

**EPIDEMIOLOGY STUDY AND ROLE OF ANTI-HELMINTHES IN  
TREATMENT OF DERMATITIS DUE TO INFECTION  
WITH *ANCYLOSTOMA DUODENALE* PARASITE**

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**ABSTRACT**

During the period from November 2009 to July 2010 412 stool samples were examined from villagers whom engaged in the cultivation of lettuce crop. They were visitors to the dermatology and chest departments in Hilla hospital complaining of dermatitis, and 39 sputum samples also collected from the same model of lecture farmers.

The total percentage of infection among the total farmers harvesting lecture is 63.23 % 55.90% is the overall percentage of those suffering from skin manifestation due to the *A. duodenale* parasitic infection. While the total percentage of other infected farmers infected are not engaged in the same plant is 8.44% 7.69% of them suffer from skin manifestation of the disease. The total percentage of patients without dermatitis was 5.55%. Sputum tests showed that the parasite larvae mentioned still infest a lot, especially rural people with overall incidence about 17.94% with *A. duodenale* and chest problems. It considered as the main cause of the dermatitis and chest infections to those visiting these centers with misleading diagnosis.

**KEYWORDS:** Epidemiology, Dermatitis

**INTRODUCTION**

Among the biggest problems facing the medical parasitology, is the problem of controlling and eliminating the spread of human worms, which became a problem of the age. Approximately 150 worms can infest and cause multiple diseases in children and adults leading to the affection of the economy in many of the countries of the world (Zangana & Fawzi, 1999, Heukelbach and Feldmeier, 2008 ) *A. duodenale* is one of the most prevalent worms, which spread between the 45 north and 30 southern hemispheres where more than half of the population lives in the globe. The latest statistics records that nearly 50% of population of those infected regions form a quarter of the population of the globe (Mapyaw Bullu, Xoa Tux Kudl, 1985). The first record casualties In Iraq has been carried out by two scientists Denecke, 1954, Bailly, 1955.

Adult worms live in the intestines and feed on blood and tissue fluids, and the mucous membrane of the intestine Infection usually occur as the result of larval penetration of the skin when the patient become in contact with fasces or contaminated materials, causing allergy and sensitivity leading to the appearance of maculo - papular rash with itching. In some cases the entry of bacteria causing serious skin complications. The presence of larvae in the lungs bronchi to pneumonia or in extreme cases causing hemorrhage and anemia (Al-Hadithi and Habash, 1986, Simon and Simon, 2003 ). Many scientists and researchers worry about this parasite which causes damage as result of infection therefor they

conducted a lot of researches to record injuries. Iraq is one of the countries which have the nature and the atmosphere that helps the spread the *A. duodenale* worm (Sopoonof, 1985). From 4973 examined patients in Basra the rate of infection was 3.4% (Rhadi, 1994 ). and from 345 examined in Muthanna the incidence was 0.9% ( 1988 ) and from 1820 examined in Erbil, Baghdad, Babylon the infection rate was 0.1%, 4.1%, 1.1% respectively ( Niazi et al, 1975 ). While the infection rate among 404 patients examined in the city of Mousal was 20.0% (Al-Hanoon & Hayatee, 1980). And 0.7% from 2680 examined in the city of Najaf (Al-Nahi & Alaa, 1998).

The incidence of infection somewhat unequal in Arab countries e.g. in the city of zafar in Oman there is high incidence among children in primary school, where it is about 23.4% ( Jassim, 1996 ). While the infection rate by this parasite is 0.4% among other intestinal worms in the city of Riyadh in Saudi Arabia (Abdel – Hafez et al, 1987). The incidence of this worm is very high in Thailand (92.5 % ) if compared with the infections of the rest of other worms, the incidence of dwarfs worm ( *H. nana* ) is 5.5% and 0.7% for (Ascariasis ) ( Keittivuti et al, 1982 ). The injuries with hook worm still a big problem because it causes many diseases and infection in different part of the body

