An overview of Diagnostic and Management Approach of Otitis Media in Primary Health Care Center

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ABSTRACT

Background: Otitis media is an inflammation that affects the middle ear. It's common in children, often recurrent, but commonly self-limiting. Otitis media is commonly managed with antibiotics; however, the disease is often caused by viral rather than bacterial organisms. **Objectives:** In this study, we aim to review the role of family physicians in the diagnosis and management of otitis media in primary health care centers. **Methodology:** PubMed database was used for articles selection, where papers on otitis media were obtained and reviewed. **Conclusion:** In summary, the diagnosis of otitis media is not elusive to the knowledgeable family physician. The appropriate management should be given in persistent infections, with amoxicillin being the first line. Surgical intervention is often reserved for more severe bilateral effusions with hearing loss.

Key Words: *family physician, otitis media, otitis externa, otitis effusion, vaccine*

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INTRODUCTION

The classic presentation at the family clinic is of an adult patient coming with frequent urination, thirst, excessive food intake, and weight loss [1]. The ear is divided anatomically into three parts, it is the middle ear that is afflicted with inflammation during an otitis media attack. For the family physician, an otitis media episode is common in children, and therefore, recognition and treatment should be prioritized to prevent complications. While otitis media is purely inflammation of the middle ear, some risk factors such as child daycare and household smoking could factor into its presence.

An immune predisposition combined with infectious factors would render the child defenseless against the disease. Commonly described infectious organisms include Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis. [1] There are other organisms in infants younger than 2 months of age, these encompass Escherichia coli, Pseudomonas aeruginosa, and Klebsiella species; all of which are gram-negative bacilli. [1] Currently, no evidence supports genetic susceptibility to the disease.

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Clinical Progression

There are four important clinical stages, and often considered subtypes of otitis media, these are acute otitis media, otitis media with effusion, chronic suppurative otitis media, and adhesive otitis media. The summarised features are for these variants (Table 1). Children with acute otitis media would commonly present to the clinic with head and neck symptoms, ranging from otalgia, otorrhoea, headache, and often with recurrent cough or sinus congestion. These patients often present with recurrent symptoms, and hence, a good physician would be alerted to an underlying acute otitis media. It is important not to miss bactraemia as a differential diagnosis, as children with high fever are unlikely to be afflicted with acute otitis media alone. Uncommonly, the child might present with misleading symptomatology that should not be dismissed, such as anorexia, vomiting, lethargy, and diarrhea. If left untreated, or in a child with a recent history of acute otitis media, the manifestations of effusion start to creep in, with potential for life-threatening complications. [2]

Table 1: Typical features in subtypes of Otitis Media

Subtype	Features
Acute Otitis Media	Rapid onset of otalgia, otorrhoea, fever, and gastrointestinal manifestations; often recurrent episodes
Otitis Media with Effusion	Progression of acute otitis media, vertigo, tinnitus, irritability, and commonly as hearing loss
Chronic Suppurative	Persistent infection of more than 6 weeks, leaking from X perforation of the tympanic membrane
Adhesive Otitis Media	Stuck tympanic membrane with the ossicles

There has been a seasonality preference in acute otitis media, as many patients are seen during winter and early spring. [3] Combine the seasonal preference with a two-step screening program, and many children with otitis media can be diagnosed and treated accordingly. [4] Currently, with COVID-19 still roaming without a vaccine, a patient might present with a middle ear infection with an underlying coronavirus infection. [5]

Diagnosis

Otitis media with effusion might be indistinguishable to the junior family physician, and therefore, a pneumatic otoscopy is indicated as highly accurate in diagnosing acute otitis media. (R) There are certain features for acute otitis media to look for during an otoscopic examination (Table 2). The child with effusion would often have a previous history of acute otitis media and commonly presents with severe vestibulocochlear manifestations. This might be seen as inattentiveness during school hours or unresponsiveness to commands, where the child would be suffering from hearing loss. Furthermore, the absence of fluid congestion when examining the tympanic cavity is considered sensitive to acute otitis media exclusion. [6]

