

Evaluation of Hydatid Cyst Surgeries in Northern Iran (Mazandaran Province) During 2001-2007

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Abstract: Hydatidosis is one of the important zoonosis diseases. It has worldwide distribution and causes severe economic and hygienic damages to medical and veterinary industries. Human beings are infected with oral transmission of *Echinococcus granulosus* eggs. Considering the importance and damages caused by hydatid cysts, this study was conducted to evaluate hydatid cyst surgeries in Mazandaran Province. This was a cross-sectional study performed during seven years from 2001-2007. About 132 surgeries in this period of time, 73 subjects (55.3%) were female and 59 (44.7%) were male. Forty-seven (35.6%) of operated hydatid cysts were dissected from lung and 85 (64.4%) were from liver, indicating significant difference between two groups ($p < 0.01$).

Key words: Hydatid cyst, surgery, hydatidosis, *E-granulosus*, Mazandaran, Iran

INTRODUCTION

Hydatidosis is an ancient zoonotic disease of worldwide importance and causes by the taeniid tapeworm *Echinococcus granulosus* (Schantz *et al.*, 1995). The adult worm lives in the small intestine of a carnivore (definitive host) and the intermediate larval stage can infect a wide range of mammal species including humans that acquire the infection through accidental ingestion of eggs (Lightowers and Gottstein, 1995).

The eggs may be found on foods such as vegetables, fruits, herbs and contaminated water. They can also stick to the hands when a person handles or pets an infected dog, cat and wild animal or its carcass (Gohar *et al.*, 2001). The eggs are then transferred to the mouth on the hands. Uninfected pets, particularly dogs may also carry the eggs on their fur if they come in contact with the feces of infected wild hosts (Arbabi *et al.*, 1998). Due to importance and hazards of Hydatidosis and lack of appropriate drug therapy, we

decided to evaluate the amount of hydatid cyst surgeries in Mazandaran province for seven years from 2001-2007.

MATERIALS AND METHODS

This study was a cross-sectional study, which was conducted from 2001-2007 in major cities of Mazandaran Province in the field of hydatid cyst surgeries. From May 2001 to June 2007 questioners including data about city, amount of surgeries, age and gender of patients, position of operated cysts and other information were designed and offer to hospitals of Babol, Sari, Amol and Qaemshahr cities. Data collected from the hospitals were analyzed with t-test and SPSS (Version 10) statistical software.

RESULTS

In major hospitals of Mazandaran Province from 2001-2007, 132 patients were operated for Hydatidosis. Seventy three (55.3%) of the patients were female, while

Table 1: Evaluation of hydatid cysts surgeries in Mazandaran Province based on city, gender and position of dissected cysts

Years	Amol				Babol				Sari*				Qaemshahr				Total
	Gender		Position		Gender		Position		Gender		Position		Gender		Position		
	Male	Female	Liver	Lung	Male	Female	Liver	Lung	Male	Female	Liver	Lung	Male	Female	Liver	Lung	
2001	2	-	2	-	2	3	3	2	7	5	8	4	1	-	1	-	20
2002	-	1	1	-	-	5	4	1	5	5	5	5	-	-	-	-	16
2003	-	2	1	1	-	3	2	1	1	4	2	3	-	-	-	-	10
2004	-	3	3	-	5	3	6	2	4	9	8	5	-	-	-	-	24
2005	1	3	4	-	6	3	5	4	4	2	1	5	-	-	-	-	19
2006	1	2	2	1	4	4	5	3	2	3	3	2	1	-	1	-	17
2007	-	1	1	-	3	7	9	1	5	4	4	5	2	4	6	-	36
Total	4	12	14	2	20	28	34	14	28	32	31	29	4	4	8	-	132

*Number of surgeries in Sari is related to both of Boo-Ali and Imam Khomeini (R.A.) hospitals

Table 2: Evaluation of hydatid cysts surgeries in Mazandaran Province based on age groups of patients

Age groups	Male	Female	Total
0-10	5	4	9 (6.81%)
11-20	9	10	19 (14.39%)
21-30	13	20	33 (25%)
31-40	8	13	21 (15.9%)
41-50	4	10	14 (10.6%)
51-60	2	3	5 (3.78%)
61-70	13	7	20 (15.15%)
71-80	5	6	11 (8.33%)
Total	59	73	132 (100%)

59 (44.7%) were male. As shown in Table 1, 47 (35.5%) of operated cysts were dissected from lungs of patients and 85 (64.4%) were from liver organs. Statistical difference between these two positions was significant ($p < 0.01$). Greatest amount of patients were in the range of 21-30 years old with partial abundance of 25%, which had a significant statistical difference with other age groups ($p < 0.001$) (Table 2).

DISCUSSION

Hydatidosis is one of the most important zoonotic diseases, which is caused by the larval stage of *E. granulosus*. In Iran hydatidosis is an important parasitic disease and because surgery is the definitive therapy of it, every year a considerable percentage of hospital beds are occupied with patients suffering from hydatid cysts (Eftekhari, 2005). In most regions of Iran cattle, sheep and other livestock are breeding in traditional system with the help of shepherd dogs. Eating internal organs of contaminated slaughtered livestock by shepherd dogs, cause augmentation in contamination with *E. granulosus*. These animals excrete *E. granulosus* eggs in environment via their feces and will increase the risk of human affliction. Evaluations done on 3370 patients operated for hydatid cysts showed that 22% of them were in contact with pet dogs, 41% were in contact with shepherd dogs and 3% with roamer dogs (Kamhawi, 1995). According to these findings, shepherd dogs had more important role in contamination of human beings.

