therapeutic Approach with Onabotulinum Toxin A. Dermatologic Surgery. 2013;39(3pt1):464-67. doi:10.1111/dsu.12118.
4. Nasal Analysis [Internet]. Dr. Hilinski. [cited 2018 Jun 9]. Available from: https://www.drhilinski.com/rhinoplasty-tutorials/nasal-analysis/.
5. Chung C, Lee Y, Park K-H, Park S-H, Park Y-C, Kim K-H. Nasal Changes after Surgical Correction of Skeletal Class III Malocclusion in Koreans. The Angle Orthodontist. 2008;78(3):427-32. doi:10.2319/041207-186.1.
6. Khamashta-Ledezma L, Naini FB, Manisalı M. Review Of Nasal Changes With Maxillary Orthognathic Surgery. Journal of Istanbul University Faculty of Dentistry. 2017;51. doi:10.17096/jiufd.09789.
7. Uzun A, Ozdemir F. Morphometric analysis of Nasal shapes and angles in young adults. Brazilian journal of otorhinolaryngology. 2014;80(5):397-402.
8. Hanging Columella Sydney [Internet]. Dr. Jason Roth. [cited 2018Jun9]. Available from: https://www.drjasonroth.com.au/nose-procedures-sydney/hanging-columella/.
9. Columellar show - Beverly Hills Rhinoplasty [Internet]. Richard Zoumalan. [cited 2018 Jun 9]. Available from: http://www.richardzoumalan.com/rhinopedia/columellar-show/.

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Review Article

Otolaryngology International
Volume 3 Number 2, July - December 2018

Auditory Brainstem Response (ABR) Audiometry and its Role in Clinical Practice

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Abstract

Auditory Brain stem Response (ABR audiometry), also known as Brainstem Evoked Response Audiometry (BERA), BAER (Brainstem Auditory Evoked Response audiometry), BAEP (Brain Auditory Evoked Potential) was first described by Jewett and Williston in 1971. It is a neuro- physiological test of auditory brainstem function and is an objective way of eliciting brain stem potentials in response to audiological click stimuli. ABR typically uses a click stimulus that generates a response from the hair cells of the cochlea, the signal travels along the auditory pathway from the cochlear nuclear complex to the inferior colliculus in mid brain and generates wave I to wave V. These waves are recorded by electrodes placed over the scalp. Even though ABR provides information regarding auditory function and sensitivity, it is not a substitute for other methods of audiological evaluation. It should be always viewed in conjunction with other audiological investigations.

Keywords: Auditory, Brain stem, Audiometry, Evoked.

Introduction

Auditory brainstem response (ABR) audiometry is a neurologic test of auditory brainstem function and is an objective way of eliciting brain stem potentials in response to audiological click stimuli. These waves are recorded by electrodes placed over the scalp. ABR audiometry is the most common application of auditory evoked responses. Test administration and interpretation is typically performed by an audiologist.

Auditory Brain stem Response (ABR audiometry), is also known as Brainstem Evoked Response Audiometry (BERA), BAER (Brainstem Auditory Evoked Response audiometry), BAEP (Brain Auditory Evoked Potential). This investigation was first described by Jewett and Williston in 1971. It was in 1967 Sohmer and Feinmesser who published the first recording of cochlear potentials using surface electrodes in humans. They erroneously attributed all the waves generated to the potentials arising from cochlea. The fact that these potentials can be recorded in an non -invasive manner excited one and all. In 1975 it was Starr and Achorwhoreported the effects of ABR (auditory brain stem response) in patients with pathology in the brain stem. In 1977 Selters and Brackman described the importance of prolonged interpeak latencies in patients with acoustic tumors. They also postulated that this time delay was directly proportional to the size of the tumor.

Even though ABR provides information regarding auditory function and sensitivity, it is not a substitute for other methods of audiological evaluation. It should be always viewed in conjunction with other audiological investigations.

Principle of ABR

ABR typically uses a click stimulus that generates a response from the hair cells of the cochlea, the signal travels along the auditory pathway from the cochlear nuclear complex to the inferior colliculus