### **The Objective of this Study**

- Knowledge of the infection incidence rate among the population of the villages of the city of Hilla
- Knowing the complications of these worms which gives abnormal presentation

### **MATERIALS & METHODS**

412 stool from suspected rural and urban citizens and 39 sputum samples from other patients whom complaining of hemoptysis and other respiratory tract symptoms are collected in the chest health center from sreadeb, alkhamessis, almaamera and alruffaite in Babylon governorate. By differentiation of the different samples into groups, the stool samples are examined in Kuffa medical institute laboratories while the other sputum sample are examined in the laboratories of chest health center in Hilla governorate by using the following techniques :-

- **Direct Smear Test : ( Stool Test )**

Drop of normal saline or distilled water placed in one of a glass slide and about 1gm of stool was mixed with wood stick thoroughly and then covered with slide. Same procedure is repeated in the opposite side of the same slide after addition of iodine solution in order to stain the eggs if the former technique does not reveal any finding. After the examination of ready sample by light microscope, hook worm ovum were seen clearly surrounded by thin smooth shell with retraction of cleavage leaving a clear space (Crompton and Savioli,2007).

- **Simple Stains Methods**

Sputum taken from the patients placed over the slide, examined directly under light microscope to visualize the larvae. In certain circumstances it is very difficult to see it, so simple stain method is used as an alternative. For this purpose a sputum sample placed on the slide and fixed by burner lamp then a drop of sefranine or crystal violet is placed over the sputum. After one to two minutes interval the slide washed with taped water smoothly, then examined under light microscope to visualize the larvae in the positive sample clearly ( Jiménez and Navarro,2013).

In most instance, it is very clear to see the hookworm ovum with thin smooth shell and there is retraction of cleavage leaving a clear space. This will give an excellent and positive result.

The biostatistical work carried out by using chi – square, to identify the least significant differences at  $P > 0.05$  % (Al-rawi, 1989 )

## RESULT AND DISCUSSIONS

During the period extending from November 2005 to July 2006 204 stool samples were collected from villages farmers whom cultivate lettuce cropping and 154 samples from other rural whom seeding other plants and 54 stool samples from other patients visiting the dermatological department in Hilla hospital from different ages and gender. 39 sputum also collected from the first group. Our attentions are focused on this group whom attending the hospital complains from sever itching, hypersensitiraty with signs of dermatological inflammation in the same sites with or without cough. Samples differentiated as shown in tables 1, 2, 3, 4.

This study proved that there is an epidemic of *A. duodenale* infection in Babylon governorate due to the use of human and animals waste as manure during implantation and seeding of the lettuce plant. From data collected as shown in table 1, *A. duodenale* is still widely distributed parasite and seems to be a health hazard in that regions. The total incidence of infection in rural citizens is 63.23% and this seems to be high if compared with result documented by ( Al-qurashi, 2002 ) in Hilla city and its adjacent villages.

The total incidence for other rural practicing other plants was less (8.44% ) as shown in table 3. ( 5.55% ) in the percentage of infection collected from patients visiting the dermatology center in general Hilla hospital without dermatitis as shown in table 4. This seem to be normal result because the use of the human and animal wastes for seeding and other agricultural purpose although it seems to be high if compared with the result documented by Al-Quraishi.

