



ENT_BB CONNECTION

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Dear Doctor,

Greetings from Micro Labs limited. We are happy to bring you **“ENT BB Connection”** which contains latest and interesting news.

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Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Ltd

Retrospective Histopathological evaluation of Middle ear tumours

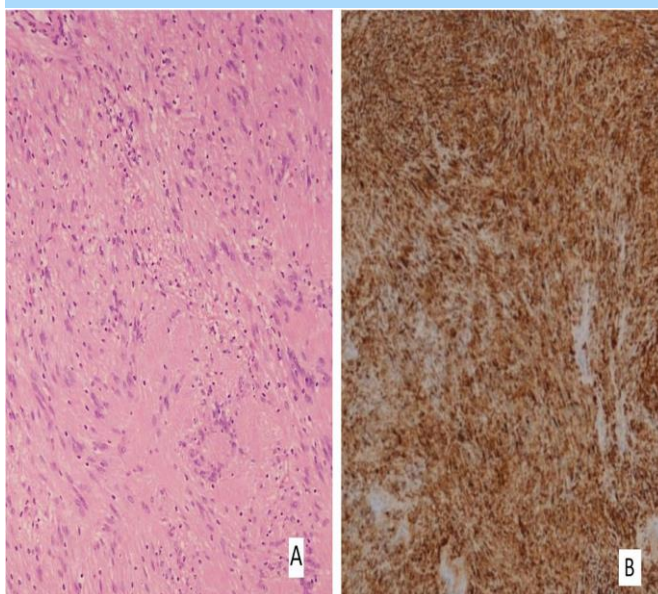
Ear tumors can be outer ear tumor, middle ear tumor, and inner ear tumors according to the position of tumor in the ear. According to World Health Organization 2017 Head and Neck Tumors classification, tumors of the inner and middle ear are categorized under common heading, because it becomes difficult to differentiate the location of tumor. Middle ear tumors is a rare type of tumor encountered in a neoplasia group. According to the WHO Head and Neck Tumors latest classification, this group includes schwannoma, meningioma, middle ear adenoma, paraganglioma, endolymphatic sac tumor, aggressive papillary tumor, and squamous cell carcinoma. Due to its ability to destroy nearby structures and causes recurrence, cholesteatoma although is a non-neoplastic lesion, it is included in the tumor classification.¹ Middle ear glandular neoplasms are caused due to middle ear mass and have exocrine or neuroendocrine differentiation. That's the reason, this tumor is indistinguishable each from another.²

Although, middle ear tumor is rarely diagnosed, it is always necessary to evaluate the tissue histopathologically, so that the treatment and prognosis of the patients remains unaffected

Akyol S aimed to analyse and distinguish the middle ear tumor from inflammatory and infective lesion and enrolled 11 patients with middle ear tumors other than cholesteatoma. Each patient's histopathological features were documented and hematoxylin-eosin-stained slides were re-examined. Enrolled patients were evaluated retrospectively according to age, gender, tumor localization, clinicopathological features, and prognosis. Of 11 cases, 8 were female patients and 3 were male patients. The age distribution was from 25 to 70 years, with a mean age of 49. Of which, 6 patients had tumor in the right ear while 5 had in the left ear. Hearing loss was the most common complaint. Histopathological report revealed 5 cases of paragangliomas, 4 cases of schwannomas, and 2 cases of

Fig 1: Photomicrographs of schwannoma

A. The tumor consists of a tight arrangement of cells with curled nuclei and fibrillar cytoplasm (HE ×100). B. Positivity of diffuse S-100 in tumor cells (IHC ×100)



meningiomas. Out of 4 schwannoma cases, 2 were males and 2 were females whereas, both of the two cases of meningioma were females. One case of schwannomas had tumor in the left ear and 3 had in the right ear. A tumoral lesion consisting of a tight arrangement of cells with curled nuclei and fibrillar cytoplasm was observed with the help of microscopic examination. **(Fig 1).** There were no atypia, mitosis, or necrosis seen. A diffuse positive staining of tumor cell with S-100 immuno-histochemical stain was observed. Clinical follow-up of the patients after excision reveals no recurrence.