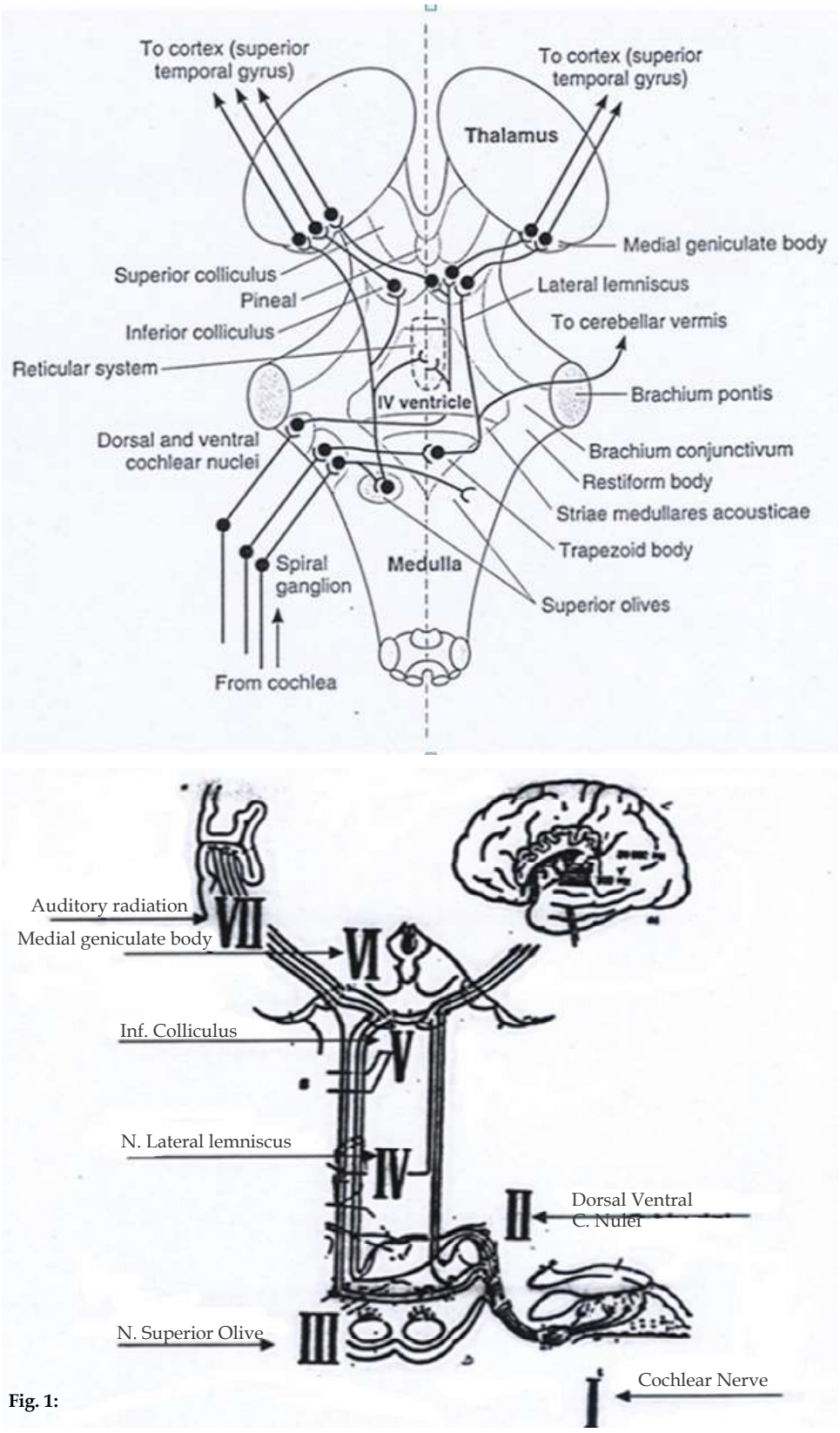

Fig. 1:

in mid brain and generates wave I to wave V.

Method of recording ABR

The stimulus either in the form of click or tone pip is transmitted to the ear via a transducer placed in the inserted ear phone or head phone. The wave forms of impulses generated at the level of brain stem are recorded by the placement of electrodes over the scalp.

Electrode placement

Since the electrodes should be placed over the head, the hair must be oil free. The patient should be instructed to have shampoo bath before coming for investigation. The standard electrode configuration for ABR involves placing a non inverting electrode over the vertex of the head, and inverting electrodes placed over the ear lobe or mastoid prominence. One more earthing electrode is placed over the forehead. This earthing electrode is important for proper functioning of preamplifier.

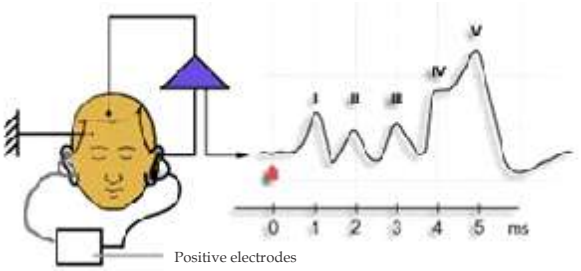

Fig. 2: showing placement of BERA electrodes

Since the potentials recorded are in far field, well displaced from the site of impulse generation, the wave forms recorded are very weak and they need to be amplified. This amplification is achieved by improving the signal : noise ratio.

Three parallel approaches are designed to improve signal to noise ratio.

- Filtering: This is employed to reduce the recording bandwidth so that only the important components of the signal generated are recorded.
- Repeated stimulation: This is done with synchronous time domain averaging to increase the amplitude of the components of the signal. In real time situations these two can be achieved by connecting the recording electrodes to a preamplifier, with appropriate filter settings.
- Polarity alteration: By altering the polarity of impulses recorded, the artefacts are cancelled making the brain stem waves stand out.

The amplitude (microvoltage) of the signal is averaged and charted against the time (millisecond), much like an EEG. The waveform peaks are labelled I- VII. These waveforms normally occur within a 10 millisecond time period after a click stimulus presented at high intensities (70 - 90 dB normal hearing level [nHL]).

In ABR, the impulses are generated by the brain stem. These impulses when recorded contain a series of peaks and troughs. The positive peaks (vortex positive) are referred by the Roman numerals I – VII, of which waves I, III and V are the most visible and of more significant clinical value.

These peaks are considered to originate from the following anatomical sites:

Table 1:

Wave	Site
I	Cochlear nerves
II	
III	Cochlear nucleus
IV	Superior olivary complex
V	Nulclei of lateral lemniscus
VI	Inferior colliculus
VII	

These peaks occur in most readable form in response to click stimuli over a period of 1 - 10 milliseconds after the stimulus in normal hearing adults.

ABR is resistant to the effects of sleep, sedation, sleep and anesthesia. Its threshold has been found to be within 10 dB as elicited by conventional audiometry.

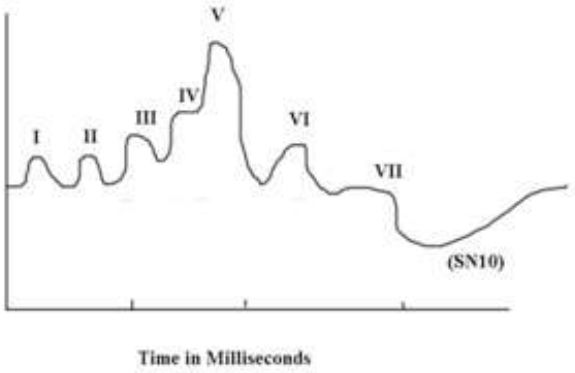

Fig. 3:

Interpretation:

Recordings of this potential may be clinically analyzed according to a number of parameters: morphology; absolute latency and wave I, III and V amplitude; I-III, I-V and III-V interpeak interval

latencies; I-V latency andamplitude relation; and I-V interval interaural differenceor wave V absolute latency difference. Absolute latencyand interpeak interval measurements are those most widely used clinically.

