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Herpes simplex virus esophagitis in an immunocompetent child: Case report

Vnetje požiralnika, povzročeno s HSV, pri imunokompetentnem otroku: Prikaz primera

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Abstract

Herpes simplex oesophagitis is a condition that is rarely seen in immunocompetent patients, especially in childhood. However, it is important to also consider the condition in children with symptoms typical of the upper gastrointestinal tract, and to perform endoscopy to confirm the presence of HSV in the mucosa of the oesophagus. Medical management is only symptomatic while antiviral treatment can be added especially in childhood.

We present a case report of herpes simplex oesophagitis in a 9-year-old otherwise healthy boy who was admitted to our department with persistent vomiting and inability of oral food intake.

Clinical examination revealed pain in the lower abdomen on palpation and clinical signs of dehydration. In laboratory findings, inflammatory markers were mildly elevated.

After some basic examinations, we were not able to explain the child's condition. The performed oesophagogastroduodenoscopy revealed inflammation. Biopsies of the oesophageal mucosa confirmed HSV type 1. Serology markers showed elevated IgM and normal IgG values while subsequent testing did not identify an immune disorder.

Izvleček

Vnetje požiralnika, povzročeno z virusom herpes simpleks (HSV), je stanje, ki se pri imunokompetentnih posameznikih pojavi redko, še zlasti v obdobju otroštva. Če so pri otroku prisotni simptomi v zgornjih prebavilih, opravimo endoskopijo požiralnika z biopsijami sluznice, s katerimi potrdimo prisotnost HSV. Zdravljenje je največkrat samo podporno, se pa v otroškem obdobju hitreje odločimo za protivirusno zdravljenje.

Predstavljamo primer 9-letnega otroka z vnetjem požiralnika, povzročenega s HSV, ki je bil zaradi vztrajnega bruhanja in nezmožnosti hranjenja iz regionalne bolnišnice premeščen na Klinični oddelek za gastroenterologijo, hepatologijo in nutricionistiko Pediatrične klinike v Ljubljani.

Ob sprejemu je bila ob kliničnem pregledu prisotna bolečina v spodnjem delu trebuha; deček je bil izsušen. V laboratorijskih preiskavah smo ugotavljali blago povišane kazalce vnetja. Po začetnih preiskavah, vključno z ultrazvočnim pregledom (UZ) trebuha, nismo uspeli pojasniti dečkovega stanja, zato je bila opravljena ezofagogastroduodenoskopija (EGDS), ki je pokazala izrazito vnetje v področju požiralnika. Biopsija je potrdila prisotnost HSV tip 1. Serološke preiskave so potrdile prisotnost HSV IgM in normalno vrednost HSV IgG, nadaljnje testiranje krvi pa ni potrdilo imunske pomanjkljivosti.

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1 Introduction

Herpes simplex virus esophagitis is a relatively frequent condition with immunocompromised individuals, however, it only occurs rarely in immunocompetent people. There are only a few described cases among children (1).

The most frequent symptoms in immunocompetent children are increased body temperature, odynophagia and vomiting, and the result is poor oral food intake (1). The condition can be the result of the virus reactivation or a primary infection, with the latter occurring in most described cases (1,2). 90% of patients become infected before adolescence, most of them without any signs of infection. When a clinical image is developed, this is a case of gingivostomatitis, which is most common in the first two years after birth (3).

After the clinical image is completed, the next step is an endoscopy. EGDS is the method of choice in diagnostic treatment of suspected HSV esophagitis. In order to set the final diagnosis, bioptic samples are taken for histopathological examinations, and the viral culture or proof of HSV using the PCR method (1).

Therapy is basically supportive – ensuring appropriate hydration and food intake, pain relief, and medication with proton-pump inhibitors. With children we opt sooner than with adults for parenteral antiviral therapy using acyclovir in a 5 mg/kg every 8 hours, even though the evidence on its effectiveness in immunocompetent people is not completely convincing, especially due to the lack of published research with a control group to prove this therapy as effective (5). A clinical improvement occurs in 1–5 days (1). Acyclovir is regularly prescribed to immunocompromised patients of all age groups.

2 Case report

A 9-year-old previously healthy boy was admitted to the regional hospital because of persistent vomiting and a mild fever. A week before the onset of these symptoms he swam in a pond, where they noticed dead frogs.

