Abdominal CT Findings to Distinguish between Tuberculous Peritonitis and Peritoneal Carcinomatosis

Aphinya Charoensak MD*,
Pavinee Nantavithya MD*, Piyaporn Apisarnthanarak MD*

** Department of Radiology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand*

Objective: *Determine useful CT findings for differentiation between tuberculous peritonitis and peritoneal carcinomatosis.*
Material and Method: *Abdominal CT scans in 27 clinically or pathologically proven cases of tuberculous peritonitis and 53 pathologically proven cases of peritoneal carcinomatosis were retrospectively reviewed. CT findings were assessed for ascites, abnormalities of peritoneum, omentum, and mesentery, abdominal lymphadenopathy, and other associated findings in abdomen, bone, and lung bases. Statistical differences of CT findings between two diseases were analyzed using Chi-square or Fisher's exact test.*
Results: *Fibrin in ascites was found in 5/26 patients with tuberculous peritonitis but none in peritoneal carcinomatosis ($p < 0.05$). Smooth and uniform peritoneal thickening was more frequently seen in tuberculous peritonitis ($p < 0.001$), but irregular peritoneal thickening and peritoneal nodules were more frequently seen in peritoneal carcinomatosis ($p < 0.001$). Type of omental abnormalities showed significantly differed between two diseases ($p < 0.001$). Smudge type was more commonly found in tuberculous peritonitis, while nodular and cake types were more commonly detected in peritoneal carcinomatosis. Lymph nodes size < 1 cm and location of lymph nodes at peripancreatic region were more frequently identified in tuberculous peritonitis, whereas lymph nodes size ≥ 1 cm and contour abnormality of the liver or the spleen were more frequently visualized in peritoneal carcinomatosis ($p < 0.05$).*
Conclusion: *Although some CT findings were overlapped, the present study addressed some useful CT findings for differentiation between tuberculous peritonitis and peritoneal carcinomatosis.*

Keywords: *Computed tomography, Tuberculosis, Peritonitis, Peritoneal carcinomatosis*

J Med Assoc Thai 2012; 95 (11): 1449-56
Full text. e-Journal: *http://jmat.mat.or.th*

Tuberculosis remains an important burden disease worldwide especially in endemic regions. Although the incidence rate is still falling, it is falling too slowly. The estimated global incidence rate is 137 cases per 100,000 population and the death rate from tuberculosis is 20 cases per 100,000 population in 2009[1]. Thailand is among the 22 high-burden countries, with the estimated prevalence rate of 130 cases per 100,000 population in 2009[1]. The pulmonary system is the most frequently involved site of tuberculosis. The extrapulmonary involvement, however, is common especially in AIDS (the acquired immunodeficiency syndrome) patients[2]. The peritoneum is one of the most common extra-pulmonary involved sites of tuberculosis.

Correspondence to:
Charoensak A, Department of Radiology, Faculty of Medicine, Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.
Phone: 0-2419-7086, Fax: 0-2412-7785
E-mail: ch_aphinya@yahoo.com

Accurate and early diagnosis of tuberculous peritonitis is crucial because delay in appropriate treatment can lead to significant mortality. However, the diagnosis of this disease is difficult because of its clinical and imaging findings can mimic other peritoneal diseases especially peritoneal carcinomatosis. If the differentiation between tuberculous peritonitis and peritoneal carcinomatosis can be obtained based on imaging findings, it would avoid unnecessary invasive diagnostic tools such as peritoneoscopy or exploratory laparotomy. Some previous studies[3-5] have described CT findings of both diseases separately. However, there are only a few comparison studies of two diseases[6,7]. The purpose of the present study was to determine useful CT findings for differentiation between tuberculous peritonitis and peritoneal carcinomatosis.

Material and Method

Institutional review board approval was obtained and no informed patient consent was required because of the retrospective nature of the study.