Table 2:

Wave	Observation	Indicates
I	small amplitude, delayed or absent	cochlear lesion
V	small amplitude, delayed or absent	upper brainstem lesion
I – III	inter-peak latency: prolongation	lower brainstem lesion.
III – V	inter-peak latency: prolongation	upper brainstem lesion
I – V	inter-peak latency: prolongation	whole brainstem lesion

Shortening of wave, the interval with normal latency of wave V indicate cochlear involvement.

Factors affecting ABR

1. Stimulus rate
2. Stimulus phase or polarity
3. Intensity of sound stimulus
4. Binaural/monaural stimulation
5. Filter characteristics of ABR machine
6. Nature of sound
7. Age and sex of patient

Usefulness of ABR

- ✓ Detection and quantification of deafness in infants, mentally retarded, malingering or deeply sedated subjects
- ✓ Objective determination of nature of deafness in difficult to test patients
- ✓ Identification of the site of lesion in retro-cochlear pathologies
- ✓ Study of central auditory disorders
- ✓ Study of maturity of CNS in newborns

- ABR is a valuable objective measure of hearing. With decreasing stimulus intensity, wave latencies increase systematically until the hearing threshold is reached. Below this hearing threshold the response is absent. Thus it is possible to estimate hearing threshold even in individuals who cannot be tested by behavioural methods. It should be borne in mind that adult like ABRresponses are acquired only after the age of 2.
- It is possible to test new-born's hearing using ABR, using age appropriate norms.
- ABR is unaffected by sleep or sedation hence infants can be sedated before performing this test.
- Can be used to detect demyelinating lesions involving auditory pathways.
- Can be used to detect lesions and tumours involving auditory pathway.
- Italsohelpstheneurosurgeoninintraoperative monitoring of the audio vestibular system during extensive neurosurgical procedures involving this area.
- ABR is very useful in identification of retrocochlear pathologies causing hearing loss. ABR findings that indicate retrocochlear pathology includes:
  - ➢ Latency differences between inter-aural wave V (prolonged in cases of retrocochlear pathology)
  - ➢ Waves I - V inter-aural latency differences - prolonged
  - ➢ Absolute latency of wave V - prolonged
  - ➢ Absence of brain stem response in the affected ear
- ABR has 90% sensitivity and 80% specificity in identifying cases of acoustic schwannoma. The sensitivity increases in proportion to the size of the tumor.
- Currently ABR is extensively being used in screening neonates for deafness. Since this is a complicated investigation only "high risk infants" are screened at present. Indications for screening ABR in an infant are:
  - ➢ Parental concern about hearing levels in their child
  - ➢ Family history of hearing loss
  - ➢ Pre and post natal infections
  - ➢ Low birth weight babies
  - ➢ Hyperbilirubinemia
  - ➢ Craniofacial deformities
  - ➢ Head injury
  - ➢ Persistent otitis media
  - ➢ Exposure to ototoxic drugs
- Even though typical ABR recordings are performed using short duration simple stimuli like clicks, complex sounds like human voice with long duration can also be used in ABR. ABR responses to speech sounds can be used as a marker to identify complex

disorders involving auditory processing.

Fallacies of ABR

- A high frequency purely cochlear deafness may present BERA features that mimic a neural lesion. To study BERA for site of lesion studies, the nature of deafness in audiogram needs to be taken into account.
- Although the ABR provides information regarding auditory function and hearing sensitivity, it is not asubstitute for a formal hearing evaluation, and results should be used in conjunction with behavioralaudiometry whenever possible.
- For an acoustic neuroma to cause abnormalities in the BERA, the tumour mass should exert sufficient pressure on a sufficient number of high frequency fibres to sufficiently block or desynchronize those nerve fibres. If this is not attained, then BERA findings will be normal in spite of a tumour.

Auditory Steady-State response (ASSR)

ASSR is an auditory evoked potential, elicited with modulated tones that can be used to predict hearing sensitivity in patients of all ages. It is an electrophysiological response to rapid auditory stimuli and creates a statistically valid estimated audiogram (evoked potential used to predict hearing thresholds for normal hearing individuals and those with hearing loss). The ASSR uses statistical measures to determine if and when a threshold is present and is a "cross-check" for verification purposes prior to arriving at a differential diagnosis.

ABR vs ASSR

Similarities

- Both record bioelectric activity from electrodes arranged in similar recording arrays.
- Both are auditory evoked potentials.
- Both use acoustic stimuli delivered through inserts (preferably).
- Both can be used to estimate threshold for patients who cannot or will not participate in traditional behavioural measures.

Differences

- ASSR looks at amplitude and phases in the spectral (frequency) domain rather than at amplitude and latency.
- ASSR depends on peak detection across a spectrum rather than across a time vs. amplitude waveform.
- ASSR is evoked using repeated sound stimuli presented at a high rep rate rather than an abrupt sound at a relatively low rep rate.
- ABR typically uses click or tone-burst stimuli in one ear at a time, but ASSR can be used binaurally while evaluating broad bands or four frequencies (500, 1k, 2k, & 4k) simultaneously.
- ABR estimates thresholds basically from 1-4k in typical mild-moderate-severe hearing losses. ASSR can also estimate thresholds in the same range, but offers more frequency specific info more quickly and can estimate hearing in the severe-to-profound hearing loss ranges.
- ABR depends highly upon a subjective analysis of the amplitude/latency function. The ASSR uses a statistical analysis of the probability of a response (usually at a 95% confidence interval).
- ABR is measured in microvolts (millionths of a volt) and the ASSR is measured in nanovolts (billionths of a volt).

