Intestinal parasite from stool examination in the patients with nephrotic syndrome undergoing renal biopsy: a summary from 345 cases

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Abstract

Nephrotic syndrome is classified as a disease with immune impairment. Some infections are indicated for its significant correlation to nephrotic syndrome. Concerning the intestinal infection in nephrotic syndrome, report on this area is lack. In this work, the author analyzed the prevalence and pattern of intestinal parasite from stool examination in 345 Thai patients with nephrotic syndrome undergoing renal biopsy. According to our study, 65 (18.8%) of the 345 subjects presented positive results for stool parasite. Of interest, non-opportunistic intestinal parasites such as hookworms, Opisthorchis viverrini, Enterobius vermicularis, Giardia lamblia and Taenia saginata can also be seen in this study. This can state the importance of the common intestinal worm infection in Thailand, which is a tropical country. It may be concluded that in Thai nephrotic syndrome patients, both opportunistic and non-opportunistic intestinal parasite infections are still highly prevalent. In the management of nephrotic syndrome patients, stool examination is still a useful investigation.

Key words: nephrotic syndrome, stool, parasite.

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Introduction

Nephrotic syndrome is a group of symptoms including protein in the urine (more than 3.5 grams per day), low blood protein levels, high cholesterol levels, and swelling [1]. Minimal change nephrosis, the main form of idiopathic nephrotic syndrome is usually a benign condition responsive to standard steroid treatment [2]. However, relapses occur frequently leading to secondary steroid resistance in a small proportion of cases [2]. If initial steroid treatment is followed by multiple relapses, levamisole, cyclophosphamide and finally cyclosporine-A are used stepwise [2].

Nephrotic syndrome is classified as a disease with immune impairment [3-4]. Some infections are indicated for its significant correlation to nephrotic syndrome.

Goldman and Lambert mentioned that the nephrotic syndrome is often related to malarial infections [5]. Concerning the intestinal infection in nephrotic syndrome, report on this area is lack. In this work, the author analyzed the prevalence and pattern of intestinal parasite from stool examination in 345 Thai patients with nephrotic syndrome undergoing renal biopsy.

Materials and Methods

This is a retrospective study. Recorded data from 345 patients (160 females and 185 males, average age = 38.7±15.9 years) with nephrotic syndrome undergoing renal biopsy at King Chulalongkorn Memorial Hospital, Bangkok Thailand during January 1999 and December 2005 were used for further analysis. All cases were confirmed for nephrotic syndrome by definition and got stero-

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id therapy. The recorded reasons for nephrotic syndrome were systemic lupus erythematosus in 60 cases, hypertension in 12 cases, acute renal failure in 8 cases, chronic glomerulonephritis in 8 cases, chronic renal failure in 7 cases, diabetic nephropathy in 3 cases, pregnancy induced condition in 3 cases, sepsis in 1 case and amyloidoisis in 1 case while the left cases had 245 unknown etiology. The renal biopsy shows normal appearance in 10 cases, focal segmental glomerulosclerosis in 66 cases, mesangial proliferative glomerulonephritis in 59 cases, minimal change disease in 50 cases, lupus nephritis in 49 cases, IgM nephropathy in 29 cases, IgA nephropathy in 26 cases, diabetic nephropathy in 12 cases, post infectious glomerulonephritis in 8 case, diffuse proliferative glomerulonephritis in 8 cases, amyloidosis in 5 cases, nephrosclerosis in 3 cases, cholesterol embolism in 1 case, ischemic nephropathy in 1 case, endotheliosis in 1 case, C1q nephropathy in 1 case, Henoch-Schonlein purpura in 1 case, Alport's syndrome in 1 case while the left cases posed inadequate biopsy results. In this study, the stool examination was performed at the Parasitology Laboratory at King Chulalongkorn Memorial Hospital by simple smear and formalin ether concentration methods.

Results

According to our study, 65 (18.8%) of the 345 subjects presented positive results for stool parasite. A variety of parasites could be demonstrated as presented in Table 1.

Discussion

Superimposed infection is an important complication of nephrotic syndrome [3-4]. However, there is limited knowledge on the intestinal parasite infestation among the patients with nephrotic syndrome. In this study, the authors performed a retrospective study to determine the prevalence and pattern of stool parasite among nephrotic syndrome patients. Of interest, 18.8% of all patients had at least one intestinal parasite infestation. This rate is considerable high comparing to healthy Thai subjects (35 cases from 2,213 screenees, about 6.1%) [6]. Using proportional T test, the rate in our nephrotic syndrome cases is also significant higher than that reported in healthy Thai subjects (p value <0.05) [6]. An important explanation for the high prevalence of parasitic infestation in nephrotic syndrome might be the fact that the primary treatment for nephrotic syndrome is the steroid administration which can induce immune suppression. With defect immune response, the patients with nephrotic syndrome can easily get infection. In addition, some cases in this series have the overt underlying systemic lupus erythematosus, which is another disease that steroid treatment is a basic therapy. The defect of mucosal antibody in the patients with systemic lupus erythematosus is already confirmed in a recent literature [7]. Therefore, a significant high rate of intestinal parasite infestation in these patients can be expected.

Table 1. Stool parasites from 345 cases with nephrotic syndrome*

Stool parasites	Cases	[%]
Blastocystis hominis	1	0.3
Enterobius vermicularis	1	0.3
Giardia lamblia	9	2.6
Hookworm	12	3.5
Opisthorchis viverrini	13	3.8
Srongyloides stercoralis	35	10.1
Taenia saginata	2	0.6

** There were some patients infested with more than one species of parasite.*

Considering the pattern of stool parasite, *Srongyloides stercoralis* is the most common kind. Indeed, strongyloidiasis is documented as an important superimposed infection among the patients with nephrotic syndrome. Considering strongyloidiasis, enhanced proliferation of the parasite in compromised hosts causes an augmentation of the normal life-cycle [8]. Resultant massive invasion of the gastrointestinal tract and lungs is termed the hyperinfection syndrome [8]. Disseminated strongyloidiasis is an unwanted complication in nephrotic syndrome. Although parasitic infections have been known to be associated with immune complex-mediated glomerular lesions, strongyloidiasis-related glomerulopathy is also an important differential diagnosis [9]. The high prevalence of stool *Srongyloides stercoralis* in this study implies the necessity for screening stool examination for all cases with nephrotic syndrome. Indeed, Mori et al. and Morimoto et al. [10] mentioned that it was important to rule out strongyloidiasis prior to corticosteroid therapy to patients from eosinophilia endemic areas.

Of interest, non-opportunistic intestinal parasites such as hookworms, *Opisthorchis viverrini*, *Enterobius vermicularis*, *Giardia lamblia* and *Taenia saginata* can also be seen in this study. This can state the importance of the common intestinal worm infection in Thailand, which is a tropical country. Therefore, non-opportunistic intestinal parasitic infection among nephrotic syndrome patients in tropical world should not be overlook.

It may be concluded that in Thai nephrotic syndrome patients, both opportunistic and non-opportunistic intestinal parasite infections are still highly prevalent. In the management of nephrotic syndrome patients, stool examination is still a useful investigation.

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