Upon admittance, the boy manifested signs of dehydration, his stomach was painful at palpitation, and the acute surgical disease was ruled out. Meningeal signs were all negative. Laboratory examination showed increased parameters of inflammation: high C-reactive protein, mild leukocytosis, and metabolic alkalosis when vomiting. Since the day of admittance the boy did not pass stool. The hospital initiated parenteral rehydration, and he was administered antiemetics and proton-pump inhibitors. During hospitalisation he received a dose of corticostereoids. In spite of symptomatic therapy, his clinical condition did not improve. A radiograph of his stomach showed meteorism and signs of constipation.

Ultrasound examination showed mesenteric lymphadenitis. After an enema he passed a small amount of stool, which was of a suitable consistency. Because of the information that the child hit his head when going down a slide at the pool two days prior the symptoms were manifested, a computer tomography (CT) scan of his head was done, and it did not show any deviation from the norm.

The issues with vomiting persisted, and because food intake was not possible, physicians inserted a nasogastric tube. Laboratory tests showed a gradual spontaneous decline of the C-reactive protein. Following newly developed electrolytic complications the boy was admitted to the Clinical Department of Gastroenterology,

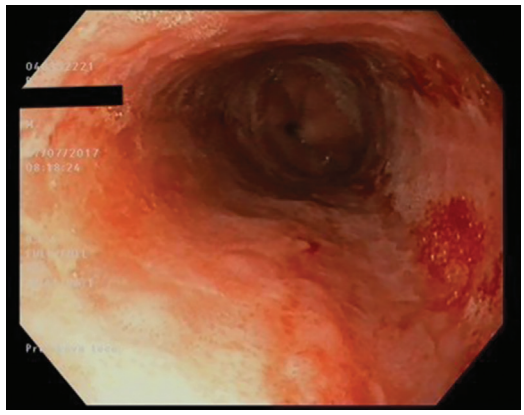

Figure 1: Endoscopic view of the changed mucosa in the distal oesophagus.

Hepatology and Nutrition of the Division of Pediatrics at the University Medical Centre Ljubljana.

After being admitted to the tertiary clinic, the vomiting persisted, making it impossible for the boy to take food. We repeated some examinations, including radiography and ultrasound of stomach, which once again failed to provide an explanation of the boy's problems.

We performed an EGDS, which showed a high level of inflammation of the mucous membrane of the oesophagus (Figure 1). In the biopsy samples taken from the oesophagus we determined the presence of type 1 HSV using imunohistochemical technique (Figure 2A, Figure 2B). During hospitalisation aphthous stomatitis manifested on his lower lip (Figure 3). After starting therapy with acyclovir in a dosage of 5 mg/kg per 8 h i.v., which the boy received for three days, his condition improved already after a few doses. He ceased vomiting and gradually began to intake liquid and food. He received acyclovir for a total of ten days. Later we received the results of the analysis of lymphocyte subpopulations, which were at normal levels, through which we most likely excluded immunodeficiency.

3 Discussion

HSV esophagitis is exceptionally rare in immunocompetent children. This is most often a primary infection, and less frequently a reactivation of a latent infection (2). Esophagitis most probably occurs during a transfer of an infection from the lip, oral mucosa or the oesophagus (7). This is most often a type 1 HSV infection, less frequently a type 2 HSV (7).

Exhibited symptoms in children often include odynophagia, and fever (5). In our case odynophagia was at the forefront, and the boy was also subfebrile. Aphthous stomatitis in the mouth and the oral mucosa, which were present in our case, are

