

Report

Human fascioliasis in some countries of the Eastern Mediterranean Region

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Introduction

Fasciola is a well known parasite of herbivorous animals. It has a worldwide distribution in the animal reservoir host. A large variety of animals, such as sheep, goats, cattle, buffalo, horses and rabbits show infection rates that may reach 90% in some areas. Infection of the human host was very sporadic until the last two decades when clinical cases and outbreaks were reported. It has now become an important emerging foodborne trematode infection of increasing concern [1]. The estimated number of people infected is 2.4 million in 61 countries. The number at risk is more than 180 million throughout the world. The largest numbers of infected people have been reported from Bolivia, China, Ecuador, Egypt, France, Islamic Republic of Iran, Peru and Portugal [2].

In the Eastern Mediterranean Region, only in the Libyan Arab Jamahiriya have no confirmed cases of human infection been reported, although animal fascioliasis is widespread and the potential for human infection exists. In Iraq, Lebanon, Morocco, Tunisia and Yemen fewer than 100 cases have been documented. It is possible that the problem has not yet received enough attention in these countries [2].

Human fascioliasis in Egypt

Introduction

Fasciola eggs have been detected in a mummy, confirming that human fascioliasis has existed since Pharaonic times. In 1928, two cases were reported and then in 1958, 11 cases were reported. Until 1978 only sporadic cases were diagnosed and they were generally considered false infections. The first few confirmed cases were diagnosed in 1978: by tracing their place of origin, a village in Abis area near Alexandria was declared an endemic focus [3]. Since then, the problem has received increasing attention. Now, different laboratories and clinical services have diagnosed human fascioliasis in all provinces of the Delta, in some provinces of Upper Egypt, in the city of Alexandria and in reclaimed desert land. Studies in some villages in the Delta have revealed prevalence rates varying between 2% and 17%. The population at risk in Egypt is considered to be 27 million. Accordingly, based on an estimated overall prevalence of 3%, the number of infected cases amounts to 830 000 individuals [2].

Characteristics of human fascioliasis

- The disease affects all ages, both sexes, all social classes and professions, par-

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ticularly inhabitants of rural areas. The prevalence is lowest in children under 5 years of age; the youngest child found infected was 16 months old. Females are more commonly infected, the sex ratio being 1.4:1. The distribution is clustered at all levels, family, village and province.

- Clinically, the disease occurs in acute and chronic phases with complications, particularly in small children [4].
- Fascioliasis may be associated with other parasites in the same order of their prevalence in the community. Association of *Fasciola* with *Schistoma mansoni* is common, but studies have proved the absence of mutual influence (immunological, pathological or epidemiological). Both *F. hepatica* and *F. gigantica* prevail in the human host and infection with both species is not uncommon [3].

Transmission

Animal reservoir. In the past, *F. gigantica* was the species infecting herbivorous animals throughout Egypt, while *F. hepatica* was restricted to the oases. At present, both species co-exist in domestic animals with infection rates varying between 30% and 90%. Infection with *F. hepatica* has even become more common than *F. gigantica* [5].

Snail host. Only *Lymnaea cailliaudi* has been detected in water bodies of the Nile Delta. These snails prefer clear, slow-running water with low salinity and abundant vegetation. The snail population is low in the summer months due to high temperatures, and increases gradually to reach its maximum in spring when the temperature is mild and vegetation flourishes. Overall, rates of snail infection vary between 10% and 40%. The highest infection rate was found to be in summer and this may be a

factor responsible for lowering snail density in this season [6]. *L. cailliaudi* has been found responsible for transmission of both *F. hepatica* and *F. gigantica*. *Biomphalaria alexandrina* has been found harbouring *F. gigantica* in areas reclaimed from the desert [7].

Dietary habits. In Egypt, many species of vegetables and weeds are eaten raw as salads, including *Eruca sativa*, *Lactuca sativa* and *Allium kurrat*. They are not aquatic but are grown along the banks of the water channels and need frequent irrigation. Once collected, they are washed in the nearby canals during their preparation for marketing. Irrigation and washing expose them to the cercariae which encyst and in a few hours become infective [6].

Incidence of infection. The highest number of cases presenting in the acute stage has been in the summer, particularly in August. This indicates infection at the end of spring or early summer. However, this should not overshadow the fact that transmission is continuous throughout the year [8].

Prevention and control

The Ministry of Health in Egypt has recognized the danger of this emerging trematode infection as an important public health problem particularly affecting women and children. It has undertaken several steps towards prevention and control.