Subjects

Between January 1, 2005 and December 31, 2009, the authors searched the hospital database and retrospectively reviewed medical records and pathological records to identify patients with clinically or pathologically proven tuberculous peritonitis and patients with pathologically proven peritoneal carcinomatosis. Only patients who had abdominopelvic CT scans with available images at picture archiving and communication system (PACS) were enrolled. Finally, there were 27 tuberculous peritonitis patients and 53 peritoneal carcinomatosis patients included in the present study. None was diagnosed as tuberculous peritonitis and peritoneal carcinomatosis concurrently. The 27 proven tuberculous peritonitis patients included 13 men and 14 women (mean age, 33.3 ± 19.0 years; age range, 11-77 years). The diagnoses were established by positive AFB (acid-fast bacilli) staining (6 patients) or positive cultures for Mycobacterium tuberculosis (3 patients) in ascitic fluid, by pathology (10 patients) or by clinical improvement after anti-tuberculosis drugs (8 patients). Of 27 patients, there were histories of HIV in five patients, SLE in two patients, cirrhosis in four patients, and ovarian cancer in one patient. Five of 27 patients had known history of tuberculosis at pulmonary or pleura.

The 53 proven peritoneal carcinomatosis patients included 10 men and 43 women (mean age, 58.8 ± 11.3 years; age range, 39-84 years). The diagnoses were established by pathology in 38 patients and cytology in 15 patients. The most common primary tumor was ovarian cancer (28/53 patients, 52.8%). Other primary tumors were colorectal cancer in eight patients, gastric cancer in five patients, endometrium cancer in four patients, pancreatic cancer in two patients, cholangiocarcinoma in one patient, cervix cancer in one patient, breast cancer in one patient, adenocarcinoma of jejunum in one patient, NHL in one patient and unknown primary tumor in one patient.

CT technique

Of 80 patients in the present study, 66 patients (45 carcinomatosis peritonei patients, 21 tuberculous peritonitis patients) were performed with 64 sliced MDCT scanners (LightSpeed 64 scanner, GE Healthcare or Somatom Sensation 64, Siemens Medical Solutions) and 14 patients (8 carcinomatosis peritonei patients, 6 tuberculous peritonitis patients) were performed with a single-slice helical CT scanner (Tomoscan AV1, Philips medical systems, shelton, Netherland). The patients were scanned with routine whole abdomen CT protocol, which consists of precontrast phase and portovenous phase at 80 seconds. All patients received oral and rectal contrast administration. The slices thickness was ranging from 1.25 to 10 mm.

Image analysis

Two radiologists (9 and 12 years' experience in abdominal imaging) independently interpreted CT images at PACS workstation and blinded to clinical data and final diagnosis. The discrepancies of CT findings were resolved by a consensus opinion of the two interpreters. CT findings were assessed as follows: ascites, peritoneal abnormalities, omental abnormalities, mesenteric abnormalities, abdominal lymphadenopathies, and other associated findings including hepatosplenic lesions (organomegaly, miliary nodules, solitary mass, multiple masses, and calcification), contour abnormalities of the liver or spleen, and abnormalities of gastrointestinal tract, bone, lung bases, and venous thrombosis. Ascites was evaluated for distribution (free fluid or located fluid), location (greater sac, or both greater and lesser sac), presence of high-density ascites (HU 20-45), and presence of fibrin in ascites. Peritoneal abnormalities were evaluated for peritoneal thickening (divided as smooth and uniform thickening or irregular thickening) and peritoneal nodules (size, calcified peritoneal nodules). Abnormalities of omentum was classified as smudge type (ill-defined soft tissue density interspersed within omental fat), nodular type (nodular lesions), or cake type (soft tissue replacement). Mesenteric abnormalities was assessed for thickened soft tissue strands, stellate appearance (thickening and rigidity of mesentery), or mesenteric nodules (size and presence of central necrosis). Lymphadenopathy was assessed for size, location, presence of calcification and central necrosis.