Conclusion

Auditory brainstem response (ABR) audiometry has a wide range of clinical applications, including screening for retrocochlear pathology, universal newborn hearing screening, and intraoperative monitoring. Additional applications include ICU monitoring, frequency specific estimation of auditory sensitivity, and diagnostic information regarding suspected demyelinating disorders (eg, multiple sclerosis). As technology continues to evolve, ABR will likely provide more qualitative and quantitative information regarding the function of the auditory nerve and brainstem pathways involved in hearing.

References

1. Karen Jo Doyle, Is There Still a Role for Auditory Brainstem Response Audiometry in the Diagnosis of Acoustic Neuroma? Arch Otolaryngol Head Neck Surg. 1999;125(2):232-234. doi:10.1001/archotol.125.2.232

2. Debadatta Mahallik, Preeti Sahu, Rajkishor Mishra, Gadadhar Ojha. Auditory Brainstem Response Results In Normal-Hearing Patients with Tinnitus. IJHSR. 2014;4(10):229-233

3. Gstoettner, W., Neuwirth-Riedl, K., Swoboda, H. et al. Specificity of auditory brainstem response audiometry criteria in acoustic neuroma screening as a function of deviations of reference values in patients with cochlear hearing loss Eur Arch Otorhinolaryngol. 1992;249:253. https://doi.org/10.1007/BF00714487

4. Maria Carolina Braga Norte Esteves , Ana Helena, Bannwart Dell' Aringa, Gustavo Viani Arruda, Alfredo Rafael Dell' Aringa , José Carlos Nardi. Brainstem evoked response audiometry in normal hearing subjects. Braz J Otorhinolaryngol. 2009;75(3):420-5.

5. Ray B et al. A study of brainstem auditory evoked responses in normal human subjects and normal variations as a function of stimulus and subject characteristics Int J Res Med Sci. 2016 Sep;4(9):4042-4049.

Review Article

Otolaryngology International
Volume 3 Number 2, July - December 2018

Tobacco Control: SWOT Analysis - Uttarakhand State

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Abstract

Tobacco is the leading preventable cause of death and more than five million people die globally from the effects of tobacco every year – more than that of HIV/AIDS, malaria, and tuberculosis. Tobacco is a serious threat to health and a proven killer and ranks second as a cause of death in the world. We need to sensitise the public, especially youngsters. It should be a collective measure. Both the central and state governments have taken various measures but we need to keep on emphasising and raise the public awareness to control the tobacco consumption. The article emphasises the issue with special reference to Uttarakhand state which has a very high consumption of tobacco.

Keywords: Tobacco; Cessation; Control; Smoking.

Introduction

Tobacco was introduced to India in the 17th century.

Tobacco is the major preventable cause of death and more than five million people die worldwide from the effects of tobacco annually – more than that of HIV/AIDS, malaria, and tuberculosis. Tobacco is a serious threat to health and ranks second as a cause of death in the world. Evidences since early 1950s indicate that more than 25 diseases are known or are strongly suspected to be causally related to smoking. WHO estimates that unless the current smoking pattern is controlled, tobacco will be responsible for 10 million deaths per year in the coming decade, with 70% of them occurring in developing countries. In India tobacco kills 0.8-1.0 million people each year and many of these deaths occur in people who are very young. Currently, about one-fifth of all worldwide deaths attributed to tobacco occur in India [1].

According to the World Health Organization (WHO), India is home to 12% of the world's smokers [2].

According to the study, "A Nationally Representative Case-Control Study of Smoking and Death in India", tobacco is responsible for 1 in 5 of all male deaths and 1 in 20 of all female deaths in the country [3]. According to the Indian Heart Association (IHA), India accounts for 60% of the world's heart disease burden, despite having less than 20% of the world's population. The IHA has identified and recommended reduction in smoking as a significant goal of cardiovascular health prevention efforts [4].

Legislation

"*Tobacco is universally regarded as one of the major public health hazards and is responsible directly or indirectly for an estimated eight lakh deaths annually in the country. It has also been found that treatment of tobacco related diseases and the loss of productivity caused therein cost the country almost Rs. 13,500 crores annually, which more than offsets all the benefits accruing in the form of revenue and employment generated by tobacco industry*".

– Supreme Court of India, Murli S. Deora vs Union of India and Ors on 2 November 2001

The Supreme Court in Murli S Deora vs. Union of India and Ors., recognized the harmful effects of smoking in public and also the effect on passive smokers, and in the absence of statutory provisions at that time, prohibited smoking in public places such as auditoriums, hospital buildings, health institutions, educational institutions, libraries, court buildings, public offices, public conveyances, including the railways.

The Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003, abbreviated to COTPA, received assent from the President on 18 May 2003. It came into force on 1 May 2004. The Act extends to the whole of India and is applicable to cigarettes, cigars, bidis, gutka, pan masala (containing tobacco), Mavva, Khaini, snuff and all products containing tobacco in any form [5]. Prohibition of sale of tobacco products in an area within 100 yards of any educational institution was brought into force from 1 December 2004.

Compliance of law was done and smoking in public places was prohibited nationwide from 2 October 2008 under the Prohibition of Smoking in Public Places Rules, 2008 and COTPA. The nationwide smoke-free law pertains only to public places. Places where smoking is restricted include auditoriums, cinemas, hospitals, public transport (aircraft, buses, trains, metros, monorails, taxis) and their related facilities (airports, bus stands/stations, railway stations), restaurants, hotels, bars, pubs, amusement centres, offices (government and private), libraries, courts, post offices, markets, shopping malls, canteens, refreshment rooms, banquet halls, discothèques, coffee houses, educational institutions and parks. Smoking is allowed on roads, and inside one's home or vehicle [7]. The philosophy behind this was that if you are a smoker and wish to continue, you have no right to expose non smokers to passive smoking.

