Human Hydatidosis: A Negliged Zoonosis and Underdeclared at the University Hospital Center of Tlemcen, Algeria: 16 Years of Registration from 2003 to 2018

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Abstract: Hydatid disease is considered as an important emerging neglected disease worldwide. Cystic echinococcosis is a neglected disease of public health significance in many low and middle-income countries. The objective of our study was to determine the epidemiological profile of human hydatidosis in Tlemcen. A prospective study was conducted at University Hospital Center (UHC) of Tlemcen, from 2003 to 2018 from the declaration of notifiable diseases. Data entry and analysis was done using Epi-info software 6. One hundred and fifty-eight (158) patients were declared during 16 years of registration at the UHC of Tlemcen. Ninety three point zero three percent (93.03%) of the reports of cases were received from the surgical services and 6 cases from the pneumology department. A slight female predominance was noted with sex-ratio (Females/Males): 1.15. More than half of the patients were subjects over 40 years old. Three cases were noted in children. The average age was 42.38 ± 17.14 years. The liver was the most frequent organ involved in our study followed by pulmonary localization. Fifty one point eight seven (51.87%) of cases were from rural areas and 46.2% from urban areas. Human hydatidosis remains an under-reported and neglected disease in Tlemcen whose fight is essentially based on preventive measures and requires multisectoral collaboration.

Key words: Humans hydatidosis, cystic echinococcosis, epidemiology, declaration, prevention, Tlemcen.

1. Introduction

Hydatid disease is considered as an important emerging neglected disease worldwide [1, 2]. Cystic echinococcosis (CE) is a neglected disease of public health significance in many low and middle-income countries [3].

Hydatidosis is a widespread zoonosis infecting a large number of wild and domestic animals and humans. The agent of this disease is a tapeworm from dogs and other Canidae whose larval stage develops as a liquid tumor, called a hydatid cyst [4].

Cystic echinococcosis (CE) is one of the most

important zoonotic diseases in the world and is currently among the five most frequently diagnosed zoonoses in the Mediterranean (along with brucellosis, rabies, leishmaniasis and food-borne zoonotic infections) [5].

In Arab countries, human hydatidosis was known long ago, like North Africa [6], Algeria [7], Tunisia [8], Morocco [9] and Libya [10].

Algeria, Morocco, Tunisia, these countries are primarily agricultural, rural areas where echinococcosis is hyperendemic [11].

In the province of Tlemcen as in Algeria, hydatidosis is one of the most common zoonosis, the epidemiological situation of zoonoses in the Tlemcen Teaching Hospital over a period of 5 years has shown that the hydatid cyst is one of the most important zoonoses [12].

The objective of our study was to determine the

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epidemiological profile of human hydatidosis in Tlemcen.

2. Materiels and Methods

A prospective study was conducted at University Hospital Center (UHC) of Tlemcen, from 2003 to 2018. Profiles of each patient were recorded, including age, sex and location of cysts; from the declaration of notifiable diseases from various departments of the UHC of Tlemcen. Data entry and analysis was done using Epi-info software 6.

3. Results

A total of 158 patients were declared during 16 years of registration at the UHC of Tlemcen, from 2003 to 2018. Annual incidence showed that no reporting was

made for six years from 2008 to 2013, the highest number of cases was reported in 2005 and 2015 with 30 cases for each year (Fig. 1).

A slight female predominance was noted with sex-ratio (females/males): 1.15. More than half of the patients were subjects over 40 years old and three children aged 1, 11 and 16 years were noted (Table 1). The average age was 42.38 ± 17.14 years with a minimum of one year and maximum of 84 years.

Ninety three percent (93%) of the declared cases were received from the surgical services and 7% from medical departments, essentially the pneumology department.

Fifty one point eight seven (51.87%) of cases were from rural areas and 48.13% from urban areas (Table 1).

Fig. 1 Incidence of humans hydatidosis declared at the UHC of Tlemcen from 2003-2018.

Table 1 Descriptive characteristics of patients with hydatid cyst at the UHC of Tlemcen from 2003-2018.

Variable	Categoreis	Number of cases (N = 158)	Percentage
Gender	Female	85	53.80
	Male	73	46.20
Age of patients (years)	< 16	03	01.90
	17-29	42	26.58
	30-39	30	19.00
	40-49	35	22.15
	50-59	23	14.55
	≥ 60	25	15.82
Residency	Rural	83	51.87
	Urban	75	48.13

Table 2 Anatomical sites of hydatid cysts declared at UHC of Tlemcen 2003-2018.

	Female N (%)	Male N (%)	Total N (%)
Affected organs			
Liver	73	65	138 (87.34)
Lung	9	7	16 (10.13)
Other localization	3	1	4 (2.53)
Pelvis	2	1	
Spleen	1	0	
Total	85	73	158 (100)

The liver was the most common organ affected by this disease followed by pulmonary localization. The pelvic localization was found in three patients and one case whose localization was splenic (Table 2).

4. Discussion

4.1 Trends of CE over Time

The total number of cases of human hydatidosis reported to the UHC of Tlemcen between 2003 and 2018 was 158 cases. The real number is underestimated due to the non-reporting of many cases.

The annual incidence has shown that no declaration has been made for six years, which may be explained by the fact that this disease is still under-reported and neglected by health personnel.

The situation of notifiable diseases at the university hospital center of Tlemcen between 2014 and 2015 showed that the under-reporting remains one of major problems encountered in the epidemiological surveillance of notifiable diseases [13].