Statistical analysis

Statistical qualitative and quantitative differences in CT findings between the two diseases were analyzed using Chi-square test or Fisher's exact test (for small sample size). A p-value less than 0.05 was considered to be statistically significant.

Results

Ascites (Table 1)

Ascites was the most common CT finding in tuberculous peritonitis (96.3%) and the second most common CT finding in peritoneal carcinomatosis (73.6%). It was more commonly found in tuberculous

peritonitis than in peritoneal carcinomatosis ($p < 0.05$). Fibrin in ascitic fluid (Fig. 1) was detected in five tuberculous peritonitis patients but none in peritoneal carcinomatosis ($p < 0.05$). Loculated ascites was detected more commonly in tuberculous peritonitis (23.1%) than in peritoneal carcinomatosis (5.1%), however, it did not differ significantly ($p = 0.051$). Location of ascites and high-density ascites were no statistically significant difference between the two diseases.

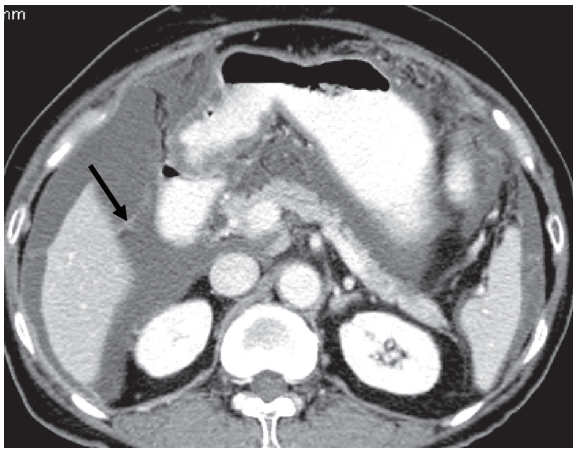

Fig. 1 Axial image of contrast enhanced CT abdomen showed fibrin in ascites (arrow)

Peritoneum (Table 2)

Peritoneal abnormalities was the most common CT finding in peritoneal carcinomatosis (81.1%) and the second most common CT finding in tuberculous peritonitis (92.6%). Peritoneum thickening was detected in 27/53 patients with peritoneal carcinomatosis and 25/27 patients with tuberculous peritonitis. Smooth and uniform peritoneal thickening was more frequently seen in tuberculous peritonitis ($p < 0.001$) while irregular peritoneal thickening was more commonly present in peritoneal carcinomatosis ($p < 0.001$). Peritoneal nodules were more detected in peritoneal carcinomatosis than in tuberculous peritonitis ($p < 0.001$). However, size of peritoneal nodules showed no statistically significant difference between two diseases. No calcified peritoneal nodules found in both diseases.

Omentum (Table 3)

Abnormalities of omentum were visualized in 71.7% of peritoneal carcinomatosis and 88.9% of tuberculous peritonitis. There was statistically

Table 1. Ascites as abdominal CT findings in 80 studied patients

Findings	Peritoneal carcinomatosis	TB peritonitis	p-value
Presence of ascites	73.6% (39/53)	96.3% (26/27)	0.031
Ascites distribution			
Free fluid	100.0% (39/39)	92.3% (24/26)	0.156
Loculated	5.1% (2/39)	23.1% (6/26)	0.051
Ascites location			0.626
Greater sac	64.1% (25/39)	73.1% (19/26)	
Greater and lesser sac	35.9% (14/39)	26.9% (7/26)	
Presence of fibrin in ascites	0.0% (0/39)	19.2% (5/26)	0.008
Presence of high density ascites	2.6% (1/39)	3.8% (1/26)	1

Table 2. Peritoneal abnormalities as abdominal CT findings in 80 studied patients

Findings	Peritoneal carcinomatosis	TB peritonitis	p-value
Peritoneal abnormalities	81.1% (43/53)	92.6% (25/27)	0.320
Peritoneum thickening			
Smooth, uniform thickening	13.9% (6/43)	80.0% (20/25)	<0.001
Irregular thickening	48.8% (21/43)	20.0% (5/25)	<0.001
Presence of peritoneal nodules	76.7% (33/43)	24.0% (6/25)	<0.001
Size of peritoneal nodules			0.636
≤ 1 cm	24.2% (8/33)	33.3% (2/6)	
> 1 cm	75.8% (25/33)	66.7% (4/6)	

significant difference between two diseases in types of omental abnormalities ($p < 0.001$). Smudge type was more commonly found in tuberculous peritonitis, whereas nodular and cake types were more frequently visualized in peritoneal carcinomatosis.