Conclusion: The signs and symptoms of the middle ear infections overlaps with the middle ear tumors, because of which middle ear tumors remains undiagnosed. It is therefore necessary to evaluate the tissue histopathologically so that it won't affect the treatment and prognosis of the patients

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Development of a smartphone based Nystagmus application for the targeted detection of vertigo

Digitalization has not only changed the social life of an individual but also has changed the requirements for the modern healthcare.¹ In last few years, the innovations of the new technology have gradually increased and have reached the system of medicine and changed the healthcare system.¹ Linking of enormous datasets of data through IT systems with medical science holds the possibility of improving health care system. Individualized therapy with the help of artificial intelligence- supported diagnostic options would be imaginable in the field of medical science.¹ The usage of smartphone has reached to different settings including medical sciences with various potential and realised benefits.² Custom-built software applications have developed a new wealth of clinical resources available to healthcare staff, providing evidence-based decisional tools to

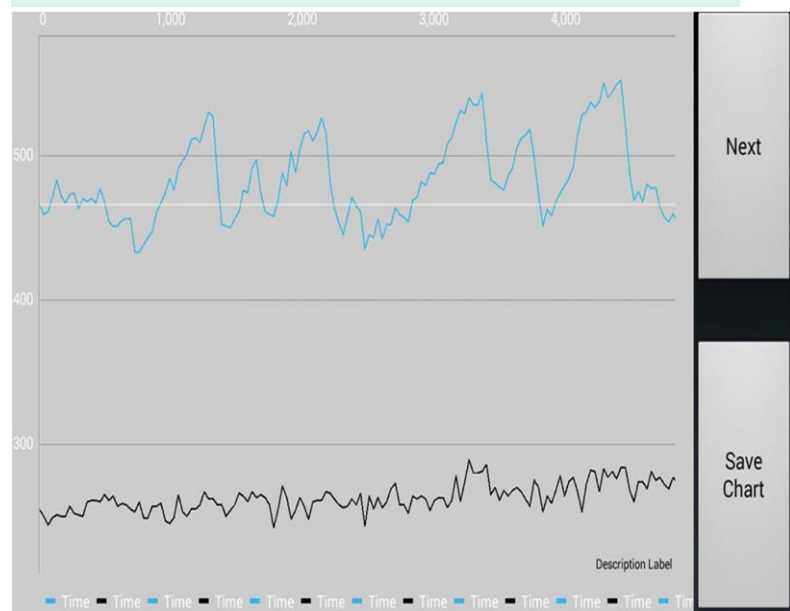
A smartphone-based nystagmus application could be a useful tool for the diagnosis of vertigo.

lower the burden of medical errors.² In the field of medicine, dizziness is one of the most observed multidisciplinary causes of emergency medical presentation. Physicians had to face difficult situations evaluating patients with dizziness. Quick differential diagnostic decision has to be made during the initial examination of the patients.¹

Bonn SM et al, aimed to develop a smartphone-based app that can diagnose and treat nystagmus.

The primary objective was to differentiate acute emergencies such as strokes ("central vertigo") and vestibular disorders ("peripheral vertigo") with the help of accompanying symptom "nystagmus". This prospective study enrolled 20 patients, of which 11 were females and 9 were males. The study design consisted of 2 test runs and 2 control runs. Nystagmus was tracked, observed and evaluated by caloric and optokinetic stimulation, through a custom developed application, in both of the test runs (fig2). Sensitivity and correlation were observed and calculated for the performances of the application and were compared under different experimental conditions.

Fig 2: Result of app analysis for a horizontal right beating nystagmus



First test run (caloric testing) revealed 15% sensitivity and 62.5% position with respect to the direction. Error in the system was observed in 10% of the cases. In the second test run (optokinetic testing), 68.57% sensitivity and 95.7% position with regard to direction was identified. In test rail 3–10, the sensitivity for the individual frequencies was 76.25% for 40°/s and 68.75% for 60°/s (direction) and 98.75% for 40°/s and 93.75% for 60°/s (position). No significant correlations between 40 and 60°/s was observed. In all tests, the results of the two control- test procedures highlighted a sensitivity of 100%

Conclusions: This experimental validation study highlighted that a smartphone-based nystagmus app could be a useful tool for the diagnosis of vertigo. The results showed that it is possible to diagnose nystagmus and determine shape or direction of it with the help of smartphone applications