Most of patients visits the dermatology department are complaining of sever itching, skin lesions extend from simple mucus – popular rash to sever infection in the lower extremities associated with cough. This is the major complain leading them to visit the dermatological dept. and chest center for help with misunderstanding their problem leading to misdiagnosis with other dermatological diseases like contact dermatitis, Pediculosis, skin infection or acute bronchitis, without any change in their health. The incidence of infection was decreased 5 month after treatment with suitable therapy and the use of other techniques other human and animal manure in addition to encourage population not to defecate or urinate in rivers or near plants. This was normal habits in the mentioned regions. Cough stop, skin lesions healed and there was a decline in symptoms in most patients infected by this parasite. Our study reveled that the incidence of infection by this parasite in the primary cause. As shown in table 1, the percentage of the total sufferers with dermatitis lesions was 55.90% among lettuce farmers. While it was 7.69% among other farmers (table 3) and the incidence was Zero among the visitors of the dermatology dept. sputum samples were collected from the same patient illustrated in table 1 to discover the main cause of cough in those patients. The samples gives the finding shown in (table 2) with incidence rate 17.94%. The increasing acknowledgement of the burden imposed by helminthes, particularly since the last quarter of the 20th century, has led to the implementation of large-scale control and elimination programmes. Despite much advancement in controlling these diseases, obstacles remain that challenge the global public health community. There is a clear need for an innovative research framework that is thoroughly integrated with the programmes, holistic in approach, collaborative and

global in perspective, and that assesses current understanding, identifies gaps in knowledge, and seizes opportunities to address specific needs and move the helminthes control agenda forward. Although millions of doses of anthelmintics have been administered to patently infected and exposed individuals in endemic areas, in some cases for prolonged periods, helminthes infections still persist in their host populations and they appear to be resilient to control interventions (a consequence, in part, of their population biology). Moreover, helminthes diseases, which are often considered as chronic and ancient scourges of humanity, may become re-emerging diseases as new outbreaks are reported in response to environmental, demographic, and socio-political changes, migration, travel, forced human displacement, and shortages of clean water. Understanding the biological, environmental, and social determinants of such persistence, as well as the driving forces of these emerging and re-emerging public health challenges, is crucial to steering the needed research and to harness the potential of new scientific advancements that can be translated into improved or novel intervention tools. It is important to remember that a large-scale elimination of the infection reservoir will also depend on improving sanitation, providing access to clean water, disposing adequately of excreta and solid waste, promoting access to health services for diagnosis and treatment, and facilitating adequate housing and health education. ( Krauth *et al.*, 2012 ; Lustigman *et al.*, 2012)

**Table 1: The Villagers Who Practicing Lettuce Agriculture with Dermatitis**

Age	No.	Patients Positive Stool Test	% of Sufferer	P. With Posit. Stool and Dermatitis	% of Sufferers
6 – 12	34	7	20 – 58	5	71.42
12 – 18	73	51	69 – 86	32	62.74
18 and above	97	68	71 – 13	34	49.27
<b>Total</b>	<b>204</b>	<b>127</b>	<b>63.23</b>	<b>71</b>	<b>55.90</b>

**Table 2: Infected Lettuce Group Patients Different Ages in Rural Area with Dermatitis and Positive Sputum Test**

Age	No.	Patients Positive Stool Test	% of Sufferer	Patients With Anemia and Hemaptesis	Patientswith Positive Sputum	% of Sufferers
6 – 12	34	7	20 – 58	4	2	50
12 – 18	73	51	69 – 86	22	4	18.18
18 and above	97	68	71 – 13	13	1	7.69
<b>Total</b>	<b>204</b>	<b>127</b>	<b>63.23</b>	<b>30</b>	<b>7</b>	<b>17.94</b>

**Table 3: The Villagers that Practicing Other Agriculture with Dermatitis**

Age	No.	Patients Positive Stool	% of Sufferer	P. With + Ve Stool and Allergy	% of Sufferers
6 – 12	27	1	3.70	/	/
12 – 18	59	4	6.77	/	/
18 and above	68	7	10.29	1	14.28
<b>Total</b>	<b>154</b>	<b>13</b>	<b>8.44</b>	<b>1</b>	<b>7.69</b>

**Table 4: The Total Patients Attending Dermatology Department without Dermatitis**

Age	No.	Patients With Positive Stool	% of Sufferer	P. With Pos. Stool And Allergy	% of Sufferers
6 – 12	13	/	/	/	/
12 – 18	22	2	9.09	/	/
18 and above	19	1	5.26	/	/
<b>Total</b>	<b>54</b>	<b>3</b>	<b>5.55</b>	<b>/</b>	<b>/</b>

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