Mesentery (Table 4)

Abnormalities of mesentery were more frequently identified in tuberculous peritonitis than in peritoneal carcinomatosis ($p < 0.001$). However, no differences were found between two diseases regarding the presence of thickened soft tissue strands in the mesentery, stellate appearance, or mesenteric nodules.

Lymphadenopathies (Table 5)

Lymph nodes size less than 1 cm and peripancreatic location were more frequently seen in tuberculous peritonitis ($p < 0.05$), while lymph nodes size equal or greater than 1 cm. was more commonly detected in peritoneal carcinomatosis ($p < 0.05$).

Other findings

Splenomegaly was found in 5/27 tuberculous peritonitis patients. Three of five patients had clinical history and imaging appearances of liver cirrhosis with portal hypertension and one patient had a history of Thalassemia. Only one remaining case had no history

Table 3. Omental abnormalities as abdominal CT findings in 80 studied patients

Findings	Peritoneal carcinomatosis	TB peritonitis	p-value
Presence of omentum abnormality	71.7% (38/53)	88.9% (24/27)	0.145
Type of omental abnormaity			<0.001
Smudge	36.8% (14/38)	87.5% (21/24)	
Nodular	31.6% (12/38)	8.3% (2/24)	
Cake	31.6% (12/38)	4.2% (1/24)	

Table 4. Mesenteric abnormalities as abdominal CT findings in 80 studied patients

Findings	Peritoneal carcinomatosis	TB peritonitis	p-value
Presence of mesenteric abnormalities	37.7% (20/53)	88.9% (24/27)	<0.001
Thickened soft tissue strands	40.0% (8/20)	54.2% (13/24)	0.526
Stellate appearance	0.0% (0/20)	8.3% (2/24)	0.493
Mesenteric nodules	70.0% (14/20)	62.5% (15/24)	0.839
Size of mesenteric nodules			0.169
< 1 cm	71.4% (10/14)	93.3% (14/15)	
≥ 1 cm	28.6% (4/14)	6.7% (1/15)	
Mesenteric nodules necrosis	0.0% (0/14)	20.0% (3/15)	0.224

Table 5. Lymphadenopathy as abdominal CT findings in 80 studied patients

Findings	Peritoneal carcinomatosis	TB Peritonitis	p-value
Presence of lymphadenopathy	47.2% (25/53)	51.9% (14/27)	0.873
Presence of calcifications	0.0% (0/25)	14.3% (2/14)	0.123
Presence of central necrosis	32.0% (8/25)	57.1% (8/14)	0.233
Size of lymph nodes			0.012
< 1 cm	16.0% (4/25)	57.1% (8/14)	
≥ 1 cm	84.0% (21/25)	42.9% (6/14)	
Location of lymph nodes			
Paraaortic region	72.0% (18/25)	64.3% (9/14)	0.723
Celiac region	20.0% (5/25)	7.1% (1/14)	0.391
Peripancreatic region	24.0% (6/25)	64.3% (9/14)	0.033
Pelvic region	44.0% (11/25)	28.6% (4/14)	0.544
Cardiophrenic region	8.0% (2/25)	14.3% (2/14)	0.609

of other causes of splenomegaly and there were miliary nodules in the spleen and miliary nodules at lung bases (Fig. 2). Miliary nodules, solitary mass, and parenchymal calcifications were detected in two patients, one patient, and one patient with tuberculous peritonitis, respectively. No splenic abnormality was detected in peritoneal carcinomatosis patients.

