Some aspects of *Hydatidosis humanis* in Republic of Moldova

Aspecte legate de *Hydatidosis humanis* în Republica Moldova

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**ABSTRACT**

Republic of Moldova is an endemic region for human hydatidosis, registering a morbidity of 4,74 to 100 000 of population. The South climatic-geographical districts are the most affected, where the index is 3-4 times higher than the average in the republic. Breeding of domestic animals and their care are favourable factors contributing to the spreading of this invasion.

**Key words:** hydatidosis, hydatid cyst, “dog - man – dog”, zoonosis.

**Introduction**

Echinococcosis / hydatidosis is one of the most spread human cestodoses and has deep sanitary, economical and social implications.

The costs provoked by the damages produced by the parasite in global aspect constitute 763980979 dollars per year. The lost resulted by the extermination of animals with echinococcosis are even higher [1].

In the structure of parasitic morbidity in Republic of Moldova the human hydatosis is on the IVth place, while after the severe impact upon the population health this invasion represents an important problem. For the neighbor countries this problem is also very actual.

**Materials and methods**

The below epidemiological study was accomplished on a group of 1547 people infected by hydatid cyst during 2000-2007 years. The evidence registers of people infected with echinococcosis and chirurgically treated were studied. At the same time 596 epidemiological questionnaires distributed in all the districts of Moldova were analyzed. The cases were distributed by localities, age groups, way of revealing, kind of activity, importance of environment in this parasitosis spreading.

**Results and discussions**

In structure of parasitic morbidity during 2000-2007 echinococcosis occupies 4-5 place, conceding only enterobiosis, ascaridosis and trichocephalosis, characteristic for Republic of Moldova in a kind to climatic-geographical features. (Table 1)

<table>
<thead>
<tr>
<th>Year</th>
<th>Absolute quantity of cases</th>
<th>Morbidity on 100000 population</th>
<th>Place in structure parasitic morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>175</td>
<td>4,10</td>
<td>V</td>
</tr>
<tr>
<td>2001</td>
<td>203</td>
<td>4,76</td>
<td>V</td>
</tr>
<tr>
<td>2002</td>
<td>228</td>
<td>5,35</td>
<td>IV</td>
</tr>
<tr>
<td>2003</td>
<td>233</td>
<td>5,49</td>
<td>IV</td>
</tr>
</tbody>
</table>
In the period 2000-2007 the minimum number of disease development (135) was registered in 2006, the maximum (228) was achieved in 2003. The average morbidity over the country constitutes 4.74% at 100 000 inhabitants. The distribution of the cases by districts prove that the most affected in the western zone of the Republic of Moldova, Prut river basin, mostly the northern and southern climatic-geographical regions.

In the most of the cases (92.4%) the preventive diagnostics of hydatid cyst was established at patient request by radiology, USG and other methods and only in 0.8% of the cases – according to epidemiological indication; 26.3% of the patients confirmed the diagnosis also by serological investigations. The frequency of one disease development in the outbreak constitutes 97.7%, of two and more cases – 2.3%.

88.8% of patients had primary form of hydatidosis, 11.2% of the cases were relapse.

The majority of disease development (89.9%) come from rural environment, where obviously exists the risk of contamination by this cestode.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
<th>Morbidity</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>200</td>
<td>4,74</td>
<td>V</td>
</tr>
<tr>
<td>2005</td>
<td>162</td>
<td>3,84</td>
<td>IV</td>
</tr>
<tr>
<td>2006</td>
<td>135</td>
<td>3,22</td>
<td>IV</td>
</tr>
<tr>
<td>2007</td>
<td>209</td>
<td>4,98</td>
<td>IV</td>
</tr>
<tr>
<td>Average value on Republic</td>
<td>-</td>
<td>4,74</td>
<td>-</td>
</tr>
</tbody>
</table>

Diagram 1 Distribution of cases of disease depending by residence during 2000-2007

Sex distribution is the following: 742 (48.0%) of the cases were recorded in woman and 805 (52.0%) – in men [t=5.7].
The distribution of the patients after age categories (diagram 1) reveal the fact that the most infected are the children and the young adults, which proportion constitute 78.3%, the older persons represent 21.7% of echinococcosis cases.

Practically each 5 case of disease development is recorded in children under 17 years old. We have to mention that 3 cases of echinococcosis were registered in children from age category 0-2 years old. This fact proves that the infection took place in the first months of their life, taking into account the evolution period of hydatid cyst.

