



The relationship between the bacteria *Mycobacterium tuberculosis* Avium in human city of Ardabil

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ABSTRACT: Tuberculosis, a disease of the WHO for Animal Health B List. This study is a retrospective study of human TB statistics in years 2011 to 2014 in surrounding villages of Ardabil. The results of our study determined that in 2011 from 589604cases, 3 persons were infected considering that all of the 3 cases have house hold poultry. In 2012 from 562586cases, 25 persons were infected considering that 13 of them have house hold poultry. In 2013 from 562384cases, 39 persons were infected considering that 25 of them have house hold poultry. In 2014 from 589615cases, 21 persons were infected considering that 9 all of them have housed hold poultry. The study revealed that 56.8% of the under study house hold poultry were infected by *M. Avium*. So it can be concluded that there is a significant relation with infected house hold poultry keeping and infection of human to Tuberculosis.

Keywords: Mycobacterium- tuberculosis - human- poultry-m .Avium

INTRODUCTION

Avian tuberculosis which its cause is mycobacterium avian tuberculosis is one of the most important diseases which influences both on pet animals and birds and human kind.

Avian tuberculosis is listed in B category of World Health Organization that this indicates the importance of this disease. Because of freely moving of birds and also keeping them in cage this disease is contagious and causes its more spread (K. Dhama *et al.* 2007). This disease is mostly widespread in northern and temperate regions (G. Singh *et al.* 1968; K. Dhama *et al.* 2007). Of course, Tuberculosis (TB) has a worldwide spread. Birds such as sparrows, pheasant and partridge both are more susceptible to be infected with this disease and are very sensitive to it (A. Aranaz *et al.* 1997). After infecting to avian tuberculosis which its cause is mycobacterium avian, these birds may be remain alive for months and because these birds mostly are kept in cage (K. Helhicek *et al.* 1995), they are disease carrier and can transfer it to other birds and especially human kind. Some of symptoms of TB include impotence, atrophy of chest muscles, diarrhea, TB nodules in liver and spleen and also injuries in lung (R. M. Fulton *et al.* 2003; L. A. Tell *et al.* 2007). Genotype IS901 and IS1242 of mycobacterium avian cause infections in human kind and animals and also shows sensitivity to tuberculosis test (L. Dvorska *et al.* 2007). This article addresses infection of avian mycobacterium in birds and their importance in a common ordinary outlook of human kind and livestock and canonization of new strategy for diagnosis, prevention and eradication of this disease in birds, pet animals and human kind.

Avian tuberculosis is more widespread in the cases which has poor safety system (immunity defect) or live at poor sanitary conditions (G. A. Falk *et al.* 1973; F. Biet *et al.* 2005; D. Van Soolingen *et al.* 1998). If avian tuberculosis is transferred to human kind, it causes a progressive disease which is resistant to cure with antibiotics, which as the first place of lymphadenitis causes lung disease and sporadic infections in different points (R. N. E. Eccles *et al.* 1995). If this disease is observed in aviculture and if is diagnosed late, it causes decrease of productive eggs and also increase of their mortality and finally causes intensive economical losses (K. Dhama *et al.* 2007; C. O. Thoen *et al.* 1998; E. Boughton *et al.* 1969; C. M. Kahn *et al.* 2005). Therefore, we want to investigate that whether there is a relationship between avian tuberculosis and human tuberculosis, whether those who had contacts with the birds infected to TB have been infected to this disease by contacts, and finally how many people infected to TB in Ardabil City have had contacts with birds and pet animals.

MATERIALS AND METHODS

This study is a retrospective research of human TB statistics in Ardabil city and its adjacent villages. Referring to Health Center of Ardabil City, totally 88 people were infected to TB who were selected as studied population. This study indicated that %56.8 of families had pet birds in the place they were living. Then, randomly bacterial culture from poultry was performed. Also, according to symptoms of avian TB, they were infected to mycobacterium avian.

And then after entering data and analyzing by SPSS16 system and EXCEL system, it is found that there is a meaningful relationship between poultry keeping in the places where human kind lives and infecting to human TB. Generally, treatment of infections resulting from mycobacterium avian is done by using antibiotics such as isoniazide, etambutole, rifampicin and siprofloccasin. On the other hand, it should be noted that mycobacterium avian is resistant against these anti-TB medicines (N. Van Der Heyden *et al*, 1997).

FINDINGS

46 persons of the patients were men and 42 were women. Histologically, 56.8% of the infected people was keeping poultry or pet birds at the place they were

living and 43.2% included other factors. 63 people lived in Ardabil City and 25 in environ villages of Ardabil City and also studies showed that the most spread of TB is seen in those who have poor safety system (e.g. HIV patients) (G. A. Falk *et al*, 1973; F. Biet *et al*, 1995; D. Van Soolingen *et al*, 1998).

CONCLUSION

According to performed researches in this study in years 89, 90, 91, and 92, totally 88 people were infected to TB, who 50 persons of them were keeping poultry in their houses and according to statistical analyses by SPSS system, there was a meaningful and significant relationship between keeping poultry and infecting to TB disease (Chart 1 and 2) (Tables 1 and 2).

Table 1: The total number of people with TB by year.

Cumulative percent	Variable percent	Percent	Abundance	Year
3.4	3.4	3.4	3	89
31.8	28.4	28.4	25	90
76.1	44.3	44.3	39	91
100.0	23.9	23.9	21	92
	100.0	100.0	88	Total

Table 2: Number of patients with tuberculosis, by keeping poultry.

