

Latent Mastoiditis And Facial Paralysis In A Child As Complications After A Coxsackie Virus Infection. Clinical Case



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Abstract: Coxsackie virus infection usually presents with mild to moderate clinical manifestations. Within 10 - 14 days a complete cure is achieved. The development of complications occurs rarely.

We present a clinical case of "mouth-hand-foot" disease in a 3-year-old child who developed complications of the lung, heart, middle ear, and facial nerve. The disease develops on undamaged terrain. Complications occur after a 30-day light period from the viral infection, which is treated on an outpatient basis. The appearance of complications and the child's sharply deteriorated general condition become a reason for hospitalization. After the medical and surgical treatment, the child was discharged healthy, without medical risk.

Acute suppurative otitis media after a coxsackie virus infection is not common. Complaints may be atypical and therefore missed. The diagnosis is made late, after complications have occurred.

Introduction

in childhood, Bell type facial palsies predominate. Otogenic facial palsies have an incidence of 7 - 10% of all facial palsies in children. The most common cause is inflammatory diseases of the middle ear. In acute and subacute otitis, the main pathogenetic factors are venous congestion, tissue edema and direct toxic effects, as well as granulation tissue and osteitis in the immediate vicinity of the facial nerve. Circulatory changes in the vasa nervorum cause facial nerve edema. Paralysis of the facial nerve in acute otitis can occur at any stage of the course of the disease, but most often at the beginning, on the fourth - fifth day. With proper treatment, the prognosis for recovery of peripheral nerve function is favorable - up to full recovery.

Coxsackieviruses are a subgroup of the genus Enterovirus and belong to the family Picornaviridae. They cause a variety of acute infectious dis-

eases. They rarely lead to complications, the most common of which are pneumonia, myocarditis and serous meningitis (1). The occurrence of a middle ear complication is most likely due to bacterial superinfection against the background of a reduced general immune response as a result of the coxsackie virus infection.

Presentation of the case

3-year-old female child. Raised in good social conditions. Fed properly. Regularly immunized according to the immunization calendar of Republic of Bulgaria. With normal physical and neuro-mental development. Without concomitant diseases.

She suffered from an acute mouth-hand-foot infectious disease, which was moderately severe and treated as an outpatient. In the convalescent period, the third week after becoming ill, the child complained of pain in the left ear and had a 3-day treatment with a macrolide antibiotic (Azatril) and ear drops (Gentazone). Around the 30th day after the onset of the acute infectious disease, a purulent discharge from the left ear began, preceded by a three-day persistent rise in body temperature to 38.5°C. The child was hospitalized in the Intensive Care Unit of the Paediatric Clinic due to impaired general condition and evidence of affection of the respiratory system (bronchopneumonia) and cardiovascular system (rhythm disturbances - persistent tachycardia and ventricular/nodal extrasystole, hardly affected by drug treatment).

After the consultation with an ENT specialist, an

impaired general condition, intoxicated face, pale skin are found. A copious amount of purulent discharge comes out of the left ear. There is tenderness and swelling of the retroauricular region with pushing of the auricle forward. The tympanic membrane on the left, after aspiration of the purulent secretion, is visualized bulging and erythematous, with a drop of the superior-posterior wall. The right tympanic membrane is slightly opacified, with obliterated light reflex. Examination of the cranial nerves revealed peripheral facial nerve palsy on the left, HBS II - III, occurring on the 2nd day after admission.

Tests done

Clinical laboratory: evidence of severe bacterial infection: mild anemia, leukocytosis, severely increased CRP (Fig. 1,2,3).

Microbiological examination: no pathogenic microorganisms are isolated from the secretion in the internal auditory meatus (IAM). *Streptococcus pneumoniae* was isolated from the swab taken

directly from the tympanic cavity during paracentesis and from the purulent swab taken directly from the operative field during mastoidectomy.

