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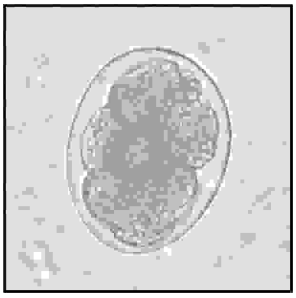

HOOKWORM INFECTION;

ITS CORRELATION WITH HAEMOGLOBIN IN RURAL POPULATION OF MUSTAFA ABAD (LULLIANI) DISTRICT KASUR

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ABSTRACT... Objectives: To find out prevalence rate of hookworm infection in a rural community of Pakistan. To find out whether a significant correlation exists between hookworm infection and haemoglobin. This study "Correlation of hookworm infection and haemoglobin" was conducted in rural population of Mustafaabad (Iulliani) located in District Kasur. (Pakistan). By a stratified random sampling 1010 male adult subjects were selected from the above locality. 253 i.e. 25.05% were found hookworm positive. Samples of stool and blood were collected. A thorough study on 253 hookworm positive subjects was carried out for calculation of haemoglobin levels and intensity of hookworm infection in terms of number of ova per gram of faeces. Haemoglobin levels were estimated by cyanomethaemoglobin method and quantitative estimation of hookworm ova in stool was carried out by stoll's modified egg counting technique. The results of the study showed statistically significant relationship between haemoglobin level and No. of hookworm ova per gram of faces.(r = -- 0.876) for 253 hookworm positive cases, which reflects a high degree of negative correlation.

INTRODUCTION

Hookworm infection is a great public health problem and produces serious disease in human by blood loss.

According to WHO" (1981)[1] emphasis should be placed on research on hookworm infection and blood loss.

Many studies conducted in Pakistan have shown that hookworm infection is prevalent in warm and humid areas of Pakistan[2-6].

Since haemoglobin is an important indicator of anaemia, therefore finding out any possible correlation with hookworm infection and haemoglobin can indicate anaemia in hookworm infection.

Detailed scrutiny of the literature yields that while there are many studies which show relationship or correlation between hookworm infection and haemoglobin[7-10]. There are others which do not find any relationship[11-15].

MATERIAL AND METHODS

On the basis of stratified random sampling method 1010 male adult subjects were selected from rural area of Mustafaabad (Lulliani). Out of these 253 were hookworm positive. Samples of stool were collected in clean labeled bottles and blood samples were taken the next morning.

Stool samples were examined and then quantitative estimation of hookworm eggs was made[16-17]. Blood samples were taken the next morning under sterile technique[18]. Haemoglobin was estimated by cyanmethaemoglobin method[19-20].

RESULTS

PREVALENCE

Out of 1010 sampled population 253 were hookworm positive. This gives an infection rate of 25.04% (Table I).

Table-I. Prevalence of hookworm infection in sampled population (n=1010)

Category	No of subjects	%age
Hookworm Positive	253	25.04%
Hookworm Negative	757	74.94%
Total	1010	100%

In pie diagram intensity wise distribution of hookworm infection is given.

Relationship of hookworm infection and haemoglobin in hookworm positive cases.

Table-II. Relationship of hookworm infection and haemoglobin in hookworm positive cases. (n=253)

N of ova per gm of faeces	No of subjects	Mean Hb values in gm/Dl
< - 2000	46	11.9
2001 - 4000	63	10.8
4001 - 6000	47	9.7
6001 - 8000	43	8.3
8001 - 10000	26	6.7
10001 - 12000	24	4.8
12001 - 14000	4	2.8
P<0.05,r= -0.876, No. of ova per gram of faeces		

The intensity of hookworm infection (No. of ova per gram of faeces) has been shown versus mean haemoglobin values (Table II). This Graph depicts clearly that there is a liner negative or inverse correlation between haemoglobin values in gram per dl and hookworm infection in terms of No. of ova per gram of faeces.

DISCUSSION

This study has opened up the chapter of supporting the previous studies in favour of a relationship between hookworm infection and haemoglobin, and on the other hand contradicting the studies, which show no relationship between hookworm infection and haemoglobin. This study has also found out the various explanations for the shortcomings in the studies, which find no relationship between hookworm infection and haemoglobin values.

Studies which could not find any relationship between hookworm infection and haemoglobin reveal that the sample size was too small (Roche and Layrisse[7], Kennedy[11]", Foy and Kondi[12], Stott[13], Foy and Kondi[21]).

Kennedy[11], Old meadow[22] and Foy and Kondi[21] did not measure the burden in terms of number of ova per gram of faeces. Some of the studies don't show the use of colorimeter for determination of haemoglobin values. Instead of that they used Talquist's method for estimation of haemoglobin. Obviously this method has its inherent errors.

It is also noteworthy that in some of the studies which did not find any relationship between hookworm burden and haemoglobin, there were no heavy infection in series e.g. Dick and McCarthy[23], Chernin[24], Kennedy[11], and Stott[13].

In present study sufficient No. of subjects (n=253) were selected. Selected subjects show all degrees of hookworm burden i.e. from light to serve degree ranging from $\leq$ 2000 ova per gram faeces to 14000 ova per gram of faeces. Moreover in present study the measurement of intensity of hookworm infection was made by counting of hookworm ova per gram of faeces by modified Stoll's egg counting technique[17] and haemoglobin was estimated by cyanmethaemoglobin method[19]. Thus both the methods selected for the above parameter are accurate and comparatively free from errors.

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