

TESTING THE ELISA METHOD SENSIBILITY IN ORDER TO IDENTIFY THE ASYMPTOMATIC CARRIERS OF HYDATIDOSIS

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Abstract: The ELISA test for hydatidosis has a major importance in diagnosing the disease, both for the imagistic confirmation and for the identification of the asymptomatic carriers. The research made within the Pediatric Clinic of Sibiu, indicated that the test had a sensibility of 62,96 % and a specificity of 85,2 %.

Keywords: ELISA test, asymptomatic carriers.

Rezumat. Testarea ELISA pentru hidatidoză are o importanță majoră în diagnosticul bolii, atât pentru confirmarea depistării imagistice, cât și pentru depistarea purtătorilor asimptomatici. În studiul efectuat în Clinica de Pediatrie Sibiu, testul a dovedit o sensibilitate de 62,96 % și o specificitate de 85,2 %.

Cuvinte cheie: testare ELISA, purtători asimptomatici

At the same time with the introduction of serology, the capacity of identifying the small-sized cysts increased (4, 5).

Has the ELISA test for hydatidosis the positive and negative predictive value, the specificity and the sensitivity necessary in order to justify the gold-standard of diagnosis? The results of the research are controversial: some researchers proved that the value of serology in the asymptomatic carriers is minimal; others consider that the use of both methods (serological and radiographic/echographic) would increase the specificity and sensitivity to 63-97,5 % (6, 7, 8).

Taking into account the costs of a surgery for hydatidosis, the use of the serological tests as a screening method for the identification of the disease (at least within the endemic areas) becomes necessary.

The ELISA technique (through the NovaTec-Echinococcus test; IgE-ELISA) allows the detection of the IgG class antibodies, which are specific for hydatidosis (for 96 determinations). The sensitivity and the specificity of the method are described as being 95 % for *E. granulosus* hydatid disease; the crossed reactions are in percentage of 32 % for the tropical helminthiases, 12% for the autochthonous helminthiases and 2% for the protozoa. It has a lot of advantages: it is sensitive, it is suited to the automatized simultaneous test of a very large number of samples, it may be realized in a short period of time and it uses a small quantity of antigen (9, 10).

In order to prove the test screening capacity, the Elisa test should be specific, with good sensitivity and positive and negative predictive value.

Its use is liable to apply to the target population within the endemic areas.

In order to achieve these goals, the target population must be very carefully chosen.

INTRODUCTION

The starting point is that until now, there has not been elaborated any standardized serologic test with an absolute sensibility and specificity. Regarding hydatidosis, the immunodiagnostic methods are still far from being "perfect". The situation is even more delicate, if we try to establish the gold-standard of the hydatidosis diagnosis:

- The immunodiagnostic test with high sensibility on the target population, as a primary test, associated with the radiographic and echographic examination of the seropositive people, or

- The echographic (and radiographic) identification regarding the target population with the help of certain mobile units, as a primary test and afterwards, the use of the immunodiagnostic techniques for the confirmation of individuals with imagistic aspect which are liable to present parasite cyst formations (1, 2, 3).

The ELISA test for hydatidosis has a major importance in diagnosing the disease, both for the imagistic confirmation and for the identification of the asymptomatic carriers. Nevertheless, for the hydatid disease, both methods (serological and imagistic) are undisputable regarding the diagnosis establishment. What is important is the relation between the two methods: 50% or more?

MATERIAL AND METHOD

The research included the symptomatic and asymptomatic (unspecified symptomatology) cases within the Pediatric Clinic of Sibiu between 2004 and 2006, cases which were submitted to the Elisa test for hydatidosis.

CLINICAL ASPECTS

The inclusion and the exclusion criteria were used for each of the research groups (symptomatic, asymptomatic). Two research groups were formed:

- The E group coming from the endemic area;
- The N group coming from the non endemic area.

The research groups (E and N) were numerically equal.

Each research group was sub-divided into 2 sub-groups:

- The E.S. sub-group, the symptomatic sub-group of the endemic area;
- The E.A. sub-group, the asymptomatic sub-group of the endemic area; respectively
- The N.S sub-group, the symptomatic sub-group of the non endemic area,
- The N.A. sub-group, the asymptomatic sub-of the non endemic area.