Smoking is also permitted in airports, restaurants, bars, pubs, discothèques and some other enclosed workplaces if they provide designated separate smoking areas. Anybody violating this law will be charged with a fine of ₹200. The sale of tobacco products within 100 yards of educational institutions is also prohibited. However, this particular rule is seldom enforced [8,9].

Uttarakhand

Uttarakhand has earned the dubious distinction based on various surveys / studies of being the state with highest consumption of tobacco products, followed by Jammu and Kashmir. Nearly one-third of adults in India use tobacco, resulting in 1.2 million deaths. However, little is known about knowledge, attitudes, and practices (KAP) related to smoking in the impoverished state of Uttarakhand.

Uttarakhand has 3.1 million tobacco users and 30 of them will die every day by 2020 due to tobacco-related ailments, such as lung disease, cancer and heart disease, unless urgent interventions are made, according to a study by the World Lung Foundation - South Asia (WLF-SA).

The study - Uttarakhand Youth Tobacco Survey (UYTS) - was conducted by WLF-SA in collaboration with association with the state health department, World Health Organization, US department of health and human services and Centres for Disease Control and Prevention.

The researchers surveyed students in grade 8 to 12 in various government schools in 2013.T hey found widespread smoking habit among school students in the state with around 20.8% of boys in the age group of 13 to 17 admitting to being avid tobacco users. A majority of the boys said that they had started smoking at the age of 15. More than half of the boys said they first smoked out of curiosity or just for fun.

The prevalence of smoking among girls was low. The study found that only 0.5% of girl students were smokers.

As per national survey the highest number of beedi smokers are in Uttarakhand [5].

Due to the high consumption of tobacco and alcohol in the hills, oral and lung cancers are common. The ICMR data for 2016 reveals that 28.79% of all cancer cases in Uttarakhand (approximately one in every four patients) were caused due to tobacco consumption.

Even after serious efforts towards cancer treatment and rising awareness levels all over the world, the number of cancer cases is increasing in Uttarakhand. Between 2014 and 2016, these cases increased by 10.15% in the state, which was more than the national figure of 9.2%.

According to the data of the Indian Council of Medical Research (ICMR), there was a total of 11,240 cancer patients in Uttarakhand in 2014. The number increased to 11,796 in 2015, and by 2016, the figure was 12,381.

Besides this, the mortality of cancer patients also increased by 10.19% between 2014 and 2016 in Uttarakhand. This, too, was higher than the national figure of 9.3%.

Cases of lung cancer, which is directly related to smoking tobacco increased among males from 624 in 2014 to 701 in 2016, a rise of 12.3%. The national average for this period was 11.2%.

In 2015, A cross-sectional epidemiological prevalence survey was undertaken in the state. Multistage cluster sampling selected 20 villages and 50 households to survey. Total of 1853 people were interviewed. Tobacco prevalence and KAP were analysed by income level, occupation, age, and sex. The overall prevalence of tobacco usage, was defined using WHO criteria, and was 38.9%. 93% of smokers and 86% of tobacco chewers were males. Prevalence of tobacco use, was associated with lower education, older age, and male sex. Except for lung cancer (89% awareness),awareness of diseases caused by tobacco usage was low (cardiac: 67%; infertility: 32.5%; stroke: 40.5%) [10].

In 2010, a team of six doctors at Government Medical College, Haldwani, analysed 354 cancer cases admitted for treatment at the Swami Ram Cancer Hospital and Research Centre, Haldwani, a referral centre for cancer patients in the Kumaon region. The doctors found that most patients suffered from lung cancer and 88.52% of the patients were males. This was commensurate to another study carried out by doctors in Dehradun in 2009 wherein they studied 232 lung cancer patients and found that 89.16% of them were males.

Strength

Action taken

Smoking in public places was prohibited nationwide from 2 October 2008.

- COPTA prohibits smoking in public places and the rule was implemented in Uttarakhand on December 2013. The health department statistics says that only 7,273 people have been penalized for violating COPTA in the past three years and a sum of Rs 3.85 lakh collected as fine from violators till 2016. Nearly 117, children below the age of 18, were caught under COTPA and fined to the tune of Rs 20,450 during the same period. There is a restriction on the sale of tobacco products within 100 yards of educational institutions. But this rule too is observed more in breach.
- Aiming to give tourists a smoke-free vacation, the Uttarakhand government decided to institute a ban on tobacco in four tourist-friendly destinations of the hill state – Harki Pauri (Haridwar), Mall Road (Mussoorie), Nainital and Paltan Bazar (Dehradun). Taking a stringent step on passive smoking, officials said the four places have been chosen on the basis of population density and visitor footfall. "Cigarette and Other Tobacco Products Act (COPTA) and other guidelines curbing tobacco use have been enforced strictly in these four places.
- In May 2016, the Uttarakhand High Court had ordered the state government to impose a ban on liquor and tobacco in Rudraprayag, Chamoli and Uttarkashi districts where the Char Dham shrines are located. It also ordered complete prohibition of tobacco within a radius of five kilometres from Sikh shrines Reetha Sahib and Hemkund Sahib.
- According to National Family Health Surveys (NFHS), the state, however, has registered a downward trend in the consumption of tobacco. Consumption of tobacco among men registered a decline from 53.3% in NFHS-III to 43.7% in NFHS-IV while women have registered an increase in tobacco consumption from 2.9% to 5.4% during the same period.

Weakness

- Despite the rising trend over the years, cancer treatment facilities in the state are limited. At present, Uttarakhand is among the handful of states that do not have a dedicated state government regional centre for cancer care.
- Among the 13 districts in the state, there are only three tobacco cessation centres - in Tehri, Dehradun and Udham Singh Nagar. Only 3,500 people have been counseled in the past three years in these centres till 2016.
- Under COPTA- There is a restriction on the sale of tobacco products within 100 yards of educational institutions. But this rule too is observed more in breach.

