The Discrepancy of Colonoscopical and Histopathological Findings in Infectious Colitis: Focus on Amebic Colitis

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ABSTRACT

***Background**: Result of colonoscopic examination in infectious colitis was varying. The aim of this study was to recognize the correlation between colonoscopical and histopathological findings in patients with infectious colitis at Cipto Mangunkusumo hospital, Jakarta.*

***Method**: A cross-sectional study had been conducted. There were 227 patients with infectious colitis with unidentified etiology and 17 patients with amebic colitis. In both groups, several variables had been studied including sex, age group and indication of colonoscopy by using Chi-square test. The relationship between hematochezia and amebic colitis event was also studied by using Chi-square test. To recognize the ability of colonoscopy test in diagnosing amebic colitis, we conducted diagnostic test by searching the sensitivity and specificity.*

***Results**: In both groups of infectious colitis, we found male more frequent than female. There was a significant difference mean of age in both group of infectious colitis ($p = 0.04$). The mean age of amebic colitis group was younger (35.86 ± 14.36 years) than the other infectious colitis group (45.34 ± 15.90 years). The incidence of amebic colitis was more frequent in hematochezia than in non-hematochezia ($p < 0.001$). The sensitivity and specificity of colonoscopy in diagnosing amebic colitis were 35% and 97%, respectively.*

***Conclusion**: There was a tendency of developing amebic colitis in patients with hematochezia than non-hematochezia. In diagnosing the presence of amebic colitis, colonoscopy examination has low sensitivity and high specificity.*

***Keywords**: discrepancy, infectious colitis, amebic colitis, colonoscopy, histopathological finding*

INTRODUCTION

Infectious colitis is an acute or chronic infection at colon caused by bacteria, virus, parasite and mycobacterium.[1-4] *Entamoeba histolytica (E. histolytica*) is one of parasite infection causes most frequently occurring in the world, attacking about 50 million people and causing 40,000–100,000 deaths every year.[5-7] Amebic colitis can attack adults and children with equal opportunity, which more males than females were infected.[7] About 90% of the infections caused by *E. histolytica* were still asymptomatic and 10% of them caused invasive amebiasis like amebic colitis or extraintestinal amebiasis. Invasive amebiasis more frequently affected amebic colitis than liver abscess or brain abscess.[3,6-11]

Amebic colitis symptoms can be diarrhea without bleeding and if it continues, a bleeding diarrhea, abdominal pain and fever may occur. Due to the bleeding diarrhea at amebic colitis, it has to be differentiated from other causes of the bleeding diarrhea such as bacterial diarrhea (shigella, salmonella, campylobacter and entroinvasive *Eschericia coli*) and noninfectious diseases like

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inflammatory bowel disease (IBD) and ischemic colitis.[1,6,7,12,13] The diagnosis of amebic colitis based on the demonstration of *E. histolytica* in the stool or colonic mucosa of patients with diarrhea. Some investigators said that the clinical symptoms of bleeding diarrhea and characteristics microscopic findings for *E. histolytica* in the stool examination (erytrophagocytosis by trophozoites) were confirmed diagnostic, but these rarely are present and their sensitivity for identification of amubae is at best 60%, even it would decrease if delay in processing of the stool samples. Other examinations used to analyze *E. histolytica* were an examination of serum antibody titer and an enzyme-linked immunosorbent assay (ELISA) that detects the amebic lectin antigen in the stool samples. Both examinations should be interpreted carefully because antiamebic antibodies can persist for years and if the examination of stool with ELISA is conducted, its sensitivity is not convincing.[6,7,14]

For the patients of acute infectious colitis particularly those who were suspected as amebic colitis based on clinical symptoms, but *E. histolytica* was not found in the examination of stool, an examination colonoscopy and biopsy was needed.[7,12] At the colonoscopy examination, a general picture of infectious colitis can be seen like free pus, an intense reddening of the surface mucosa, and a yellowish exudates that partially or completely cover the mucosal surface.[3] The classic picture of amoeba colitis at colonoscopy was multiple punctate ulcers measuring 2–10 mm are seen with normal intervening tissue. At the ulcer center there were exudates and its side was hyperemic. The lesions of amebic colitis may appear as classic flash-shaped ulcerations, thickening mucosa wall, or necrosis of the intestinal wall, depending on degree of invasive. This defect was commonly found in cecum and ascending colon, but it was also found in the entire colon if its disease was severe.[6,7,10,11] At the acute phase of amoeba colitis, the picture of its colonoscopy was similar to

colitis, but at the chronic phase it looks like Crohn's disease.[3,10,12] The gold standard for the diagnosis of amebic colitis remains colonoscopy with biopsy.[6] With colonoscopy and biopsy, a differential diagnosis could be made with other infectious colitis like pseudomembran colitis and noninfectious colitis such as IBD and ischemic colitis.[6,7,15]

In this study, we tried to look at how the correlation between the results of colonoscopy examinations and the results of the histopathology examinations of the infectious colitis patients at Cipto Mangunkusumo hospital.

