PRINCIPLES OF DIAGNOSTIC AND TREATMENT OF ECHINOCOCCOSIS IN CHILDREN

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431 patients (55.5% boys and 44.5% girls) with echinococcosis of the different localization at the age from 1 to 16 years old were under our observation and treatment. Children under the school age (82%) most often suffered from this disease. Echinococcosis of the lungs was determined in 173 patients (40.2%), echinococcosis of the liver - in 192 patients (44.5%), combined echinococcosis - in 54 patients (12.5%), and echinococcosis of the rare localizations was found in 12 patients (2.8%). Combination of echinococcosis of the liver and the lung was met in 48 cases (88.9%) of combined echinococcosis, in 4 (4.7%) patients it was observed echinococcosis of the liver and both lungs. During the investigation we used the complex of methods including clinical, roentgenological, ultrasound, laboratory and immunological investigations. Basically, in echinococcosis of the lungs it was used the wide lateral thoracotomy in the fifth-sixth intercostal spaces depending on the localization of the cysts.

Keywords: Echinococcosis of the lungs, reaction of the antigen-connected lymphocytes, echinococcectomy.

UDC: 616-018-616.995.121.576.31-08

Echinococcosis is one of the severe human helminthiases and at the same time it is widely distributed among domestic and wild animals. Therefore, echinococcosis appears as a serious social and medical challenge for the most countries of the world causing economical damage which costs a hundred milliards dollars per year.

In spite of the big success in fighting with echinococcosis many problems of pathogenesis, diagnostics and treatment of this disease are not enough studied and resolved.

431 patients with echinococcosis with different localization were our observation and treatment, they were at the age from 1 to 16 years old. Boys were 239 (55.5%) and girls - 192 (44.5%). The most often suffered from this disease are children under the school age (82%). Echinococcosis of the lungs was determined in 173 patients (40.2%), echinococcosis of the liver was determined in 192 patients (44.5%), combined echinococcosis was determined in 54 patients (12.5%), and echinococcosis of the rare localizations was found in 12 patients (2.8%). Combination of echinococcosis of the liver and the lung was observed in 48 cases (88.9%) patients with combined echinococcosis; echinococcosis of the both lungs and the liver - in 4 (4.7%) patients. Echinococcosis of the both lungs were determined in 20 (11.6%) patients, the disease in right lung - in 91 patients (52.6%) and in left lung - in 62 patients (35.8%).

Almost in each second patient (41%) during the echinococcosis of the lungs we examined complications. From them, suppuration of the echinococcal cysts was detected in 37 patients (21.3%), burst of the cysts through the bronchus - in 20 patients (11.6%), and burst of the cysts through the pleural cavity was diagnosed in 14 patients (8.1%). The common cause of the late handling of the patients was a long-term asymptomatic duration of the disease.

Complex of methods including clinical, roentgenological, ultrasound, laboratory and immunological investigations were used during the investigation. It is known that the parallel using of the several serologic reactions can increase its diagnostic possibility. Side by side with the reaction of the indirect hemagglutination (RIHA) we used proposed in the clinic cellular immune reaction of the antigen-connected lymphocytes (ACL) (patent No.2705, Uzbekistan, November 11, 1994)
Principle of the method consists in formation of the complex antigen-connected lymphocytes with erythrocytes loaded by the antigens of echinococcus. As an antigen it was used centrifuged fresh echinococcal fluid which we put on the erythrocyte. Setting contact of the sensitized lymphocytes with the pointed erythrocytes creates the specific rosette form which is easy to identify under the microscope demonstrating ability of the ACL to react to this antigen. In the parallel test it was studied the control antigen (albumin) and by the difference between investigated and control probes it was calculated the amount of ACL reacting with this antigen.

ACL-reaction was performed to 109 patients with diagnostic purpose: positive results were determined in 87% of cases, and in the combined echinococcosis the positive results were determined in 96% of cases. RIHA was performed to 109 patients to determine the comparable effectiveness of immunological reactions in the diagnosis of echinococcosis: positive results were found in 83% of cases, and in the combined echinococcosis the positive results - in 94% of cases.

In echinococcosis of the lungs or liver the study searched for echinococcal cysts in other localizations. The exact localization of the cysts was determined by use of USI which allowed choosing optimal operative access.