Opportunities

- Global Adult Tobacco Survey (GATS) 2016-17 revealed decreased prevalence of tobacco in India.
- As per the GATS (2016-17) report, over 61.9% adults thought of quitting cigarettes, 53.8% thought of quitting bidi and 46.2% adults thought of quitting smokeless tobacco because of the warnings on tobacco products.

- From GATS 1 to GATS 2 survey prevalence of smoking has decreased by 4%.

Threats

- As per national survey the highest number of beedi smokers are in Uttarakhand.
- 18.1% & 12.4% of all Adults use Smoked & Smokeless Tobacco which is higher than national incidence. (GATS 2016-17).
- Younger population more effected.
- A Global Adult Tobacco Survey (GATS) fact sheet for north India indicated that despite a high level of awareness about the hazards of tobacco use, current tobacco use in Uttarakhand is as high as 30.7%.
- Increasing prevalence of smoking among females.
- 1/3rd people living with smokers exposed to passive smoking.

Limited heath care facilities.

Recommendations

We need to sensitise the public, especially youngsters. It should be a collective measure. Both the central and state governments have taken various measures but we need to keep on emphasising and raise the public awareness to control the tobacco consumption [11].

State level

- Dedicated tobacco control cells for effective implementation and monitoring of Anti Tobacco Initiatives.

District level

- Monitoring of Tobacco Control Laws and Reporting.
- Training of health and social workers, NGOs, school teachers etc.
- Local IEC activities.
- Provision of tobacco cessation facilities.
- School Programme- awareness Tobacco hazards.
- Sales to and by minors strictly prohibited.

Conclusion

Tobacco control and awareness about tobacco hazards is need of the hour to prevent morbidity and mortality related to tobacco. The efforts will be meaningless unless and until we perform a SWOT (Strength, Weakness, Opportunities and Threat) analysis for a particular geographical area as Universal policy may not be effective everywhere. Hence, it is required to analyse the regional issues and challenges to make tobacco control more effective in the country.

References

1. Aggarwal P, Varshney S., Kandpal SD, Gupta P. Habits and beliefs pertaining to tobacco among undergraduates ofa medical college in the state of Uttarakhand Journal Indian Academy of Clinical Medicine(JIACM). 2012;13(3):189-94.
2. Chandrupatla, Siddardha G.; Tavares, Mary; Natto, ZuhairS..Tobacco Use and Effects of Professional Advice on Smoking Cessation among Youth in India. Asian Pacific journal of cancer prevention: APJCP.; 2017;18(7):1861–1867.
3. Seema Singh. Indian smokers will die every year. Livemint. 20008 Feb 14. Retrieved 2 May 2013.
4. Indian Heart Association Why South Asians Facts Web. 27 April 2015. <http://indianheartassociation.org/why-indians-why-south-asians/overview/>.
5. Implementation of the Framework Convetnion on Tobacco Control (FCTC) in India: A Shadow Report - 2010.
6. COTPA Law. Smokefreekerala.org. Retrieved 2018-03-16.
7. Agencies. Smoking ban to be enforced from Oct 2: Ramadoss. Express India. Retrieved 13 August 2012.
8. India to declare all places of work as smoke free. Spiritindia.com. 23 July 2007. Retrieved 15 February 2011.
9. Bangalore: Smoking ban still long way to go. The New Indian Express. 8 August 2011. Retrieved 13 August 2012.
10. Nathan John Grills, Rajesh Singh, Rajkumari Singh, and Bradley C. Martin. Tobacco Usage in Uttarakhand: A Dangerous Combination of High Prevalence, Widespread Ignorance, and Resistance to Quitting. BioMed Research International Volume 2015, Article ID 132120, 10 pages http://dx.doi.org/10.1155/2015/132120.
11. Varshney S., Varshney P. Engaging Doctors in Tobacco control. Otolaryngology International. 2016;1(2):37-40.

Case Report

Otolaryngology International
Volume 3 Number 2, July - December 2018

Mucocele of Maxillary Sinus with an Idiopathic Cause: A Frequently Misdiagnosed Entity

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Abstract

Maxillary sinus mucocele is an uncommon benign lesion that develops due to retained secretions and presents as an expansile cystic lesion. Patient presents with non-specific symptoms and are mostly due to pressure effects on the orbit or palate causing facial deformity. Etiology is not well established, and it is proposed that they ensue due to obstruction of the ostium by inflammation or previous procedures. De novo origins result in unwanted investigations and delayed diagnosis and treatment. Endoscopic marsupialization of the mucocele, middle meatal antrostomy with maxillary sinus clearance or inferior meatal antrostomy are the surgeries of choice. Here is a case of left maxillary mucocele which had no identifiable cause, and is reported due to its rare incidence and delayed management.

Keywords: Mucocele; Maxillary sinus; Middle meatal antrostomy.

Introduction

Mucocele of the paranasal sinuses are epithelium lined, mucus containing sac that can fill the sinus completely and has the capacity of expansion. The fronto-ethmoid sinuses (89%) are the most commonly affected and maxillary sinus (1%) the least [1]. They arise as a consequence to obstruction of the ostium andin ammation due to previous surgery or trauma to the paranasal sinuses [1,2]. Origin of mucoceles are not defined in about 33% of the cases [2].

Here, we report a case of left maxillary sinus mucocele with no identifiabe cause, which lead to its initial misdiagnosis, and thus, delayed management.

Case report

A 50-year-old diabetic female presented to our ENT OPD with a 7-month history of left-sided facial swelling which was slow growing with dull aching pain not relieved by medication.

There was also left sided nasal obstruction and discharge. Patient also had associated symptoms including history of left sided epiphora, hyposmia, hyponasality in voice, mouth breathing and snoring. No history of trauma. Local examination revealed a left-sided, firm, non tender swelling in the left nasal cavity arising from the lateral wall of the nose anteriorly, pushing the inferior turbinate medially, extending up to vestibule.

