National Guidelines for Hearing Assessment after Meningitis

وزارة الصحـــــة
Ministry of Health

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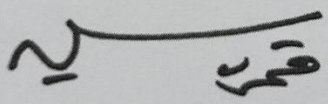
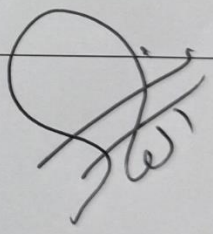
Signature		Signature	
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Acronyms:

HL	Hearing Loss
CT	Computed Tomography scan
MRI	Magnetic Resonance Imaging
CPG	Clinical practice guideline
MOH	Ministry of Health
OAEs	Otoacoustic Emissions
ABR	Auditory Brain Stem Response
PTA	Pure tone audiogram

Guidelines for Hearing Assessment after Meningitis

Chapter One:

1. Introduction

Meningitis is a life-threatening illness caused by infection and inflammation of the meninges. Bacteria, viruses and fungi can cause meningitis. At least 50 kinds of bacteria can cause meningitis, but the main types are Meningococcal bacteria (Neisseria meningitidis), Pneumococcal bacteria (Streptococcus pneumoniae) and Hib meningitis (Haemophilus influenza type b).

It is a prevalent global health problem despite the availability of vaccines against the usual pathogens responsible for the disease. Approximately one in ten children who survive meningitis develops permanent sensorineural hearing loss (HL). HL in children has a significant impact on their social, educational, and emotional well-being. It can cause speech and language problems resulting in speech delay, especially in younger children who have not yet developed speech. Therefore, the identification of HL in these children is crucial in order to ensure early habilitation and minimize the long-term educational, social and emotional difficulties that these children may experience. Studies have reported rates of hearing loss varying from 7% to 36% with 4% having profound hearing loss post-meningitis. The patient population for this clinical practice guideline includes children from birth to age 12 who have been treated for meningitis or if a lumbar puncture has shown positive culture results (either positive c/s, positive microscopy/biochemistry, or positive CSF viral study) and a low number of leukocytes.

2. Purpose

The purpose of these guidelines are to:

2.1. Provide guidance on how to identify infants/young children who have had meningitis.

2.2. Standardize the management of children who have hearing loss after meningitis.

2.3. Provide direction for the urgent audiological referral from pediatricians and ENT doctors for the assessment of children treated with meningitis.

3. **Scope**

These guidelines apply to all healthcare workers working at Al Nahdha Hospital and dealing with children with hearing loss as a result of meningitis including pediatricians and ENT doctors.

Chapter Two

4. Guidelines:

4.1. Children treated for meningitis should be referred for audiological testing as soon as possible after diagnosis; once they are clinically stable they should be referred urgently to Otolaryngology / Audiology clinic at the regional hospital or Al Nahdha hospital for hearing assessment (if within catchment area), within 2 weeks of completion of treatment. Children who are admitted at Al Nahdha Hospital Pediatrics Department can be referred before discharge.

4.2. **Audiological test batteries**:

The following audiological tests should be performed:

4.2.1. OAEs

4.2.2. ABR Diagnostic

4.2.3. Tympanometry

4.2.4. PTA

4.2.5. Speech audiometry

4.2.6. CT and MRI: Cases with assessment demonstrating HL require temporal bone imaging with CT and MRI urgently.

4.3. Referral to the Cochlear Implant team: Urgent referral to cochlear implant team for consultation is indicated if:

4.3.1. There is unilateral/bilateral severe-to-profound hearing loss irrespective of imaging results.

4.3.2. Imaging is indicative of ossification irrespective of the degree of hearing loss.

4.4. Monitoring of Hearing after Meningitis:

4.4.1. Follow-up hearing assessment for children and adults diagnosed with meningitis should be carried out as follows:

A. If the initial hearing assessment showed normal hearing, they should be followed up at 1, 3, 6 and 12 months and annually thereafter until they are three years post-meningitis. For the purpose of this guideline, normal hearing is defined at 20 dBHL or less at 500 Hz, 1 , 2, and 4 kHz bilaterally.

B. Cases with mild and moderate hearing loss should be re-tested within two weeks, if they have stable results, they should be tested audiologically every three months for the first year and every six months after that, until they are three years post-meningitis. Stable hearing loss is defined as less than or equal to 10 dB changes at 500 Hz, 1, 2, and 4 KHz.

C. Children who have fluctuating or worsening sensorineural hearing loss should be referred urgently to the Cochlear Implant team. A change in hearing is defined as a change of greater than 10 dBHL at two or more frequencies or a 20 dBHL or greater change at one frequency with good test reliability.

Chapter Three:

5. Responsibilities:

5.1. Head of ENT shall:

5.1.1. Ensure all audiologist in ANH and Referral center are aware and adhere to these guidelines.

5.1.2. Ensure all referral cases are referred appropriately and as per these guidelines.

5.2. Audiologists shall be:

5.2.1. Aware and adhere to these guidelines.

5.3. All pediatricians shall:

5.3.1. Adhere to these guidelines while involved in the diagnosis and management of children with meningitis.

5.4. all Audiologists, Pediatricians and Otolaryngologists at referral institutions shall:

5.4.1. Refer to these guidelines prior to referral the child to Al Nahdha Hospital.

Chapter Four

Document History and Version Control

Version	Description	Review Date
1	Initial Release	December 2024

References:

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