METHOD

This was a cross-sectional study. The data were taken from the result of colonoscopy and biopsy that had been conducted in the endoscopic room at the Division of Gastroenterology, Department of Internal Medicine, CiptoMangunkusumo hospital from 2003 to 2006.

The patients involved in the study were histopathologically diagnosed as infectious colitis (250 subjects). These infectious colitis patients were then divided into two groups, consist of 227 patients unidentified etiology group and 23 patients identified etiology group. The identified etiology of infectious colitis group consists of 17 patients amebic colitis, five patients tuberculous colitis and one patient pseudomembran colitis. The infectious colitis involved in the study was 227 patients unidentified etiology of the infectious colitis patients and 17 patients amebic colitis. Then, in both groups we evaluated several variables such as sex, age group, indication of colonoscopy by using Chi-square test. In addition, the correlation between hematochezia and the occurrence of amoeba colitis by using Chi-square test. To recognize the ability of the colonoscopy in diagnosing amebic colitis with histopathology Gold standard, we conducted diagnostic test by searching the sensitivity and specificity. Statistical analysis was performed by using the SPSS 12.0.

RESULTS

In total 1,275 patients were performed colonoscopy during 3 years (2003-2006), which 456 colitis patients were found. Of the 456 colitis patients, the result of the histopathology examinations indicates that 250 (54.8%) patients had infectious colitis, consisting of 227 (49.8%) patients whose etiology of infectious colitis were not identified, 17 (3.7%) patients of amebic colitis, and 5 (1.1%) patients of tuberculous colitis and 1 (0.2%) patient of pseudomembran colitis. Other types of colitis based on the result of the histopathology examination (table 1).

From 250 the infectious colitis patients, 244 patients consisting of 227 infectious colitis patients with unidentified etiology and 17 patients of infectious colitis with identified etiology (amebic colitis) were selected for the study. From these 244 infectious colitis patients, there were more males than females found, either in the unidentified etiology group or in the identified etiology group (amebic colitis group). This difference was not significant ($p = 0.711$). From 244 infectious colitis patients, in the unidentified etiology group the highest ages were 40–49 years old; whereas, in the amebic colitis group, the highest ages were 30–39 years old. This difference was not significant ($p = 0.099$). From 244

Table 1. Result of hispathology of patients which diagnosed colitis using colonoscopy

Hispathology result	Type	n	%	Total	%
Infectious colitis				250	54.8
	Unidentified etiology	227	49.8		
	Amebic colitis	17	3.7		
	Tuberculous colitis	5	1.1		
	Pseudomembran colitis	1	0.2		
Non specific colitis/proctitis/ileitis				78	17.1
Inflammatory bowel diseases				55	12.1
	Ulcerative colitis	28	6.1		
	Crohn's disease	9	2.0		
	Indeterminate	18	3.9		
Eosinophilic colitis/proctitis				32	7.0
Radiation colitis/proctitis				22	4.8
Colorectal malignancy				7	1.5
	Adenocarcinoma	5	1.1		
	Malt lymphoma	1	0.2		
	Malignant non-Hodgkins lymphoma	1	0.2		
Ischemic colitis				5	1.1
Microscopic colitis				3	0.7
	Collagenous colitis	2	0.4		
	Lymphocytic colitis	1	0.2		
Inflammatory polyp				3	0.7
Normal				1	0.2
Total				**456**	**100**

Table 2. Distribution of infectious colitis based on sex, age and colonoscopic indication

	Infectious colitis based on histophatological finding				p
	Unidentified etiology		Amebic colitis		
	n	%	n	%	
Sex					0.711
Male	123	92.5	10	7.5	
Female	104	93.7	7	6.3	
Age (years)					0.099
< 20	6	75.0	2	25.0	
20–29	36	94.7	2	5.3	
30–39	39	86.7	6	13.3	
40–49	51	96.2	2	3.8	
50–59	46	93.9	3	6.1	
60–69	41	95.3	2	4.7	
70–79	8	100.0	0	0.0	
Colonoscopic indication					0.004
Hematochezia	80	85.1	14	14.9	
Chronic diarrhea	80	98.8	1	1.2	
Abdominal pain	56	96.6	2	3.4	
Constipation	9	100.0	0	0.0	
Intra abdominal mass	2	100.0	0	0.0	

infectious colitis patients, the highest colonoscopy indication either in the unidentified etiology group or the amebic colitis group was similar namely hematochezia. The difference between colonoscopy indications due to hematochezia and other causes was significant (p = 0.004) (table 2).

There was a significant difference of the mean age in the infectious colitis group whose etiology were not identified and the amebic colitis group (p = 0.04), where the mean age of the amebic colitis was younger (35.86 ± 14.36 years) compared to the infectious colitis group with unidentified etiology (45.34 ± 15.90 years) (table 3).