A left sided palatal bulge was present from the left upper lateral incisor anteriorly to the second molar posteriorly [Fig. 1]. She was referred to us after being conservatively treated initially by a local doctor with oral antibiotics and anti-inflammatory drugs. Diagnostic nasal endoscopy showed a blocked osteomeatal complex.

The lateral wall of left nasal cavity was bulging medially towards the septum, completely occluding

the left nasal passage and eroding the floor of the left nasal cavity. Rest of the otolaryngological, ophthalmological, dental examinations, and general physical examination were normal. Contrast-enhanced computed tomography (CECT) of the nose and paranasal sinuses showed evidence of a large expansile homogenous mass, without any peripheral enhancement, in the left maxillary sinus, pushing its medial wall medially and obstructing the left nasal cavity to extent upto the septum with compression of inferior and middle turbinate [Fig. 2].

A trans-nasal endoscopic guided aspiration was performed at the most pronounced bulged part of the swelling and fluid analysis of the content showed low cellularity with focal collections of acute and chronic inflammatory cells, cystic macrophages, but no evidence of neoplastic pathology [Fig. 3]. Based on clinical and endoscopic features and radiological imaging, a provisional diagnosis of a cystic lesion of left maxillary sinus was made and planned for endoscopic marsupialization of the left maxillary sinus under local anesthesia. Left uncinectomy was done and a liberal middle meatal antrostomy performed.

Mucoid content of the maxillary sinus suctioned, and marsupialisation of the thin-walled cyst was done. And to alleviate the drainage, left inferior meatal antrostomy was also done. Complete regression of the nasal obstruction within seven days and partial regression of the palatal bulge noted in ten days [Fig. 4]. Histopathology of the cyst wall established our diagnosis of maxillary sinus mucocele eliciting an exudate of neutrophils and macrophages, enmeshed in fibrin, with foci of hemorrhage and the cyst wall lined by pseudostratied columnar epithelium. The patient did not show any symptoms during the follow up period of six months and is presently asymptomatic.

Discussion

Mucoceles result from an occlusion of the sinus ostia and obstruction to drainage, with resultant redundation of mucus within the sinus.

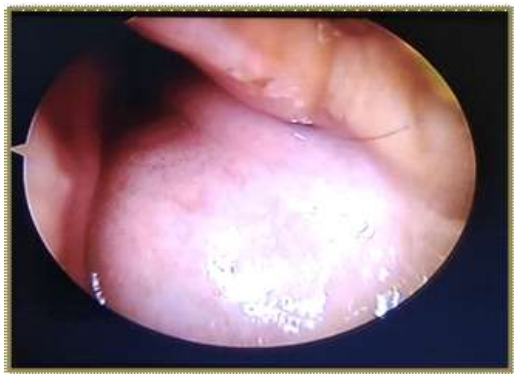

Fig. 1.A: Swelling in the left nasal cavity arising from lateral wall touching the septum medially extending up to the vestibule.

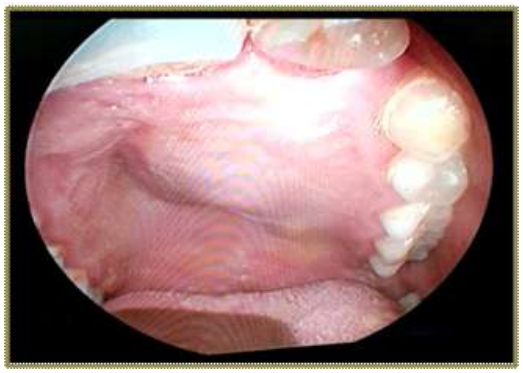

Fig. 1.B: Left sided palatal bulge.

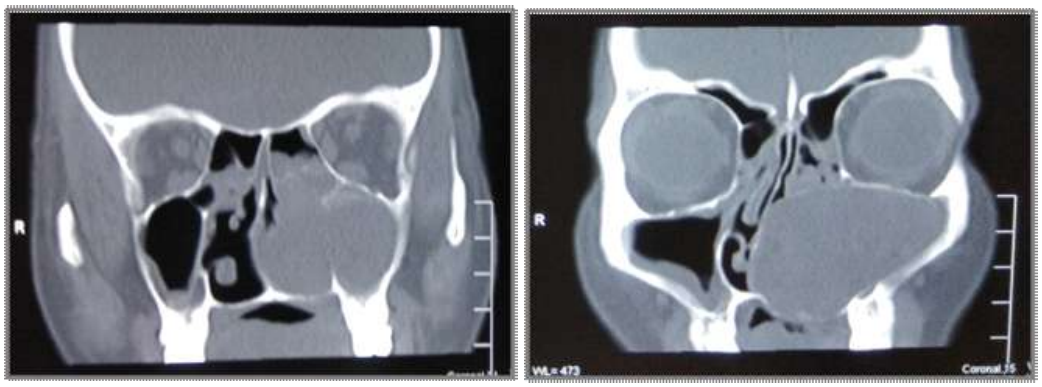

Fig. 2: Large well circumscribed soft tissue density mass lesion with thin peripheral calcification involving left maxillary sinus, left nasal cavity and extending to the palatal region. Widening of left nasal cavity, thinning of postero-lateral and medial walls of maxillary sinus with mild erosion of palate seen.

Fig. 3: Serous fluid aspirated from the mass. On standing, coagulum is formed on the surface of the fluid suggestive of mucocele.