The sub-groups were numerically equal.

The inclusion/exclusion criteria within the E group:

- Origin area – the “classical” endemic area;
- The absence of the personal antecedents regarding the hydatid disease;

The inclusion/exclusion criteria within the N group:

- Origin area – non affiliation to the “classical” endemic area;
- Occupational environment - other than the sheep breeding;
- Presence of the domestic animals into the microclimate (dogs kept in the apartment);
- The absence of the personal antecedents regarding the hydatid disease.

The characteristic symptomatology was considered the following]:

- Chronic cough, effort dyspnea, thoracic pain with long term evolution, after the prior exclusion of other affections which evolving with similar symptomatology (bronchial asthma, IACRI, etc.);
- Abdominal pain, nausea, vomiting, loss of weight, with long term evolution, after the prior exclusion of other affections which evolve having similar symptomatology (chronic gastritis, ulcer, cholecystitis etc.);
- Allergodermia, without other causality;
- Nanism, without other causality.

For the asymptomatic group, the clinical criteria of inclusion were the following:

- Uncharacteristic symptomatology (even for the “unusual”, rare localisations of the echinococcosis);
- We cannot consider “the absence of symptomatology” as an inclusion criterion, taking into account the fact that the research group comprised the patients hospitalized in the clinic.

All the patients included in the research groups were submitted to a preliminary analysis of other parasitosis (see the crossed reactions of the immunodiagnostic test).

Between 2004 and 2007, a number of 20 patients were ELISA tested for hydatidosis. The E group = 100 patients (the E.S. sub-group = 50 patients; the E.A. sub-group = 50 patients. The N group = 100 patients (the N.S. sub-group = 50 patients; the N.A. subgroup = 50 patients)

The endemic symptomatic group (E.S.) presents the following characteristics:

- 50 patients; predominant age > 10 years old; predominant males; origin area – the classical endemic area, the occupational environment – sheep breeding, the predominant; specific respiratory symptomatology.

The endemic asymptomatic group (E.A.) presents the following characteristics:

- 50 patients; predominant age > 10 years old; no gender predominance; predominant origin area – classical endemic area; uncharacteristic symptomatology.

The non endemic symptomatic group (N.S.) presents the following characteristics:

- 50 patients; predominant age > years old, predominant males;
- Origin area – urban area; occupational environment – other risk occupations (zootechnists, hunters, etc.); digestive specific predominant symptomatology

The non endemic asymptomatic group (N.A.) presents the following characteristics:

- 50 patients; predominant age, 5 – 10 years old; no gender predominance; origin area – urban area occupational environment– accompany dogs; uncharacteristic symptomatology.

The results of the ELISA test:

- 29 patients of the E.S. batch = positive ELISA test (predominant age > 10 years old; males predominant; coming from the classical endemic area; respiratory symptomatology predominance)
- 12 patients of the E.A. batch = positive ELISA test (predominant age > 10 years old; female gender predominance; classical endemic area predominance)
- 10 patients of the N.S. batch= positive ELISA test (predominant age 5 - 10 years old, male gender predominance, urban area of Sibiu predominance; respiratory symptomatology predominance; occupational environment made up of other risk occupations – zootechnists, butchers etc.)
- 4 patients of the N.A. batch = positive ELISA test (no age predominance > 5 years old; no gender predominance; origin area – urban area of Cîsnădie; occupational environment made up of other risk occupations - zootechnists, butchers etc.)

The ELISA test	Sensibility groups E + N	62,96 %
	Sensibility group E	77,5 %
	Specificity	85,2 %

Regarding the studied batches, the ELISA test proved a sensibility of 62,96 %; the value may seem insignificant, but the casuistic also came from the non endemic areas and without any characteristic symptomatology. The sensibility for the E group was of 77,5 %. The specificity was of 85,2 %.

CLINICAL ASPECTS

1. The ELISA test for hydatidosis may be considered as an immunodiagnostic screening method for the asymptomatic carriers, in competition with the imagistic methods (echography, radiography).
2. The imagistic confirmation was in percentage of 70, 37 %.
3. The echography confirmed the most seropositive cases.
4. The ELISA test proved its value of screening test being as valuable as the imagistic method – the echography.
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