Head CT (Fig. 4): completely obliterated pneumatization of both maxillary sinuses and the cells of the ethmoidal labyrinth. Partially obliterated pneumatosis of the sphenoid sinus, the same being underdeveloped. High-density liquid-equivalent collections in the left external auditory meatus, inner ear, and left mastoid process cells. Pathologically enlarged cervical lymph nodes in the neck.

Histological result of the histological examination of the material taken during the mastoidectomy: material represented by compact bone tissue (erosion of mastoid air cell bony septa), focal acute inflammatory and single inflammatory cells of chronic type - data which establishes the diagnosis of coalescent mastoiditis.

Diagnosis: Protracted purulent otitis media. Latent mastoiditis with exteriorization – retroauricular abscess. Otogenic facial nerve palsy.



Fig. 4: CT test of central nervous system and mastoids

Treatment

Medication: a combination of antibacterial agents, venous rehydration, local and systemic pathogenetic and symptomatic agents (corticosteroids, betablockers, antipyretics, painkillers, sedatives, local decongestants).

Surgical: due to high anesthetic risk (bronchopneumonia and tachyarrhythmia), on the 2nd day after admission, under inhalation anesthesia, a wide paracentesis was performed on the left and a diagnostic paracentesis on the right. During the manipulation, an epitympanic perforation was visualized in the left ear, from which a large amount of purulent discharge was aspirated. Purulent secretion was also aspirated from the paracentesis hole made in the posterior quadrant of the tympanic sinus membrane. No secretion was evacuated in tympani dextra membrane paracentesis. Next, daily lavage of the affected ear, from which a copious amount of purulent discharge leaked. Due to unaffected general condition, persistent pain and suppuration from the left ear, a simple mastoidectomy was performed on the 4th day after paracentesis. Intraoperatively, an abscess cavity retroauricularly was encountered

from which pus was aspirated. After removal of the corticalis, the periantral and antral cells were opened sequentially. The lateral semicircular canal is visualized. All cells had hyperemic and edematous mucosa covered by flaccid granulations. The lateral semicircular canal showed a flaccid granulation covered with a scant amount of purulent discharge, which was lavaged with saline. The tegmental and sinudural cells opened. No pathological changes were found in the apical cells. The wound was sutured in two tiers, with placement of two tubular drains through which lavage was performed daily, followed by placement of antibiotic ear drops into the mastoid cavity.

Course of the disease: in the postoperative period, an obvious improvement in the general condition of the child began, disappearance of restlessness, improvement in sleep and appetite. The function of the facial nerve on the left has fully recovered. The operative wound healed primordially. The suppuration from the ear disappeared and the tympanic membrane acquired a normal anatomical appearance. The dynamics of laboratory blood tests (CRP, WBC, Hb values) showed a gradual normalization and control of the inflammatory process (Fig. 1, 2,

3).