No hepatomegaly was found in both groups. Miliary nodules, solitary mass, and parenchymal calcifications were found in one patient, one patient, and three patients with tuberculous peritonitis, respectively. There were solitary mass, multiple masses and parenchymal calcifications identified in five patients, nine patients, and one patient with peritoneal carcinomatosis, respectively.

Contour abnormality of the liver or the spleen was visualized in 21/53 patients with peritoneal carcinomatotis and in 3/27 patients with tuberculous peritonitis ($p < 0.05$).

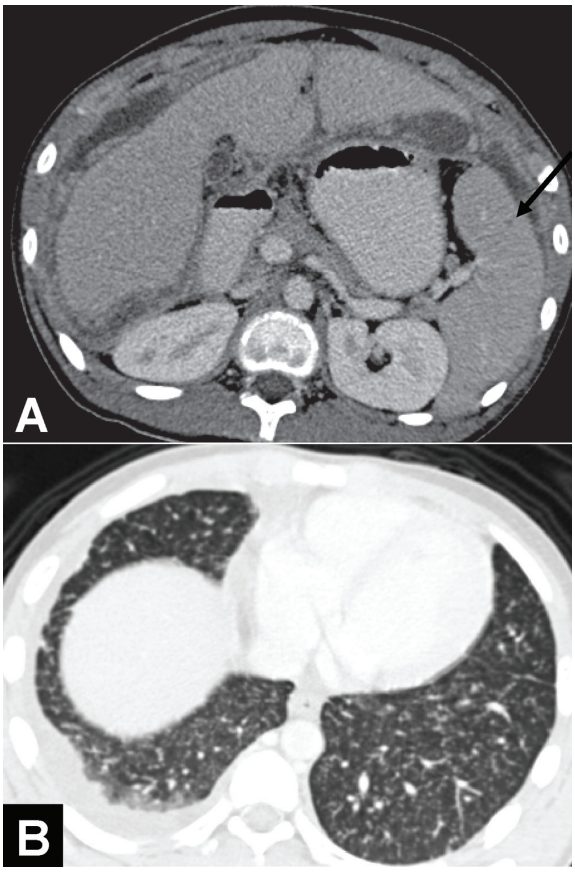

Fig. 2 Tuberculous peritonitis A) Axial image of contrast enhanced CT abdomen showed splenomegaly with miliary nodule (arrow) B) Lung window revealed multiple miliary nodules in both lung bases

GI tract abnormalities were found in 6/27 tuberculous peritonitis patients. Four of five patients had thickened wall of terminal ileum and cecum, one patient had jejunal wall thickening and one patient had small bowel obstruction. One patient with peritoneal carcinomatosis had thickening at terminal ileum and transverse colon from serosal seedings.

Of 53 peritoneal carcinomatosis patients, two patients had deep vein thrombosis at groin region, one patient had pulmonary embolism and one patient had bony destruction. Five of 27 patients with tuberculous peritonitis had tree-in-bud pattern or miliary nodules in lung bases.

Discussion

Currently, computed tomography has been increasing use for evaluation of peritoneal diseases. Differentiation between tuberculous peritonitis and peritoneal carcinomatosis is difficult in some instances because of non-specific clinical presentations and some overlapped imaging findings[6,7]. Similar to few prior studies, however, the present study addressed some useful CT findings to distinguish between both diseases.

In the present study, ascites was more frequently seen in tuberculous peritonitis than in peritoneal carcinomatosis. This result could be from "wet" type tuberculous peritonitis in almost tuberculous peritonitis patients included in the study. High-density ascites has been described as a characteristic finding in tuberculous peritonitis[4,8]. Similar to prior study[7], however, high-density ascites did not differ significantly between two diseases. Kedar RP et al[9] suggested that presence of fine fibrous strands in the ascitic fluid is a sonographic finding suggestive of tuberculous peritonitis. Although CT is less superior than ultrasound in detection of multiple, thin, interlacing septa in ascites[10], the present results showed that CT could identify fibrin in ascites in approximately 20% of tuberculous peritonitis patients and this finding was significantly different between two diseases. However, CT visualization rate of fibrin in ascites might be higher than the present results if all patients were scanned with multi-detector rows CT.

