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Research Article

PRESENCE OF ANAEMIA AND ABSENCE OF EOSINOPHILIA IN THE EARLY STAGE OF HOOKWORM INFECTION IN OUR STUDY –AN EXTREMELY INTERESTING FINDING

Govindarajalu Ganesan

Department of General Surgery Indira Gandhi Medical College and Research Institute
Puducherry.-605009

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ABSTRACT

Objective: Anaemia is reported to occur in hookworm infection in many studies. But so far detailed study was not done to know about the occurrence of anaemia and its relation with eosinophilia in patients with early stage of hookworm infection found while doing upper gastro-intestinal endoscopy. Hence a detailed study was done to know about anaemia and its relation with eosinophilia in patients with early stage of hookworm infection found while doing upper gastro-intestinal endoscopy.

Methods: A study of 1137 patients who had undergone upper gastro-intestinal endoscopy for a period of four years and eight months from May 2009 to December 2013 was carried out. In each of these 1307 patients, the first and second part of duodenum were carefully examined to find out the presence of hookworms. In all the patients found to have hookworms in duodenum, investigations were done to know about the presence or absence of anaemia and the presence or absence of eosinophilia. The results were found as given below.

Results: Out of these 1137 patients, 14 patients found to have hookworms in duodenum while doing upper gastro-intestinal endoscopy were taken into consideration for our study. Out of these 14 patients with hookworms in duodenum, 9 patients had anaemia and 6 of these 9 patients were found to have mild anaemia indicating early stage of hookworm infection. Out of these 6 patients with mild anaemia in early stage of hookworm infection, 2 patients did not have any eosinophilia.

Conclusion: Two patients with mild anaemia in the early stage of hookworm infection did not have any eosinophilia. Hence eosinophilia can be absent in the early stage of hookworm infection with mild anaemia.

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INTRODUCTION

Anaemia is reported to occur in hookworm infection in many studies (1 to 17). But so far detailed study was not done to know about the occurrence of anaemia and its relation with eosinophilia in patients with early stage of hookworm infection found while doing upper gastro-intestinal endoscopy. Hence a detailed study was done to know about anaemia and its relation with eosinophilia in patients with early stage of hookworm infection found while doing upper gastro-intestinal endoscopy.

MATERIALS AND METHODS

This study was conducted in the department of general surgery, Aarupadai Veedu Medical College and Hospital, Puducherry. A study of 1137 patients who had undergone upper gastro-intestinal endoscopy for a period of four years and eight months from May 2009 to December 2013 was carried out. In each of these 1137 patients, the first and second part of

duodenum were carefully examined to find out the presence of hookworms. In all the patients found to have hookworms in duodenum, investigations were done to know about the presence or absence of anaemia and the presence or absence of eosinophilia. Anaemia is defined as haemoglobin < 12g/dl or 12g% in women and haemoglobin < 13g/dl or 13g% in men. Mild anaemia is taken as haemoglobin in 10 to 12g/dl or g%, moderate anaemia is taken as haemoglobin 7 to 10g/dl or g% and severe anaemia is taken as haemoglobin < 7g/dl or g%. Eosinophilia is defined as eosinophils > or = 500 cells/cu.mm (18). The results were found as given below.

RESULTS

1. Out of these 1137 patients, 14 patients found to have hookworms in duodenum while doing upper gastro-intestinal endoscopy were taken into consideration for our study.

*Corresponding author: **Govindarajalu Ganesan**

Department of General Surgery Indira Gandhi Medical College and Research Institute Puducherry.-605009

2. Out of these 14 patients with hookworms in duodenum, 9 patients had anaemia and 6 of these 9 patients were found to have mild anaemia indicating early stage of hookworm infection.
3. Out of these 6 patients with mild anaemia in the early stage of hookworm infection, 2 patients with mild anaemia did not have any eosinophilia.