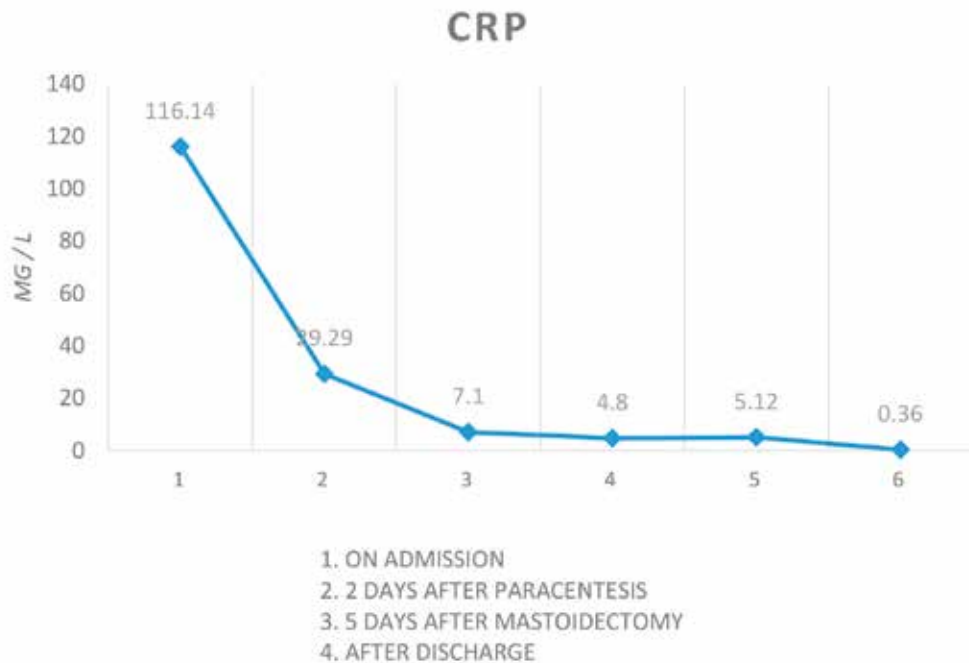


Fig. 1: Dynamics of C - reactive protein levels in blood

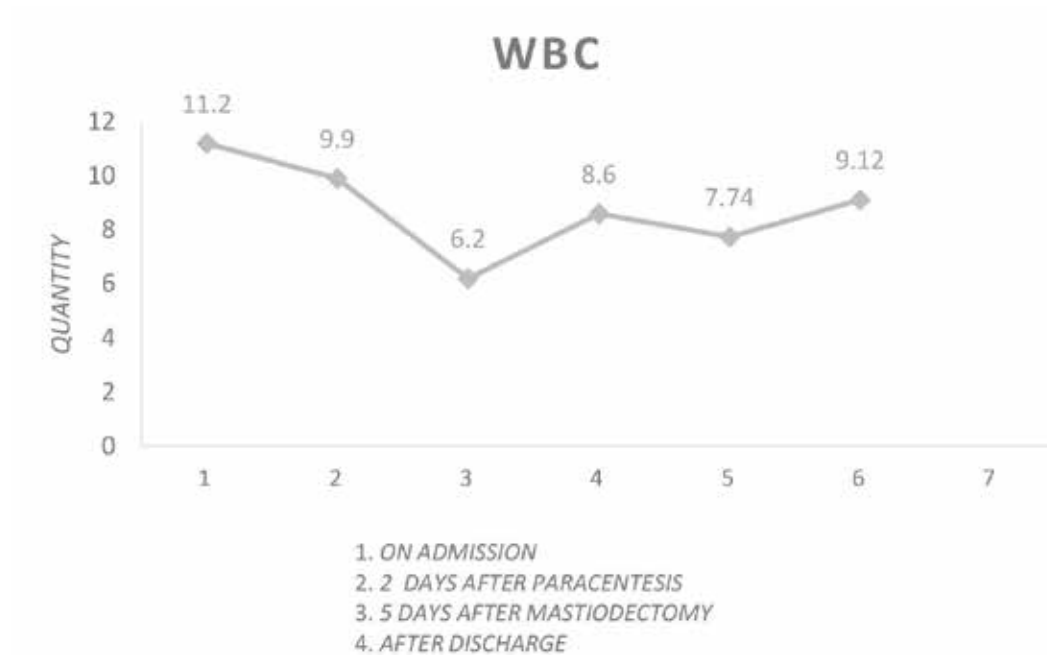


Fig. 2: Dynamics of leukocytosis

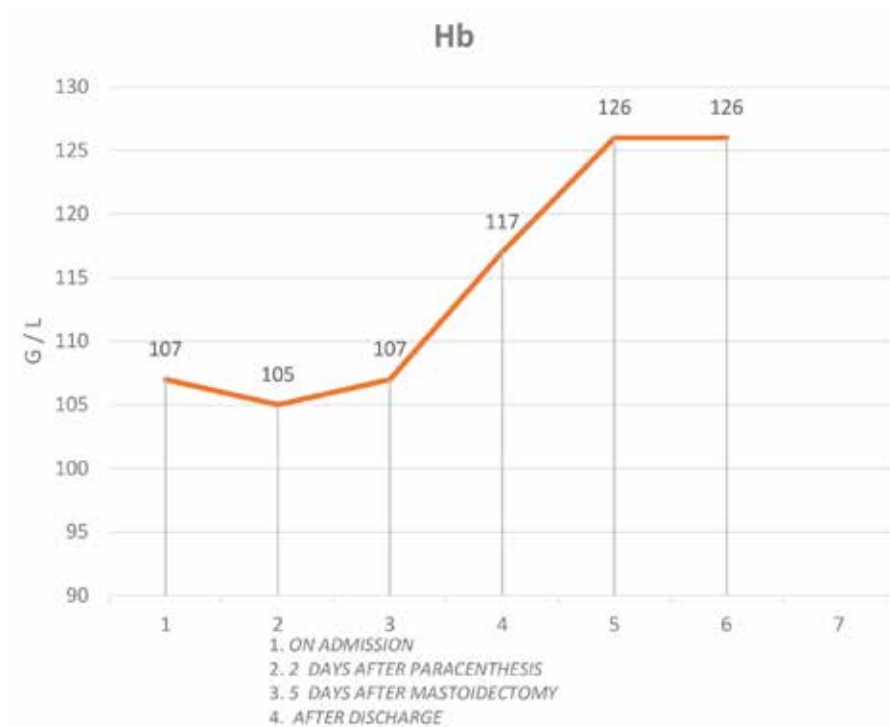


Fig. 3: Dynamics of haemoglobin values

Discussion

The middle ear disease (purulent otitis media) and its complications (latent mastoiditis with exteriorization – retroauricular abscess and otogenic facial nerve palsy) develop in the convalescent period

of a coxsackie virus infection, also complicated by bronchopneumonia and rhythm disturbances. The cause of the inflammatory complications on the middle ear part is bacterial superinfection with *Streptococcus pneumoniae*, based on the reduced

postinfectious immune reactivity of the macroorganism.

Peripheral facial palsy is a complication of latent mastoiditis developed on the basis of protracted otitis media. It is due to tissue edema and direct toxic effects, and also to granulation tissue and osteitis in the immediate vicinity of the facial nerve. The outcome was favorable – complete recovery of peripheral nerve function after successful treatment of the middle ear.

The bulging tympanic membrane and the presence of peripheral facial palsy are indications for paracentesis, with or without subsequent tympanostomy. When facial paralysis persists despite drainage of pus, mastoidectomy is performed(2). Placement of tubular drains and daily lavage of the mastoid cavity followed by placement of antibiotic drops are important for controlling inflammation and for the healing process in the middle ear.

The dynamics of blood laboratory tests support the diagnosis and treatment approach. High CRP values at the beginning, together with leukocytosis, are a sign of severe bacterial infection with *Streptococcus pneumoniae* isolated from the purulent swab. Anemia is toxic and is characteristic of protracted middle ear infections. The sustained decrease and normalization of CRP and WBC values as well as normalization of Hb are correlated with the control of bacterial infection. The result of the histological examination verified the nature of the inflammatory process in the middle ear, namely, protracted otitis media.

Protracted otitis media developed secretly, under the guise of convalescence from the viral infection and intake of antibacterial drugs and antipyretics. Clinically, the diagnosis was made only after the onset of complications.

In bacterial agents causing acute/subacute otitis media, the first place is occupied by pneumococcus - 36% (3).

Conclusion

Pneumococcal middle ear infection is a significant health problem, especially in children and in patients with compromised immunity. Often the latent course is veiled among the general clinical symptoms - restlessness, irritability, food refusal, poor sleep, vague fibrillation, diarrhoeal bowel movements, etc. It is diagnosed only after complications occur.

The monitoring of clinical and laboratory indicators of inflammation and consultations with an otologist are important for early diagnosis, effective treatment and prevention of complications.

Bibliography

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