In a study in 1990 showed that Hydatidosis is most common in housekeeper women, considering vegetables as part of most Iranian family's daily diet, cleaning and eating raw vegetables may lead to parasite eggs entrance in digestive system. This study done by Roknii showed that 6% of women operated for hydatid cyst, in a period of their lives had pica and ate soil (Eslami, 2004). In this study, maximum of patients was in range of 21-30 years old with abundance of 25%. In parallel with this study, Eftekhari (2005) showed that 28.3% of hydatid cysts patients hospitalized in Kerman medical university hospitals were in age group of 21-30 years old.

Kamhawi (1995) in a study on 679 hydatid cyst patients in Jordan reported that the most common suffering age group was 21-30 years old group. Considering long time commune period of this disease and manifestation of clinical signs in middle age active time of a humans life contamination by this disease causes major economic and hygienic damages in society. In a study done in 1996 in Babol, 5 hydatid cyst operations were done in the hospitals of this city. In comparison to the population of Babol in that year, prevalence of Hydatidosis was 1.18 in 100,000 but in 2007 operations was reached to 10 and prevalence was 1.66 in 100,000. This increase in the prevalence of Hydatidosis should be an alarm for Mazandaran Province and its managers to pay more attention to Hydatidosis. In this study, 65.9% of hydatid cysts were dissected from livers, while 34.1% were from lungs (Ghaffari, 1999). Most studies done in Iran and other countries of the world showed that occurrence of hydatid cyst in livers was more than lungs.

In two previous studies conducted by Haghi in Mashhad and Saberi in Tabriz, observation of hydatid cysts in lungs was more than livers (Amouian *et al.*, 2004). Also, in other investigation showed that 44.85 and 39.4% of operated patients in Mashhad had cysts in lungs and livers, respectively (Amouian *et al.*, 2004). Considering the mechanism of *E. granulosus*, pathogenesis observing more cysts in lungs than livers is not justifiable. Surgery

is a definitive therapy for hydatid cyst and every year a considerable percentage of hospital beds are occupied with patients suffering from this disease. As mentioned before, this study was done just in Mazandaran Province hospitals and because of short distance from Tehran (capital of Iran) and easy access to it surely a considerable number of this province patients were operated in Tehran hospitals.

CONCLUSION

Hydatid cyst has high prevalence in human and domesticated animals of Iran and causes great hygienic and economic damages in this country. Reducing this difficulty needs a controller hygienic plan in all over the country, particularly enhancing awareness and knowledge of all society especially women and individuals practicing high risk jobs.

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REFERENCES

Amouian, S., N.T. Meybodi and N.M. Roshan, 2004. A retrospective study of 1759 cases of Hydatid cyst in Mashhad university hospitals. *Hakim Res. J.*, 7: 8-14.

Arbabi, M., G. Masoud and A.D. Asl, 1998. Seroepidemiologic prevalence of Hydatid cyst in Hamedan 1991. *J. Kashan Univ. Med. Sci.*, 2: 45-50.

Eftekhari, F., 2005. Clinical and demographic features of patients with Hydatid cyst admitted in Kerman University hospitals between 1991-2000. *J. Kerman Univ. Med. Sci.*, 12: 252-257.

Eslami, A., 2004. *Veterinary Helminthology*. 3rd Edn., Tehran University Press, Tehran, Iran, ISBN: 964-03-3907-5, pp: 149.

Ghaffari, S., 1999. Study of operated hydatid cysts cases in three medical centers of Babol Medical University during 1991-96. *J. Babol Univ. Med. Sci.*, 1: 27-33.

Gohar, S.H., G. Massoud, M. Rokni and E.B. Kia, 2001. *Seroepidemiologic* of human hydatidosis in Shahrar area, south of Tehran in 1999. *J. Kerman Univ. Med. Sci.*, 8: 44-49.

Kamhawi, S., 1995. A retrospective study of human cystic *Echinococcosis* in Jordan. *Ann. Trop. Med. Parasitol.*, 89: 409-414.

Lightowlers, M.W. and B. Gottstein, 1995. *Echinococcosis/Hydatidosis: Antigens, Immunological and Molecular Diagnosis*. In: *Echinococcus* and Hydatid Disease, Thompson, R.C.A. and A.J. Lymbery (Eds.). CAB International, Wallingford, Oxon, UK., ISBN: 0-85198-910-1, pp: 355-410.

Schantz, P.M., J. Chai, P.S. Craig, J. Eckert, D.J. Jenkins, C.N.L. Macpherson and A. Thakur, 1995. Epidemiology and Control of Hydatid Disease. In: *Echinococcus* and Hydatid Disease, Thompson, R.C.A. and A.J. Lymbery (Eds.). CAB International, Wallingford, Oxon, UK., ISBN: 0-85198-910-1, pp: 233-332.