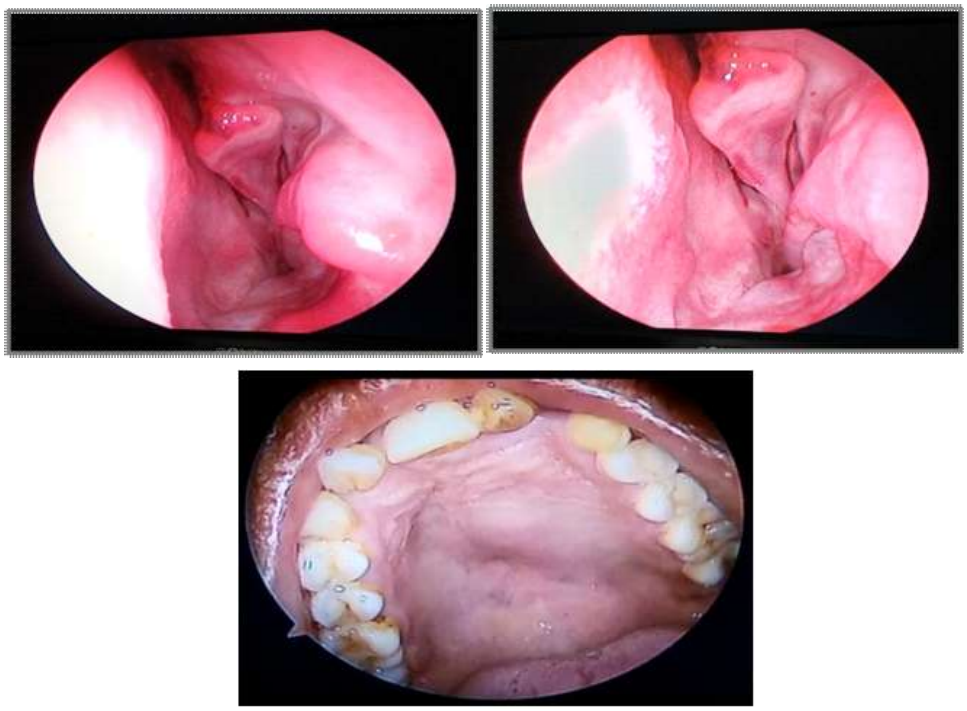

Fig. 4: Post operative pictures showing regression of the nasal mass. Inferior surface of left middle turbinate seen to be compressed due to pressure effect and palate showing partial regression of the bulge.

Continual accumulation results in its expansion owing to the pressure effect. Maxillary sinus mucoceles are exceptional, with a worldwide incidence of 3–10%. They are usually sterile and painless. Pain indicates infection [1-3]. However, our patient had sought an early medical opinion because of pain.

Blockage of the sinus ostium has been postulated as the primary etiologic factor. This may be due to a mass lesion, inflammation and fibrosis, osteoma, fibrous dysplasia, Paget's disease, malignancy, trauma, or previous surgery [1-3]. In this case, precipitating factor for the development of mucocele could not be described. Expansion is seen due to the direct effect of positive pressure within the mucocele.

Bone resorption factors such as prostaglandins, interleukin-1, and tumor necrosis factor have been identified to be produced at the interface between the mucocele and bone. These may cause intraorbital or intracranial extension [4-6]. Computed tomography is the desired imaging modality where mucocele appears as an expanded, airless sinus filled with homogeneous material.

The walls of the sinus may be either normal or remodeled, with thickening, thinning and erosion to various degrees, often within the affected sinus. The presence of air present around the upper surface of the retention cyst distinguishes it from a mucocele [3-7]. Hence, a good radiological examination with a high degree of suspicion aid in early identification of this condition.

Endonasal endoscopic approach is the desired treatment of paranasal sinus mucoceles with the advantage of a minimally invasive surgery [2-5]. Martel et al. analyzed 58 patients of paranasal sinus mucoceles and found that recurrence rate was low in patients who underwent endoscopic treatment (4.8%) than those treated by an external approach (28.5%) [8].

To facilitate the normal function of secretion and drainage, restore normal mucocillary clearance, and to avoid external scar, infraorbital paraesthesia, an endoscopy assisted marsupialization was performed.

Conclusion

Thus, we believe that, for evaluation of any sinonasal mass, a detailed clinical and radiological assessment with endoscopic correlation is mandatory to arrive at an early diagnosis and not suspect malignancy in the first look.

This shall preclude the need for redundant invasive procedures and protracted treatment time, as happened in the reported case.

References

1. Aggarwal SK, Bhavana K, Keshri A, Kumar R, Srivastava A.Frontal sinus mucocele with orbital complications: Management by varied surgical approaches. Asian Journal of Neurosurgery. 2012; 7(3):135-40.
2. Martín M M,Gras-Cabrerizoa J R, Gonzáleza, Gili J M, Delago M J, Solench HM. Clinical analysis and surgical results of 58 paranasal sinus mucoceles. Acta Otorrinolaringol. Esp. 2015;66(2):92-7.
3. Capra G G, Carbone P N, Mullin D P.Paranasal Sinus Mucocele. Head and Neck Pathol. 2012 6:369–72.
4. Busaba N Y, Salman S D. Maxillary sinus mucoceles: Clinical presentation and long-term results of endoscopic surgical treatment. Laryngoscope. 1999; 109:1446-9.
5. Tuli I P, Pal I, Chakraborty S, Sengupta S. Persistent deciduous molar as an etiology for a maxillary sinus mucocele.Indian J Otolaryngol Head Neck Surg. 2011 July;63(1):S6–S8.
6. Sadhoo A, Tuli IP, Sharma N. Idiopathic mucocele of maxillary sinus: A rare and frequently misdiagnosed entity. J Oral Maxillofac Radiol. 2016;4:87-9.
7. Salam T, Zamani M, Olver J. Maxillary mucocele with orbital floor remodelling. Case Reports in Ophthalmological Medicine. 2012;1-3.
8. Som PM, Curtin HD. Head and neck imaging, 4th edn, vol 1. Mosby, 2003.pp.204–230, 838–840.

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[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006; 35: 540-7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, et al. Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003; 61: 347-55.

Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone iodine antisepsis. State of the art. Dermatology 1997; 195 Suppl 2: 3-9.

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[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000; 71: 1792-801.

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[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiber-reinforced composite substructure. Dent Mater 2006.

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[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O,

Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. p. 7-27.

No author given

[8] World Health Organization. Oral health surveys - basic methods, 4th edn. Geneva: World Health Organization; 1997.

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[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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