- Raising awareness of medical staff, particularly doctors working in health units in rural areas.
- Training of technical personnel in diagnosis of fascioliasis.
- Coordination with universities and research centres to establish the magnitude of the problem and evaluate new drugs (triclabendazole) for treatment of human cases.

- Cooperation with the sectors involved to set a national plan for control of infection. For example, the veterinary sector is planning to apply a mass treatment campaign to the animal reservoir using triclabendazole, and the health education sector and Ministry of Agriculture plan to provide safe areas for plantation of vegetables away from all sources of pollution and particularly free of snails, the intermediate hosts.

Treatment

A clinical trial was undertaken in Egypt on triclabendazole, the fasciolicide drug of choice for animal infection [2]. The drug proved safe and well tolerated and very effective (the cure rate reached 90% in chronic infections). Triclabendazole has been recommended for human use and is presently in the process of certification.

Fascioliasis in the Islamic Republic of Iran

In the Islamic Republic of Iran, the first human case was diagnosed surgically in 1955. In the recent past, up to 100 cases have been diagnosed per year. In 1988, an outbreak, considered the biggest in the world, occurred in the Gilan province. It began in February 1988, lasted for 18 months, and about 10 000 people were infected. The outbreak was related to an increased consumption of local green aquatic vegetables in the province. Since the end of the outbreak, cases are still being diagnosed parasitologically and serologically in Gilan and Mazandaran provinces in the north and Isfahan in the central part of the country. The population at risk in these provinces is estimated to be 6 million and 10 000 are currently infected.

Studies in the Islamic Republic of Iran have revealed the following characteristics of infection.

- With regard to age, sex, clustering of cases and social class, the data are similar to those in Egypt.
- The peak of transmission is from February to June.
- The vehicles for metacercariae are the green aquatic vegetables, mainly water cress, lettuce and khali-vash (a variety of water cress) which is consumed mostly in February and March.
- Patients in the outbreak were treated with triclabendazole and the cure rate was 90%.

A control programme has begun for mass chemotherapy of animals, and snail control is carried out using molluscicides. In order to prevent human infection, health education and activities to raise awareness about the mode of transmission are the strategies being used at present until triclabendazole is registered for human use [10,11].

Fascioliasis in Yemen

Few relevant studies have been undertaken on the Yemeni population. In 1963, Nagaty, while undertaking a survey in different areas, reported the presence of *F. hepatica* ova in the stools of a five-year-old girl from Wosab El-Ali [12].

Examination of 37 000 stool specimens from persons presenting to the Central Public Health Laboratory in Sana'a, during 1982–1983 revealed the presence of *Fasciola* eggs in 185 specimens (0.5% of the stool samples). The author reported confirmation of the diagnosis by repetition of examination in some of the cases. In 1985, a

Yemeni patient was diagnosed by surgical recovery of the worms in the gall bladder (the operation was performed in the United States of America). In 1989, acute fascioliasis was reported as a cause of eosinophilia in Yemeni patients: 31% of patients with eosinophilia had specific anti-*Fasciola* antibodies in their sera. The presence of both *F. gigantica* and *F. hepatica* was reported in animals in Yemen, denoting the possibility of human infection with both species [12-14].

Conclusion

Fascioliasis is becoming an increasing threat to public health. However, there is still a lack of awareness of this emerging problem in countries in the Region. Health authorities in the different countries should be alerted to its importance. An urgent priority is to carry out surveillance studies to

determine the risk of infection. It is expected that the true prevalence is higher than that reported.

In endemic areas, all efforts should be directed towards control of this problem. Sound programmes for prevention and control should be planned and applied. The main points in prevention and control can be summarized as follows:

- mass treatment of the animal reservoir
- proper diagnosis and treatment of patients, using triclabendazole once certified
- snail control
- plantation of salad vegetables in safe areas
- health education and orientation towards proper washing of salad vegetables before consumption, using either 6% vinegar (100 ml/l) or potassium permanganate (24 mg/l) for 5 to 10 minutes [6].

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Zoonoses continued to be an important public health problem in some countries of the Region. The importance of zoonotic diseases particularly increased due to intensive human and animal population migration, increased international trade in animals and products of animal origin and intensification of animal husbandry practice in the Region. The surveillance and control of zoonoses is the responsibility of both public health and veterinary services. The importance of cooperation between the veterinary and medical sectors in the surveillance and control of zoonoses is becoming an essential requirement in view of emerging zoonoses and reemergence of others. A WHO regional seminar on international and intersectoral collaboration in surveillance and control of major zoonoses was held in November 1996 with the objectives of reviewing and strengthening means of cooperation between medical and veterinary services in Member States, and improving and adopting advanced strategies in surveillance and control of zoonoses.

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