

ABSTRACT

“PRE-OPERATIVE HIGH RESOLUTION CT&MR IMAGING FINDINGS IN CHILDREN WITH BILATERAL PROFOUND SENSORINEURAL HEARING LOSS”

BACKGROUND: In 2012, world health organization (WHO) estimated 360 million people in the world suffer from disabling hearing loss. About 50% of the patients with sensorineural deafness are congenitally deaf and 30% of these congenitally deaf patients have syndromic deafness. High resolution computed tomography (CT) and magnetic resonance imaging (MRI) of the temporal bone are the imaging modalities of choice to evaluate the ear structures and nerves for cause of hearing loss and are now routinely being performed.

AIMS: To evaluate the role of various imaging modalities and are findings in pre- operative evaluation of cochlear implant in children with profound sensorineural hearing loss.

MATERIALS AND METHODS: In our study a total of 70 children with profound sensorineural hearing loss were included. All the children underwent both the modalities of radiological investigations (HRCT& MRI).

RESULTS: Majority of our children 58 (82.9%) showed normal HRCT &MRI of the temporal bone .A total of 17.1% (12 children) demonstrated various bony malformations of the cochlea-vestibular system, internal auditory canal and cochlear nerve aplasia . Majority of children had multiple abnormalities. 3

children (4.2%) of children had bilateral cochlear nerve aplasia. One child(1.4%)had complete labyrinthine aplasia, which are the absolute contraindication for cochlear implant surgery.4 children(5.7%) had Unilateral cochlear nerve aplasia with bilateral abnormal cochlea and vestibule, 2 children(2.8%) had bilateral Incomplete partition type 1,One child had Incomplete partition type 1 one side with common cavity other side, One child had Bilateral dilated vestibular aqueduct. Both modalities provided critical information on abnormalities of the otic capsule, pneumatisation of the mastoid, middle ear abnormalities, cochlear ducts patency and vascular abnormalities- thus helping to assess the suitability of the ear for implantation, determine the side to be implanted and to find any associated abnormality which could adversely influence the surgery.

CONCLUSION: HRCT Temporal bone and MRI of the inner ear are complementary to each other and provide exquisite vital anatomical details and information. Hence they are now considered as baseline investigations and are mandatory prior to cochlear implant surgery. It also helps in choosing the candidacy for surgery, side selection, and deciding the surgical technique in cochlear implantation.

KEYWORDS: Sensorineural hearing loss, HRCT, MRI