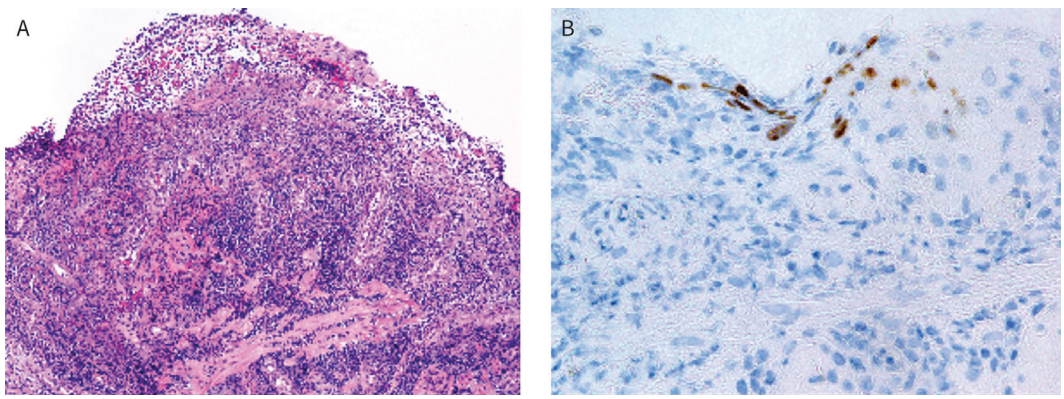

Figure 2: Histological sample.
The histological samples include erosions and ulcerations, with proliferation of granulation tissue and mixed inflammatory infiltration (A). The surface epithelium is only partially preserved and is infiltrated with neutrophil granulocytes, without viral inclusions. The immunohistochemical reaction against HSV is focally positive in surface epithelial cells (B).

Figure 3: Aphthous ulcer on the lower lip.

otherwise rare (5). Before the onset of symptoms in upper gastrointestinal tract, non-specific symptoms may be present, such as general weakness, increased temperature, loss of appetite and weight (6).

With a clinical image that points to an infection in the oesophagus, the diagnostic examination of choice is EGDS, which shows the erosions, differently sized ulcerations and fibrin plaques, especially in the middle and distal part (5). In our case we ascertained changes in accordance with the description during the endoscopic examination. Early in the onset of the infection there may be changes in the shape of vesicles (2). To confirm the diagnosis a biopsy of the tissue is required; the sample must be taken from the area at the edge of the ulcer, where most of the epithelial cell that contain the virus can be found (5). The sample is sent for a histopathology examination, and the viral culture (1), the sensitivity of the examination in presence of HSV in the specimen is 97% in both methods (7). During the last period the PCR method is gaining popularity, as compared to the viral culture or enzyme immunoassay (EIA) it is more sensitive and specific (8). In our case we have determined the presence of type 1 HSV in samples taken from oesophagus. Serological examinations have a limited value, as frequently following a past infection HSV IgG antibodies are present, while seroconversion is diagnostic (5). In our case we established the presence of specific HSV IgG and HSV IgM antibodies. Repeated cases of this disease in immunocompetent people are very rare (5).

HSV esophagitis is a self-limiting disease, and the described cases include a punctured oesophagus and significant haemorrhaging (9). Recovery is completed in a few weeks (6). Symptomatic therapy is advised, as it provides appropriate hydration and pain management (2). Acyclovir therapy with doses of 5mg/kg per 8 hours i.v., and after a partial improvement a switch to oral therapy, in total of ten days had been proven to be effective on immunocompromised people in past studies. Similar studies on immunocompetent people are too few, however, it is assumed that therapy shortens symptom duration and decreases the chance of complications (1). A clinical improvement after the administration of acyclovir occurs in 24–72 hours, with the symptoms fading within two weeks (6). After beginning acyclovir therapy the boy's condition improved after only a few doses. He received therapy for a total of ten days, and the symptoms gradually completely faded.

If such a diagnosis is made for an immunocompetent person, basic examinations for excluding primary immunodeficiency had to be ruled out (7), while with adolescents we must rule out a HIV infection (5). Analysis of lymphocyte subpopulations showed at normal levels, through which we most likely excluded immunodeficiency.

Recent research is explaining potential risk factors for the onset of HSV esophagitis with immunocompetent people. In one of the studies the researchers established nearly a half of the cases had eosinophilic esophagitis present (10). In our case histologic results of the biotops of the oesophagus mucous membrane did not point to an overt concentration of eosinophil granulocytes.

4 Conclusion

A HSV esophagitis is exceptionally rare in immunocompetent children, and the diagnosis should be considered with persisting symptoms in the upper digestive tract.

The most important diagnostic examination when considering the symptoms in the oesophagus is EGDS, which also includes a biopsy of the mucous membrane of the oesophagus, and a subsequent histopathologic examination and virus culture. Treatment is supportive in most cases but with onset during childhood we opt sooner for antiviral therapy using acyclovir. It is important to also conduct basic examinations to exclude immunodeficiency.

The child's parents agreed with the publication of the article.

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