Similar to results of prior study[7], mesenteric abnormalities were more frequently detected in patients with tuberculous peritonitis ($p < 0.001$) and the most common abnormality was mesenteric nodules. In contrast to a prior study which mesenteric macronodule found more common in tuberculous peritonitis, the present results showed no significant

difference in size of mesenteric nodules between both diseases.

Similar to a prior study by Rodriguez E et al[6], smooth and uniform peritoneal thickening was more detected in tuberculous peritonitis than in peritoneal carcinomatosis. Whereas, irregular peritoneal thickening and peritoneal nodules were more frequently visualized in peritoneal carcinomatosis. Size of peritoneal nodules was no significant differences between two diseases.

Type of omental abnormalities showed statistically significant differences between two diseases. Similar to a study by Ha HK et al[7], smudge type was more frequently identified in tuberculous peritonitis but nodular type and cake type were more frequently noted in peritoneal carcinomatosis. Contrary to a study by Rodriguez E et al[6], which showed no difference between both diseases in cake type and smudge type of omental abnormalities. In addition to omental infiltration pattern, Ha HK et al[7] suggested that outer contour of the infiltrated omentum is more valuable to differentiate between both diseases; a thin omental line was more common in patients with tuberculous peritonitis.

Lymphadenopathy in abdominal tuberculosis commonly involved mesenteric, celiac, porta hepatic and peripancreatic lymph nodes, which correspond to lymphatic drainage from small bowel and right side of the colon[11]. The present results showed that location of lymphadenopathy at peripancreatic region was more frequently seen in tuberculous peritonitis than peritoneal carcinomatosis. However, this result might be attributable to proportion of primary tumors included in the present study which the majority tumor have different lymphatic drainage pathways. Lymph nodes with central necrosis, although characteristic of tuberculosis, are not pathognomonic and can be visualized in some metastatic malignancies such as testicular tumors, lymphoma after treatment and benign causes including Whipple's disease, Crohn's disease, sarcoidosis and Castleman's disease[12]. The present study found that size of lymph nodes was significant difference between tuberculous peritonitis and peritoneal carcinomatosis. Lymph nodes less than 1 cm. was more commonly seen in tuberculous peritonitis while lymph nodes equal or greater than 1 cm was more frequently observed in peritoneal carcinomatosis. However, a previous study by Yang ZG et al[13] showed that the size of abdominal lymph nodes due to tuberculosis ranges from 1.2 to 4.0 cm (mean, 2.0 cm). Therefore, further study is required because there was a relatively small number of tuberculous peritonitis patients with lymphadenopathy in the present study. In addition to size and location of lymph nodes, one helpful finding is that enlarged lymph nodes in tuberculosis do not tend to cause biliary, gastrointestinal, or genitourinary obstruction[14].

Hepatosplenic tuberculosis generally caused by hematogenous spread and usually manifested as micronodular (miliary) form[12,15]. The macronodular form is rare and appears as multiple low attenuation lesions or a single mass. In the present study, splenomegaly was found in 5/27 tuberculous peritonitis cases. However, there was only one patient who had miliary nodules in the spleen and lung bases, which splenomegaly could be due to splenic tuberculosis.

Contour abnormality of the liver or spleen was more frequently detected in peritoneal carcinomatosis. However, it can be identified in tuberculous peritonitis approximately 11%. Abnormality of the liver or splenic surfaces in peritoneal carcinomatosis occurred from peritoneal implants. Other causes could be extrinsic pressure on the liver or splenic surfaces by gelatinous implants in pseudomyxoma peritonii, perihepatic hematoma, peritoneal mesothelioma, or perihepatic abscess.