Special difficulty was in diagnosis of lung echinococcal cysts, which burst through bronchus or through pleural cavity, and in their differentiation from the abscess or from the pyothorax. These cases required using treating-diagnostic bronchoscopy with following microscopy of broncholavage fluid, sputum and punctate of the pleural cavity to determine echinococcal scolex hooks and fragments of chitinous surface.

Human infection by the echinococcus oncospheres mainly occurs through gastrointestinal tract. There are some contradictory opinions regarding the influence of gastric juice to the oncospheres.

In order to determine the role of the acid-forming function of the stomach during the infection of echinococcosis in children we put the following objective: to study the acid-forming function of the stomach, endoscopic picture of the mucous membrane of the stomach in children with echinococcosis and the members of their families.

Investigations were carried out in 110 patients with echinococcosis of the different localizations. In control group there were 30 children with hernia, cryptorchism, cicatricial contracture of the joints and so on.

Acid-forming function of the stomach was studied by the indexes of pH, general acidity, free hydrochloric acid, debit hour \((D/H)\) of hydrochloric acid and free hydrochloric acid of gastric juice. pH of the gastric juice was defined using universal ionomer MB-74 and by using intragastric equipment AGM-01.

Hypo-acid condition was determined in 91 (82.8%) cases, anacid condition - in 5 children (4.5%), and normoacid condition - in 14 children (12.7%). Gastroscopic investigation determined chronic superficial gastritis in 10 of 26 children, and chronic hypertrophy gastroduodenitis in 2 children.

Gastroscopic study diagnosed chronic superficial gastritis in 10 out of 26 children, and chronic hypertrophic gastroduodenitis in 2 children.

At the same time, it was performed investigation of acid-forming function of the stomach in family members of children with echinococcosis. 51 people were observed at the age from 3 to 15 years old in 21 families. Hypo-acid condition was detected in 21 people (41.2%). USI found the echinococcal cysts of the liver in two of them.

Normoacid condition was found in 83.3% of cases in the control group, hypo-acid condition was noted in 5 patients (16.7%).

Surgical operation remains as the basic in the treatment of echinococcal disease. Basically, in lung echinococcosis it was used the wide lateral thoracotomy in the fifth-sixth intercostal spaces depending on the localization of the cysts. Step by step surgical operations were performed in bilateral and combined lesions: firstly in the lung (on side of
the big cyst), then in the liver by the interval of the 1 month. Laparotomy by Fedorov was performed in echinococcosis of the liver; upper-median laparotomy was used in lesion of the both lobes.

Processing of the fibrosis capsule was performed with 2% formalin solution. Delbe capitonage (2 cases) was used to eliminate parasite bed in the lung, suturing in small cavities (22 cases), A. Vishnevsky method was used also (64 cases), and A. Pulatov method (123 cases) according the amount of cysts. Drainage tubes were left in the pleural cavity and according to parasites’ bed indications.

Delbe capitonage was used in echinococcosis of the liver in 12 patients, plugging of residual cavity with omentum - in 13 patients, drainage of residual cavity swab with ointment Wisniewski - in 5 patients, closure of the small residual cavities with nodular catgut sutures - in 20 patients. Invagination of the fibrosis capsule was made in 32 patients on the proposed method (elimination of cavity by putting sutures on resectional edges of the fibrosis capsule with liver parenchyma inside the wound; patent No.3322, May 22, 1995, Uzbekistan). Effectiveness criteria of surgical treatment included the absence of complications, duration of the febrile period, length of cavity drainage time, and staying period of the patients in the hospital after surgical operation.

92% of cases showed good results after the suggested method of echinococcectomy in the liver. Good results in echinococcosis of the lungs were conditioned by use of organ-saving echinococcectomy according to methods of A. Vishnevsky and A. Pulatov.

32 children at the age from 4 to 16 years old received chemotherapy of the echinococcosis. Chemotherapy was prescribed as treatment method in cases when patients had small multiple echinococcal cysts (20-30 and more), and recurrences of the disease (the size of the cysts until 3 sm). As prophylactic method after surgical operations it was used in the cases of multiple (2 and more cysts) and combined (in injures of 2 and more organs) echinococcosis.

**Conclusion**

Parallel using of two immunological methods (RIHA, ACL) could increase the possibilities of early diagnosis echinococcosis in children.

Hypo-acid condition determined in 82.8% of children with echinococcosis might be considered as predisposed factor for the development of the disease.

The used method of echinococcectomy of the liver was effective in 92% of cases.

Chemotherapy of echinococcosis in children has its own indications and appears as the only one method of conservative treatment.