Keeping poultry	abundance	percent	Variable percent	Cumulative percent
With poultry	50	56.8	56.8	56.8
No poultry	38	43.2	43.2	100.0
Total	88	100.0	100.0	

In years 89 and 90, spread of this disease was progressing so that in 89 only 3 persons were infected but in years 90 and 91 TB reached to its peak meaning 25 and 35. Fortunately, by preventions and treatment actions in 92 this amount reached to 21 people (Table 1, Chart 3), but infections resulting from mycobacterium avian (cause of avian TB) is increasing which encompasses both human kind and birds. This studies shows that most of human TB infections are attributed to infected milk, diary productions, chicken and poultry and those who had contacts with poultry or pet birds and also had poor sanitary conditions and finally had incomplete safety system, most amount of TB prevalence especially avian TB has been seen in them. There is not any satisfactory treatment for avian TB, but by means of accurate management and applying sanitations this disease can be eradicated easily from infected aviculture. To do so, sometimes the infected should be sent into slaughterhouse and devices and environment should be well-disinfected before entrance of new chickens. Therefore, by observing general hygiene and less contacts with pet birds and avoidance from contacts with pet birds and not keeping wild birds one can prevent from spread of avian BT.

Identification, prevention and control of avian TB, which is one of the common dangerous diseases between human kind and livestock, is a priority for the Ministry of Health.

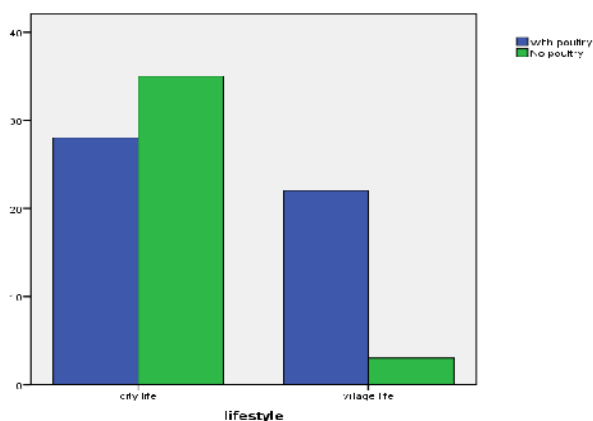


Chart 1. Total number of people with TB disease poultry kept by the type of life.

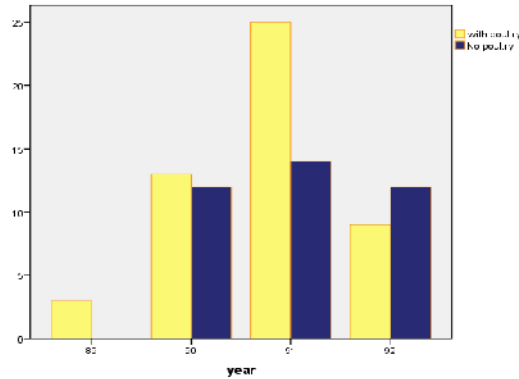


Chart 2. Number of people with TB disease of poultry kept by year.

Table 3: Total number of people with TB disease of poultry kept by year.

Year	Keeping poultry		Total
	With poultry	No poultry	
	89	3	
90	13	12	25
91	25	14	39
92	9	12	21
Total	50	38	88

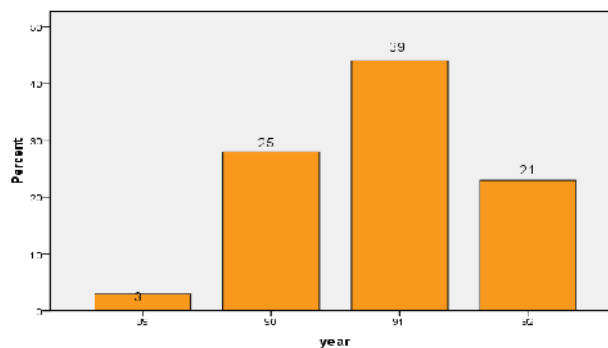


Chart 3. Number of patients with TB in the 92-89.

DISCUSSION

In the studies which have been performed in years 89, 90, 91, and 92, totally 88 people were infected to TB, that in 89 from the total population of 589604 people, 3 people was infected to TB, who all these three persons were keeping poultry and pet animals and birds and in 90 from the total population of 562586 people 25 persons were infected to TB and 13 people of them were keeping pet birds and animals and also in 91 from the total population of 582364 people 39 persons were infected to TB, that about 25 people of them were keeping pet birds and animals and finally in 92 from the total population of 598615 people 21 persons were infected to TB that about 9 people were keeping pet birds and animals.

According to studied performed in India by Manish Mahendran and his colleagues, there is not a satisfactory treatment for avian TB and also if a herd is infected to TB, all of them should be obliterated and

also the tools which were in contact with the herd should be disinfected and obliterated.

Avian TB is a common disease between human kind and livestock which is identified as a dangerous disease that its prevention and control is a priority for Ministry of Health.

The performed studies indicate that many human TB infections are attributed to milk, dairy products, chicken and poultry and most amount of TB spread especially avian TB has been seen in those who had contacts with them and also had poor sanitary conditions and finally had incomplete safety system.

RECOMMENDATIONS

1. Those infected people to TB who have contacts with livestock and poultry should be investigated.
2. More experiments and evaluations of livestock, poultry, cows and sheep and also tuberculosis test from them should be performed in order to considering infection of mycobacterium avian.

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