The present study has some potential limitations. First, this was a retrospective study and included patients examined using different CT scanners. The 10 mm slice-thickness used in a single-slice helical CT scanner affects the ability to identify some findings such as fibrin in ascites or small lesions. Second, small number of some CT findings limiting evaluation of statistically significant. Third, intra-observer and interobserver agreement was not assessed in the present study. Finally, there was no histological proof in most CT findings especially lesions in solid organs or lymph nodes.

In summary, presence of fibrin in ascites, smooth and uniform peritoneal thickening, smudge type of omental abnormality, lymph nodes size < 1 cm, and peripancreatic lymph nodes suggest tuberculous peritonitis. Irregular peritoneal thickening, presence of peritoneal nodules, nodular and cake types of omental abnormality, lymph nodes size ≥ 1 cm, and contour abnormality of the liver or the spleen suggest peritoneal carcinomatosis.

Acknowledgements

This study was supported by Siriraj Research Development Fund. The authors wish to thank Dr. Chulaluk Komoltri for the statistical analysis.

Potential conflicts of interest

None.

References

1. World Health Organization. Global tuberculosis control 2010. WHO report 2010. Geneva: WHO; 2010.
2. Small PM, Schecter GF, Goodman PC, Sande MA, Chaisson RE, Hopewell PC. Treatment of tuberculosis in patients with advanced human immunodeficiency virus infection. N Engl J Med 1991; 324: 289-94.
3. Na-ChiangMai W, Pojchamarnwiputh S, Lertprasertsuke N, Chitapanarux T. CT findings of tuberculous peritonitis. Singapore Med J 2008; 49: 488-91.
4. Epstein BM, Mann JH. CT of abdominal tuberculosis. AJR Am J Roentgenol 1982; 139: 861-6.
5. Walkey MM, Friedman AC, Sohotra P, Radecki PD. CT manifestations of peritoneal carcinomatosis. AJR Am J Roentgenol 1988; 150: 1035-41.
6. Rodriguez E, Pombo F. Peritoneal tuberculosis versus peritoneal carcinomatosis: distinction based on CT findings. J Comput Assist Tomogr 1996; 20: 269-72.
7. Ha HK, Jung JI, Lee MS, Choi BG, Lee MG, Kim YH, et al. CT differentiation of tuberculous peritonitis and peritoneal carcinomatosis. AJR Am J Roentgenol 1996; 167: 743-8.
8. Denton T, Hossain J. A radiological study of abdominal tuberculosis in a Saudi population, with special reference to ultrasound and computed tomography. Clin Radiol 1993; 47: 409-14.
9. Kedar RP, Shah PP, Shivde RS, Malde HM. Sonographic findings in gastrointestinal and peritoneal tuberculosis. Clin Radiol 1994; 49: 24-9.
10. Malik A, Saxena NC. Ultrasound in abdominal tuberculosis. Abdom Imaging 2003; 28: 574-9.
11. Pereira JM, Madureira AJ, Vieira A, Ramos I. Abdominal tuberculosis: imaging features. Eur J Radiol 2005; 55: 173-80.
12. Vanhoenacker FM, De Backer AI, Op de BB, Maes M, Van Altena R, Van Beckevoort D, et al. Imaging of gastrointestinal and abdominal tuberculosis. Eur Radiol 2004; 14 (Suppl 3): E103-15.
13. Yang ZG, Min PQ, Sone S, He ZY, Liao ZY, Zhou XP, et al. Tuberculosis versus lymphomas in the abdominal lymph nodes: evaluation with contrast-enhanced CT. AJR Am J Roentgenol 1999; 172: 619-23.
14. Burrill J, Williams CJ, Bain G, Conder G, Hine AL, Misra RR. Tuberculosis: a radiologic review. Radiographics 2007; 27: 1255-73.
15. Suri S, Gupta S, Suri R. Computed tomography in abdominal tuberculosis. Br J Radiol 1999; 72: 92-8.