Table 2: Otoscopic Features in Otitis Media

Otoscopy Feature	Normal Tympanic Membrane	Acute Otitis Media	Otitis Media with Effusion
Color	Translucent pale gray	Erythema	Opaque yellow or blue
Position	Neutral	Bulging tympanic membrane	Retracted
Mobility	Normal	Decreased	Impaired
Perforation	Normal	Not typical	Single perforations

Other cases would present as interval pain that worsens during sleeping or naps. Uncommonly, tinnitus, and vertigo might be presenting complaints, and an effusion should be investigated in such atypical presentations. In the presence of vestibular symptoms, a differential should include benign paroxysmal positional vertigo. [7] Furthermore, otitis media with effusion was commonly shown to have biofilm formation from Streptococcus pneumoniae infection. [8] It is also vital to differentiate otitis media from otitis externa in family medicine practice, as the management of otitis externa is often a cocktail of topicals: acetic acid, aminoglycosides, and corticosteroids (Table 3).

Table 3: Differentiating Otitis media from Otitis externa

	Otitis media	Otitis externa
Risk factors	Children, second-hand smoking, respiratory tract infections, non-vaccinated	Swimming in public pools, living in humid environments
Clinical features	Bulging tympanic membrane, ear pain, hearing loss, tinnitus, vertigo, purulent discharge	Itchiness and pain, serous discharge

If a family doctor could not differentiate the latter from the former, they might prescribe aminoglycosides in a perforated tympanic membrane, adversely resulting in ototoxicity. If the child is suffering from complications, the family doctor could benefit from performing more tests including swab analysis, magnetic resonance imaging of the skull, contrast tomography of the petrosal bone, and laboratory tests. [6]

Complications

Another clinical use of a pneumatic otoscope is If left untreated, many detrimental complications may arise from otitis media. These include mastoiditis, which itself, if left unmanaged, would progress to chronic mastoiditis and Bezold abscess formation. It may further progress into

intracranial complications with long-lasting effects such as cerebral venous sinus thrombosis. [9] The clinical subtype of chronic suppurative otitis media is currently investigated for treatment with aural toileting, however, the evidence is still lacking. [10] Granulomatosis with polyangiitis may present with otitis media, and studies have shown a better auditory outcome in cases recognized early and treated with intravenous cyclophosphamide. [11] Otitis media commonly occurs in children, and may often coincide with vaccination schedules. Family physicians should pay attention to contraindications for vaccination, such as fever in otitis media. Another example, where the measles, mumps, and rubella vaccine (MMR) is not contraindicated in children with egg allergy, as MMR is made from chick embryos and not from hen eggs. However, egg allergy in children is a contraindication to seasonal influenza vaccination, and a good family physician would seek alternative egg-free variant of the vaccines. Some evidence suggests the beneficial effect of pre-pneumococcal vaccines in reducing the prevalence of otitis media. [12, 13]

Management

Otitis media is commonly self-limiting, with most children being cured with no antibiotic intervention. Instead, analgesia with paracetamol and ibuprofen are often sufficient in most cases. [6] In a child with otitis media who develops effusion, it would be the family physicians' responsibility to reassure the parents and recommend follow up within three months, as well as advising parents to prevent second-hand smoking. In children with bilateral otitis media with effusion, who do not remit within 3 months, the approach is to refer to surgery for grommet insertion. [14] If there are any contraindications to surgery, then it would benefit the patient to install hearing aids. [15] Many children with acute otitis media might be prescribed antibiotics injudiciously, this is alarming considering that not all patients require antibiotics and they might develop resistance. [16] Otitis media should be managed by watchful waiting, as the evidence does not show disease progression with conservative treatment. In severe or persistent cases, a dose of amoxicillin is indicated for a ten-day duration. [17] In patients allergic to penicillin, switch them to cephalosporin alternatives. [18] Further treatment of acute otitis media may occur in a fifth of children receiving antibiotic treatment, which can be investigated by the improvement of symptoms and otoscopic tympanic membrane score. [19]

CONCLUSION

The family physician should be well versed in the approach and management of common illnesses in the community, such as otitis media. The family doctor should be able to differentiate otitis media from other similar diagnoses, lest they adversely prescribe ototoxic medication. In otitis media, the management begins with watchful waiting, and antibiotics are only prescribed in persistent conditions. In the bilateral hearing loss, the definitive management is surgical intervention, so these patients need urgent referral.

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