

Systemic inflammatory response in children of the first months of life with acute otitis media

Alena Merkulava

Belarusian State Medical University, Belarus

Editorial

Introduction: Specific characteristics of the immune response in children of the first months of life affect both manifestations and the course of the inflammatory response. Changes in peripheral blood parameters, typical for acute otitis media in older children, are not often found in children of the first months of life. Cytokines IL-8 and soluble TNF- α receptor p55 plays an important role in the inflammatory process. **Materials & Methods:** We have examined 200 children- 3 months of age infants with acute otitis media. Blood and urine sampling was performed at the 4-5 days of the disease. Determination of the concentration of IL-8 and soluble TNF- α receptor p55 was performed applying a sandwich method of enzyme immunoassay using monoclonal antibodies. **Results:** The content of the soluble p55 TNF receptor in the blood ranged from 0.34 to 3.79 g/ml (the mean value was 1.13 g/ml) and in urine it was in the range of 0.18-6.41 g/ml (mean 1.45 g/ml). The content of the IL 8 ranged from 0.02 to 0.08 g/ml (mean -0.03 g/ml) in the blood and from 0.02 to 0.21 g/ml (mean -0.036 g/ml) in urine. No significant differences between the content of this pro inflammatory cytokines in blood and urine were detected ($p > 0.05$). The levels of the soluble p55 TNF receptor and IL 8 correspond to their levels in the serum of healthy children. **Conclusions:** An increase in the synthesis of pro-inflammatory cytokines TNF- α p55 and IL-8 is not typical for children 0-3 months of age with acute otitis media. Assessment of the cytokine levels in infants with acute otitis media may be useful only in case of high risk of infection generalization in order to exclude the septic process. The absence of significant differences in TNF- α p55 and IL-8 content in blood and urine suggest that the non-invasive method of studying urine samples is more preferable for the benefit of the patient. Otitis media (OM) or middle ear inflammation is a spectrum of diseases, including acute otitis media (AOM), otitis media with effusion (OME; 'glue ear') and chronic suppurative otitis media (CSOM). OM is among the most common diseases in young children worldwide. Although OM may resolve spontaneously without complications, it can be associated with hearing loss and life-long sequelae. In developing

countries, CSOM is a leading cause of hearing loss. OM can be of bacterial or viral origin; during 'colds', viruses can ascend through the Eustachian tube to the middle ear and pave the way for bacterial otopathogens that reside in the nasopharynx. Diagnosis depends on typical signs and symptoms, such as acute ear pain and bulging of the tympanic membrane (eardrum) for AOM and hearing loss for OME; diagnostic modalities include (pneumatic) otoscopy, tympanometry and audiometry. Symptomatic management of ear pain and fever is the mainstay of AOM treatment, reserving antibiotics for children with severe, persistent or recurrent infections. Management of OME largely consists of watchful waiting, with ventilation (tympanostomy) tubes primarily for children with chronic effusions and hearing loss, developmental delays or learning difficulties. The role of hearing aids to alleviate symptoms of hearing loss in the management of OME needs further study. Insertion of ventilation tubes and adenoidectomy are common operations for recurrent AOM to prevent recurrences, but their effectiveness is still debated. Despite reports of a decline in the incidence of OM over the past decade, attributed to the implementation of clinical guidelines that promote accurate diagnosis and judicious use of antibiotics and to pneumococcal conjugate vaccination, OM continues to be a leading cause for medical consultation, antibiotic prescription and surgery in high-income countries. The ear can be divided into three parts: the outer, middle and inner ear. The outer ear comprises the auricle (or pinna) and the ear canal. The tympanic membrane (eardrum), a thin cone-shaped membrane, separates the outer ear from the middle ear. The middle ear comprises the middle ear cavity and the ossicles (the malleus, incus and stapes), which are attached to the tympanic membrane. The oval window connects the middle ear with the inner ear, which includes the semi-circular ducts and the cochlea. The middle ear cavity is connected to the nasopharynx by the Eustachian tube.