Table 3. Mean age of infectious colitis patients with hematochezia complaint

Infectious colitis	Age		p
	n (%)	Mean ± SD	
Amebic colitis	14	35.86 ± 14.36	0.04
Unidentified etiology	80	45.34 ± 15.90	

There was a significant difference on amebic colitis event in the patients with hematochezia complaints (14.9%) compared to the non-hematochezia complaints (2.0%), where the amebic colitis event in patients with hematochezia complaints were greater than the non-hematochezia complaints ($p < 0.001$) (table 4).

Table 4. Relationship of hematochezia complaint with amebic colitis

Colonoscopy	Infectious colitis		p
	Amebic colitis	Unidentified etiology	
Hematochezia	14 (15%)	80 (85.1%)	
Non-hematochezia	3 (2%)	147 (98.0%)	0.000
	17 (17%)	227 (93.0%)	

To identify the diagnostic value of colonoscopy in diagnosing the amebic colitis, we conducted diagnostic test by searching the sensitivity and specificity (table 5).

Table 5. Colonoscopy diagnostic value for diagnosing of amebic colitis

Colonoscopy	Histopathology		Total
	Positive	Negative	
Positive	6	7	13
Negative	11	220	231
	17	227	244

DISCUSSION

In this study there were 244 infectious colitis patients studied. The diagnosis was based on histopathology examination, consisting of 227 infectious colitis patients whose etiology were not identified and 27 infectious colitis patients whose etiology were identified (amebic colitis). Either in the infectious colitis group whose etiology was unidentified or in the amebic colitis group, there were more males than females. This finding is consistent with Stanley study.[7]

In the present study, of 244 infectious colitis patients, the highest ages in the unidentified infectious colitis group were 40-49 years old and the highest ages in the amebic colitis group were 30-39 years old. This difference was not significant ($p = 0.099$).

The highest colonoscopy examination indication either in the unidentified etiology group or in the amebic colitis group was similar namely hematochezia. The difference of colonoscopy indications caused by hematochezia with other causes was significant ($p = 0.004$). The result shows that in both infectious colitis groups the highest complaint was hematochezia. In managing the patients with hematochezia, beside other anamnesis and physical examination studied, a laboratory examination was needed including the examination of stool through microscopy, culture and serum antibody examination toward amoeba. In the study, such data were hardly found so that they cannot be shown. Hematochezia was not only caused by infectious colitis but also caused by other causes such as IBD and ischemic colitis.[1,6,7,12,15] In atipic cases, it was hard to differentiate between amebic colitis and IBD. In the endemic areas like South-east Asia, amebic colitis must be excluded before considering the diagnosis of IBD. If the amebic colitis patients were treated as IBD patients, it could cause fulminant amebic colitis and eventually it can cause necrotizing colitis, intestine perforation, seriously bleeding with mortality rates more than 40%.[6-8,16]

In this study, there was a significant difference in the mean ages of the infectious colitis group whose etiology were not identified compared to the amebic colitis group ($p = 0.04$), where the mean age of the amebic colitis group was younger (35.86 ± 14.36 years) than the infectious colitis group whose etiology were unidentified (45.34 ± 15.90 years). Other investigators found different results, where amebic colitis could attack adults and children with an equal probability.[7]

The study found that hematochezia was the highest complaint among the amebic colitis group. To identify how big the effect of the hematochezia complaint toward the possibility of the amebic colitis occurences was, Chi-square test was conducted. The result shows that the amebic colitis occurrences among the patients with hematochezia complaints were significantly more than the non-hematochezia complaints ($p < 0.001$).

To look at the diagnostic value of the colonoscopy in diagnosing the amebic colitis, the study used a table of 2 x 2. The result indicates that the sensitivity and specificity of the colonoscopy in diagnosing the amebic colitis 35% and 97% respectively with the positive predictive value (PPV) and the negative predictive value (NPV) 46% and 95% respectively. Positive Likelihood Ratio (PLR) 411.45 and Negative Likelihood Ratio (NR) 0.67. Due to its low sensitivity (35%), the result of colonoscopy in diagnosing the amebic colitis had to be followed by biopsy for

hitospathology examination. This was in accordance with gold standard to diagnose the amebic colitis, that is, a colonoscopy examination is followed by biopsy, where it could make differential diagnosis from other causes, such as pseudomembran colitis, IBD and ischemic colitis.[6,7,12,15]

CONCLUSION

In the study, the result of the colonoscopy and histopathology examinations in infectious colitis were found more the infectious colitis groups whose etiology were unidentified than the amebic colitis groups. In both groups, more males than females were found. The highest indications of colonoscopy examination in both groups were hematochezia. The mean age of the amebic colitis groups was younger than the infectious colitis groups whose etiology was not identified. The trends of the amebic colitis occurrences among the patients with hematochezia complaints were more than with non-hematochezia complaints. In diagnosing the occurrence of the amebic colitis, a colonoscopy examination had a low sensitivity and high specificity.

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