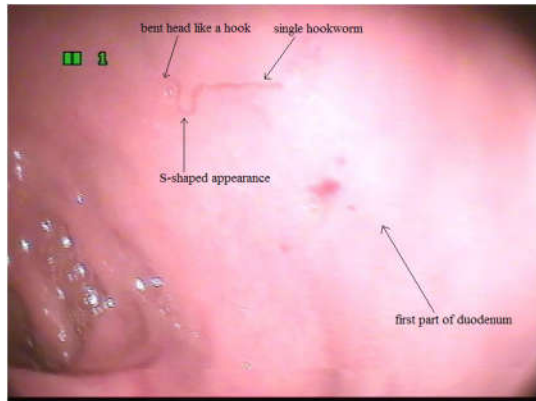


Fig 1 Single hookworm in duodenum with its bent head like a hook and S-shaped appearance In the patient with mild anaemia [haemoglobin 10 g%] without eosinophilia (absolute eosinophil count- 364 cells/cu.mm)

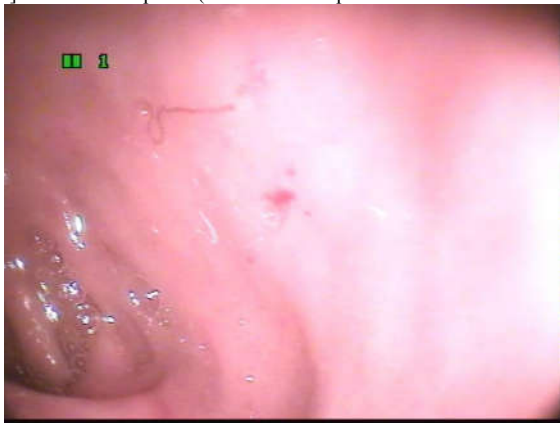


Fig 2 Single hookworm in duodenum with its bent head like a hook and S-shaped appearance In the same patient with mild anaemia [haemoglobin 10g/dl or g%] without eosinophilia (absolute eosinophil count- 364 cells/cu.mm)[different view].



Fig 3 Single hookworm in duodenum with its bent head like a hook and S-shaped appearance In the same patient with mild anaemia [haemoglobin 10g/dl or g%] without eosinophilia (absolute eosinophil count- 364 cells/cu.mm)[different view].

DISCUSSION

Mild anaemia in the early stage of hookworm infection without eosinophilia [2 patients]

1. Out of the 2 patients with mild anaemia in the early stage of hookworm infection without eosinophilia in our study, one patient had mild anaemia (haemoglobin 11.2 g %) but did not have eosinophilia (absolute eosinophil count- 396 cells/cu.mm).
2. Another patient had mild anaemia (haemoglobin 10 g %) without eosinophilia (absolute eosinophil count- 364 cells/cu.mm).
3. Only single hookworm was found in the duodenum in this patient who had mild anaemia (haemoglobin 10 g %) without eosinophilia (absolute eosinophil count- 364 cells/cu.mm).
4. Single hookworm in duodenum seen in this patient who had mild anaemia (haemoglobin 10 g %) without eosinophilia (absolute eosinophil count- 364 cells/cu.mm) is shown in Fig 1,2,3.
5. The hookworm in duodenum is identified by its bent head which looks like a hook (Fig 1, 2, 3) and by its S-shaped appearance (13) (Fig 1,2,3).
6. Hence eosinophilia can be absent in the early stage of hookworm infection with mild anaemia.
7. Hence upper gastro-intestinal endoscopy should always be done in all patients with mild anaemia to confirm the presence of hookworms in tropical and subtropical countries even when there is no eosinophilia.

CONCLUSION

1. Two patients with mild anaemia in the early stage of hookworm infection did not have any eosinophilia.
2. Hence eosinophilia can be absent in the early stage of hookworm infection with mild anaemia as seen in our study.
3. Hence upper gastro-intestinal endoscopy should always be done in all patients with severe anaemia to confirm the presence of hookworms even when there is no eosinophilia in tropical and subtropical countries.

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