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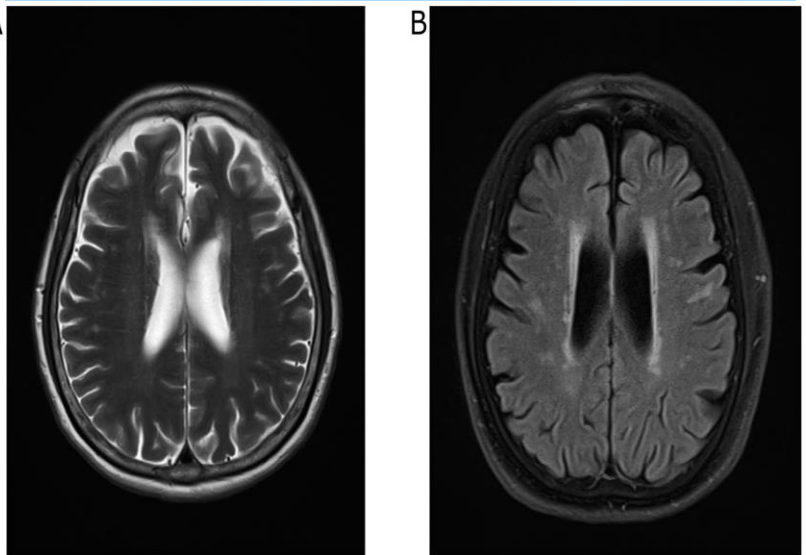
Impact of White Matter Lesions in patients with Idiopathic Sudden Sensorineural Hearing Loss

In elderly patients, Hyperintense signal of white matter on T2-weighted or fluid-attenuated inversion recovery magnetic resonance imaging are the most common finding, which was thought to be the consequence of aging because the prevalence of Hyperintense signal of white matter increases exponentially with age. But, with the development of modern medicine, it is currently assumed to reflect small vessel disease and is a common risk factor for various cardiovascular diseases such as diabetes, hypertension, aging, ischemic stroke, intracranial haemorrhage, and Alzheimer's disease. A commonly used, simple method to rate Hyperintense signal of white matter is the Fazekas scale. The higher the Fazekas scale score, the higher is the prediction of cognitive function in patients with Alzheimer's disease. In patients with ischemic stroke, a Fazekas score of 3 had a higher risk of stroke and major vascular events compared with those with a Fazekas score of 0-1, which means that the severity of Hyperintense signal of white matter might can cause recurrent vascular events. In patients with idiopathic sudden sensorineural hearing loss, MRI is used to diagnose retro cochlear pathologies and to rule out brain lesions including vestibular schwannoma or infarct.

Cardiovascular risk factors and severe white matter lesions together may increase the possibility of hearing loss and also lowers the response to treatment in patients with idiopathic sudden sensorineural hearing loss. Therefore, it is important to control cardiovascular abnormalities in such patients to achieve a better prognosis.

Shin S et al, enrolled medical records of 126 patients with unilateral idiopathic sudden sensorineural hearing loss and underwent MRI of the brain at an otology clinic. The severity of white matter lesions was evaluated through the Fazekas scale scores (Fig 3). If final hearing at 3 months did not exceed 25 dB then it was considered as a complete recovery. A total of 107 patients were included in this study. In the Fazekas scale, score-0 was most frequently observed in 78 patients followed by score-1 in 17 patients and score-2 in 12 patients. According to Fazekas scale scores, prevalence of diabetes and hypertension and distribution of age were not similar. Level of hearing in the affected area was totally different between those having scores of 1 and 2. At the same time, contralateral hearing thresholds were not different, but hearing on the contralateral side was significantly lesser in patients with hypertension when compared to patients without hypertension. According to the regression analysis, Fazekas scale score and initial hearing thresholds of the affected side were significant prognostic factors for complete recovery.

Fig 3: Example of Fazekas scale scores. (a) Fazekas score of 1: image from a 56-year-old male patient. (b) Fazekas score of 2: an image of an 82-year-old female patient.