In the structure of internal organs incidence the leaver (63.3%) and the lung (25.8%) are on the first place. Other locations were recorded in 7.9% of the cases, the most frequent being: leaver+lung, kidney, spleen, abdominal cavity, poly-organ localization.

Invasion extensity occurs usually after the scheme “dog-ovine-dog”, “dog-man” and “dog-ovine-bovine-man” [3]. After analyzing the data from Republican Veterinary Service concerning live stock of domestic animals, including ovine, it was established that there is a direct correlation between the number of domestic animals (including ovine) per inhabitant and the morbidity index in this locality.

Furthermore, in the last decades the proportion between domestic animals from collective sector and private sector changed drastically in the favor of the last one [2], this fact has as consequence the increasing number of animal slaughter in domestic conditions (usually, without veterinary supervision), which favors the infection of dogs (definitive hosts in this invasion). This fact is proved by the majority of persons participants in the survey. The presented data allows to assume the further increase
morbidity of echinococcosis in Republic of Moldova (Table 2).

### Table 2 Parity between domestic animals in a private and public sector in Republic of Moldova during 1990-2000

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Horne d cattle</td>
<td>16.20</td>
<td>49.20</td>
<td>80.60</td>
<td>89.60</td>
<td>83.80</td>
<td>50.80</td>
<td>19.40</td>
<td>10.40</td>
</tr>
<tr>
<td>Pigs</td>
<td>16.03</td>
<td>46.04</td>
<td>71.06</td>
<td>86.80</td>
<td>83.97</td>
<td>53.96</td>
<td>28.94</td>
<td>13.20</td>
</tr>
<tr>
<td>Sheep, Goats</td>
<td>59.03</td>
<td>83.49</td>
<td>92.46</td>
<td>95.58</td>
<td>40.97</td>
<td>16.51</td>
<td>7.54</td>
<td>4.42</td>
</tr>
</tbody>
</table>

The analysis of epidemiological survey revealed that the disease is recorded in all categories of population, regardless of activity type, thus 27.18% of patients are workers and clerks, 23.82% are unemployed persons, 21.91% are pupils and students, 11.97% are farmers (the rate of shepherds and veterinary employees is of 2.85%), 15.10% are pensioners and invalids.

Therefore, the echinococcosis is a medical–veterinary problem, but only in 55.4% of disease development cases in outbreak surveillance the sanitary-veterinary service was involved.

32.4% of questioned patients indicate as decisive factor in invasion contagion the contacts with the dogs; 42.8% - domestic animals supervision, especially such procedures as: wool washing, sheep leather tanning, contact with ill animals during slaughter, consumption of uncooked milk and cottage cheese. A relative high number (14.9%) of the questioned persons suppose that the disease was caused by the consumption of mutton, which has no implication in spreading of the cestode.

### Conclusions

1. In Republic of Moldova the echinococcosis constitute a high priority problem of public health through its severe impact upon people health and through the increasing of invasion spreading.

2. Hyperendemic districts are the western part of Republic of Moldova (Pru river basin), especially southern climatic–geographical zone, which fact is explained by the intense development of sheep breeding.

3. The most affected age categories are the children and the young people.

4. Sex distribution constitutes 48.0% in females and 52.0% in males.

5. The majority of the patients come from rural environment, the contact with dogs and domestic animals are the main contagion factors in majority of disease development cases.

6. In invasion prevention an important role shall have the collaboration between medical and sanitary-veterinary services.

7. The system of echinococcosis fighting in man and animals must be pointed out on sanitary education of the population (especially in rural localities) and on dog dehelminthesation.

### REZUMAT

Republica Moldova reprezintă o zonă endemică prin hidatidoză umană, înregistrând o morbiditate de 4,74 la 100 000 populație. Cele mai afectate sunt raioanele climato-geografice sud, unde acest indice depășește media pe țară de 3-4 ori. Creșterea și îngrijirea animalelor domestice media pe țară de 3-4 ori. Creșterea și îngrijirea animalelor domestice sunt factorii ce favorizează răspândirea acestei invazii.

**Cuvinte cheie:** hidatidoză, chist hidatic, om – câine – om, zoonoză.
Reference


2. ERHAN D., COAUT., Materialele Conferinţei IV a Zoologilor din RM, p. 15-20.