4.2 Distribution of Cases by Age and Gender

In our study, 158 cases of human hydatidosis were collected over sixteen years with a slight female predominance, sex ratio (men/women) of 0.85. The average age was 42.38 ± 17.14 years old with a minimum of one year and a maximum of 84 years, the young adult is the most affected. More than half of the patients were subjects over 40 years old. These results are consistent with several studies in many countries.

In Algeria [14], a study was carried out in order to know epidemiological profile of 290 cases of human cystic echinococcosis diagnosed at the Mustapha

university hospital in Algiers (2006 to 2011) who found the same sex ratio (men/women) of 0.84, the median age, all one confused is 34 ± 21 years old with extremes of two and 89 years old. This affection is always the prerogative of the young adult.

In Sudan [15], a retrospective study was conducted during the period of 2012 to 2014, the results found in 572 cases that the prevalence rate of human infection was significantly higher in female than male.

A study in Egypt [16] between 2013 and 2015 upon 45 patients showed that the hepatic hydatidosis prevalence increased in the age group > 40 years.

In Yemen [17] females are more prone to infection compared to males. A prospective study [18] was carried out in 2013 on seven patients showing that all infected patients were females; while, none patient male was found.

A retrospective study in Iraq [19] was reported among 50 cases, that CE affected more females (61.2%) than males (38.8%), the age of the CE patients ranged from 4 to 72 years (median: 39.5, standard deviation: 14.8).

Also, in Ethiopia [20], a significantly higher incidence of CE was seen in female patients, the highest incidence of CE was observed in the age group of above 40 years, which indicates that the rate of infection of CE increases as the age of the patient advances. Also, people in this age group are probably the most active in livestock rearing.

In India [21], the mean age of 54 patients suffering from hydatid disease was 43.9 years (range: 10-98 years). Highest numbers of cases were seen among age group of 40-49 years. In the same country, another

study [22] done on 45 patients showed the overall range between 20-40 years old as the highest rate infection of age group.

In Iran [23], from 2006 to 2013, a total of 182 hydatidosis patients were diagnosed. Mean age of patients was 44.5 ± 21.5 years at range of 3 to 91 years. Most cysts are diagnosed in the patients of the age group 20-50 years (47.2%) and then in the age groups higher than 51 years (38%).

A higher occurrence of CE in females has similarly been reported in other countries including Jordan, Tunisia, and Iran [24, 25].

The highest incidence of CE was observed in the age group of above 40 years, which indicates that the rate of infection of CE increases as the age of the patient advances. Also, people in this age group are probably the most active in livestock rearing [20].

Also, predominance of the disease in women might be due to the fact that females are more frequently exposed to the infection than males due to being engaged more in domestic activities including feeding of dogs and preparing food for the family [19]. Other studies did not find difference by sex [21, 23].

4.3 CE in Children

The hydatid cyst affects children and adults and both are susceptible to infection [16]. Our study showed that three children were affected (1.9%), this percentage is underestimated due to under-reporting of cases.

A study conducted in Algeria [14] revealed that the child represents one quarter among 290 cases. In Egypt [16], 37.7% of children aged between 5 and 15 years were affected in a total of 45 subjects. In Yemen [18], the higher rate of infection was recorded in age group less than 20 years old, two cases are noted among seven cases of CE (5%).

4.4 Distribution of Cases by Localisation

The liver was the most frequent organ affected by CE followed by the lung. Cysts in humans are predominantly found in the liver and the lungs [26, 27].

In Algiers [14], the liver is the majority (72%), the lung occupies the second place (20%).

Many studies have shown that the high infection rate was recorded in liver: Sudan [15], Egypt [16], Yemen [18], Iraq [19], Ethiopia [20], India [21] and Iran [23].

Three cases of pelvic localization were noted in our study. Pelvic localization is an exceptional location of hydatidosis [28, 29]. Although rare, its diagnosis is to evoke in front of a pelvic process in endemic countries for hydatidosis [29].

In our study, one case of CE with splenic location has been recorded occupying the 4th position. Splenic hydatid cyst accounts for about 4% of abdominal locations of hydatidosis [30], it comes in 3rd position after the liver and lungs [31]. Involvement of the spleen is relatively rare, even in endemic areas [32]. In Africa, it is mostly met in the Maghreb [33].

4.5 Distribution by Regions

In our study, a little more than half (51.87%) of the patients originated from a rural area sheep-raising.

In India, majority of patients were from rural areas (46.67% (21/45)) and the remaining (4/45) were from urban areas [22].

In Iraq, nearly three-quarters of the patients (74% (37/50)) originated from a rural area [19].

5. Conclusion

To date, no official program for combating this parasitosis exists in Algeria. Apart from health education and media awareness in the run-up to El Kebir holiday, the other measures seem more difficult to apply in the field because it is a whole behavior and customs that we should try to change [14].

This study shows that human hydatidosis is common in women, which affects subjects at different ages; especially those over 40 years old. It is characterized by the dominance of the hepatic localizations, followed by pulmonary localizations.

Human hydatidosis remains an under-reported and neglected disease in Tlemcen whose fight is essentially

based on preventive measures and requires multisectoral collaboration.

Health professionals are compelled to notify this disease to know the real situation and allow regular surveillance. Also, awareness on the part of the general population about prevention of hydatidosis is important.

Conflict of Interest

No conflict of interest.

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