Conclusion: The prevalence of white matter lesions in patients with idiopathic sudden sensorineural hearing loss might not be high, but severe white matter lesions with cardiovascular risk factors together may initially worsen hearing and lower the response to the therapy. That is why, to achieve a better prognosis, it is important to maintain cardiovascular abnormalities in patients with idiopathic sudden sensorineural hearing loss

Reference:

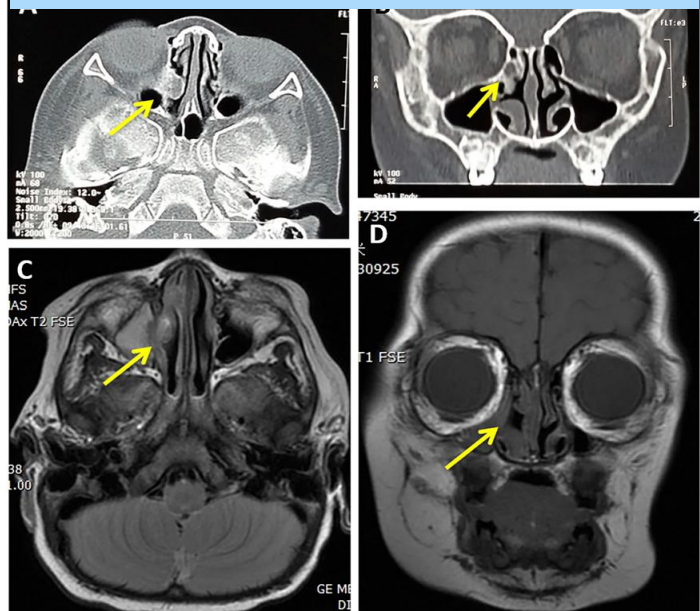
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A Case Report of Aneurysmal Bone Cyst: A Rare benign bone lesion in Children

An aneurysmal bone cyst is a rare benign bone lesion observed in adolescent. It can be divided into primary and secondary bone lesion. Primary aneurysmal bone cysts are characterized by chromosome aberration related to the USP6 gene, and secondary aneurysmal bone cysts are caused by local vascular dysplasia because of bone tumors and trauma.¹ Aneurysmal bone cyst usually appears like a group of intraosseous cavities without endothelial membrane while other shows a polycystic structure filled with blood. Aneurysmal bone cyst affect different part of the bone, but most commonly seen in the vertebrae and long tubular bones.¹ In some rare cases, they can be even found in the flat bone and craniofacial bone of the nasal cavity and paranasal sinuses.¹ Aneurysmal Bone Cyst are rarely found in the head and neck region and in the sinuses.² The etiopathogenesis of Aneurysmal Bone Cyst is still unclear, while the haemorrhagic fluid content and septated appearance are the commonly observed characteristic feature of Aneurysmal Bone Cyst.² The clinical presentation may be due to the compression of adjacent structures or due to the result of a pathological fracture.²

Han Y et al, reported a case of a 1-year-old boy with a right nasal obstruction for a whole month, the obstruction was gradually increasing and severe at night and was accompanied by intermittent nasal bleeding. Nasal examination was done which showed a firm red mass in the right nasal cavity which looked smooth and was not separated from the surrounding mucous membrane tissue and had extended to the inferior conchae. No globe displacement or tooth loosening in the paranasal sinus area was identified. No abnormality in the results of the ophthalmic examination was identified. Complete opacification of the right ethmoid sinuses and nasal cavity ($3.7 \times 1.8 \times 2.8$ cm) was observed through CECT imaging of the orbits and paranasal sinuses. The whole tumor appeared as an uneven enhancement and the boundary was unclear. Unilateral pattern of sinus opacification within the right nasal cavity and ethmoid sinus was observed in a magnetic resonance imaging scan.

Fig4: The patient's CT (A, B) and MRI (C, D) of paranasal sinuses after one year of surgery



Hematuria routine test, serum calcium, serum alkaline phosphatase, and prothrombin time were within the range. Patient had to undergo a nasal endoscopic tumor resection. At the middle nasal nail base plate, yellow-white elliptical osteoma with a size of about 5 mm in diameter was observed. The mass was resected and the right orbital wall was disappeared. The patient was discharged on day 7 of the surgery. Histological examination revealed that the lesion was an aneurysmal bone cyst. The lesion was considered secondary, because an osteoma was found during the surgery on the cyst. Fluorescence in situ hybridization testing revealed a rearrangement of the ubiquitin-specific protease 6 oncogene on chromosome 17. After a year, patient was asked for the follow up, which showed no recurrence. (fig 4)

Conclusion: Presence of Aneurysmal Bone Cyst in the nasal cavity and sinuses in children is very rare and it important to be analyzed according to postoperative pathology and combined with a genetic examination to make a diagnosis. Endoscopic sinus surgery is one of the common and effective method used for treating Aneurysmal Bone Cyst of the nasal cavity and sinuses in children

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