ลักษณะภาพเอกซเรย์คอมพิวเตอร์ที่ช่วยแยกระหว่างวัณโรคเยื่อบุช่องท้องและมะเร็งแพร่กระจายในช่องท้อง

อภิญญา เจริญศักดิ์, ภาวิณี นันทวิทยา, ปิยาภรณ์ อภิสารธนรักษ์

วัตถุประสงค์: เพื่อศึกษาลักษณะภาพเอกซเรย์คอมพิวเตอร์ที่ช่วยแยกระหว่างวัณโรคเยื่อบุช่องท้องและมะเร็งแพร่กระจายในช่องท้อง

วัสดุและวิธีการ: ทำการศึกษาย้อนหลังโดยรังสีแพทย์ 2 ราย แปลผลภาพเอกซเรย์คอมพิวเตอร์ของช่องท้องในผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็นวัณโรคเยื่อบุช่องท้องจำนวน 27 ราย และผู้ป่วยที่ได้รับการวินิจฉัยว่า เป็นโรคมะเร็งแพร่กระจายในช่องท้องจำนวน 53 ราย ลักษณะทางภาพเอกซเรย์คอมพิวเตอร์ที่ศึกษาคือ น้ำในช่องท้อง, ความผิดปกติของเยื่อบุช่องท้อง โอเมนตัม และเยื่อแขวนลำไส้, ต่อมน้ำเหลืองผิดปกติในช่องท้อง และความผิดปกติอื่น ๆ ที่พบภายในช่องท้อง กระดูก และชายปอด คำนวณความแตกต่างทางสถิติของลักษณะภาพเอกซเรย์คอมพิวเตอร์ของทั้งสองโรค อาศัยการทดสอบ Chi-square หรือ Fisher's exact

ผลการศึกษา: ไฟบรินในน้ำในช่องท้องพบได้ 5 ใน 26 ราย ของผู้ป่วยวัณโรคเยื่อบุช่องท้อง แต่ไม่พบในผู้ป่วยโรคมะเร็งแพร่กระจายในช่องท้อง ($p < 0.05$) ในผู้ป่วยวัณโรคเยื่อบุช่องท้องพบการหนาตัวของเยื่อบุช่องท้องแบบเรียบสม่ำเสมอได้บ่อยกว่า ($p < 0.001$) แต่ผู้ป่วยโรคมะเร็งแพร่กระจายในช่องท้องพบ nodule ที่เยื่อบุช่องท้อง และการหนาตัวของเยื่อบุช่องท้องแบบขรุขระบ่อยกว่า ($p < 0.001$) พบมีความแตกต่างของชนิดความผิดปกติของโอเมนตัมในทั้งสองโรค ($p < 0.001$) โดย smudge พบได้บ่อยกว่าในผู้ป่วยวัณโรคเยื่อบุช่อง ขณะที่ชนิด nodular และ cake พบได้บ่อยกว่าในผู้ป่วยโรคมะเร็งแพร่กระจายในช่องท้อง ในผู้ป่วยวัณโรคเยื่อบุช่องพบต่อมน้ำเหลืองขนาดเล็กกว่า 1 ซม. และต่อมน้ำเหลืองบริเวณข้างเคียงตับอ่อนได้บ่อยกว่า ในขณะที่ผู้ป่วยโรคมะเร็งแพร่กระจายในช่องท้องพบต่อมน้ำเหลืองขนาดเท่ากับหรือใหญ่กว่า 1 ซม. และความผิดปกติของรูปร่างของตับหรือม้ามได้บ่อยกว่า ($p < 0.05$)

สรุป: การศึกษานี้พบว่าลักษณะทางภาพเอกซเรย์คอมพิวเตอร์บางชนิดมีประโยชน์ช่วยในการแยกระหว่างวัณโรค เยื่อบุช่องกับโรคมะเร็งแพร่กระจายในช่องท้อง