Diagnostic Performance of CT Findings in Differentiation of Perforated from Nonperforated Appendicitis

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Objective: *To assess performance of CT finding in differentiation of perforated from non-perforated appendicitis in Siriraj hospital, Bangkok, Thailand and evaluate accuracy of each finding by using multidetector row computer tomography (MDCT).*

Material and Method: *Between June 2006 and May 2009, all adult patients (age more than 15 years) who had a diagnosis of acute appendicitis in Siriraj Hospital that was confirmed by pathology or surgical records and received a CT scan whole abdomen or lower abdomen with contrast administration before surgical or medical treatment were included in this study. The 48 consecutive CTs of whole or lower abdomen examinations were retrospectively reviewed by two radiologists. Sensitivity, specificity, and accuracy of CT compared with pathologic or surgical findings.*

Results: *In 48 patients, 21 patients of non-perforated appendicitis and 27 patients of perforated appendicitis were enrolled. The CT findings of abscess, extraluminal appendicolith, and extraluminal air had the highest specificities for perforated appendicitis, 95.24%, 100%, 95.24%, respectively. The best accurate finding was defect in enhancing appendiceal wall. The CT findings of enlarged mesenteric lymph nodes at right lower quadrant region and defect in enhancing appendiceal wall had the highest sensitivities, 88.88% and 88.46%, respectively. Group 3 of combined specific findings had the best sensitivity (92.59%) and accuracy (83.3%).*

Conclusion: *Multi-detector CT can help to differentiate perforated from non-perforated appendicitis.*

Keywords: *Perforated appendicitis, CT findings*

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Acute appendicitis is one of the most common causes of acute abdominal pain. Computed tomography (CT) is now established as the imaging modality of choice for the evaluation of acute abdominal pain as the result of suspected appendicitis in adults[1]. CT has high accuracy for diagnosis of acute appendicitis, with reported sensitivities of 88-100%, specificities of 91-99% and accuracies of 94-98%[2]. However, an important aspect of the diagnosis of acute appendicitis is the identification of any associated complications, such as perforation. Perforation occurs in 19-35% of cases of acute appendicitis[1]. Perforated appendicitis is associated with increased morbidity and mortality. Surgical morbidity and the incidence of complications are increased in patients with perforated appendicitis. Laparoscopic appendectomy becomes more difficult after perforation and may necessitate conversion to an open appendectomy[3]. Different management options, such as administration of antibiotics and/or abscess drainage with or without interval surgery, are frequently chosen for perforated appendicitis instead of immediate appendectomy because appendiceal perforation relates an increased risk for complications after immediate surgery for acute appendicitis[4]. Therefore, preoperative identification of perforated appendicitis is important in selecting an optimal therapeutic approach.

In some studies results, multi-detector CT was used to accurately differentiate perforated from non-perforated acute appendicitis[1,4,5]. Many CT findings of perforated appendicitis have been published, such as extraluminal air, abscess, extraluminal appendicolith, etc. The purpose of the present study was to assess performance of multi-detector CT findings in differentiating perforated appendicitis from non-perforated appendicitis.

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Material and Method

Patient selection

The present study was approved by our institutional review board at Siriraj Hospital. The authors obtained a list of all patients (age more than 15 years) who had undergone appendectomy and pathologic examination or discharge. Summary confirmed appendicitis and received CT scan of whole abdomen or lower abdomen with contrast administration before surgical or medical treatment between June 2006 and May 2009 in Siriraj Hospital.

Of 1514 patients listed, 1,465 were eliminated because CT was not performed. Of the 49 remaining patients, one patient was eliminated because of adenocarcinoma at cecum and ileocecal valve with involved appendix from pathologic proven. The final study group included 48 patients (21 male patients, 27 female patients and age range 15-96 years) who underwent surgery within 24 hours of CT scanning and who had acute appendicitis that was confirmed by pathologic examination or surgical record.

Data collection and reference standard

The authors retrospectively reviewed the patients' medical, surgical and pathology records. The peripheral white blood cell count was recorded. Patients were considered to have acute appendicitis if any of the following final diagnosis described as acute appendicitis, acute suppurative appendicitis, gangrenous appendicitis, or perforated appendicitis. The reference standard was surgical or pathological report.

Multidetector CT (MDCT) protocols

All patients were examined in the supine position on available MDCT system with sixty-four detector rows MDCT (GE Medical systems, USA) or dual source CT (Siemens).

Oral contrast media were routinely given (total 4 glasses of oral contrast media, each glass every 15 minutes, last glass just before entering the CT room). Additional rectal contrast as tolerated was also done and using tampon in women.

An intravenous line of either 18 or 20 gauge was placed in an antecubital vein. Intravenous injection of 100 ml of non-ionic contrast media with 370 mg of iodine per ml at 2 ml/s was performed with a dedicated, motor-driven, computer controlled pump that was electronically linked to the MDCT system.

MDCT images were obtained with scanning sequences as followed; scannogram (scout), axial precontrast phase, axial postcontrast phase (delayed 80 seconds after start injection) and axial delayed full bladder (delayed 5 minutes after start injection. If not full bladder is detected, this phase will repeated at 10 minutes). All axial scans were done as 1.25 mm thickness for sixty-four detector rows MDCT or 1.5 mm thickness for dual source CT.

Scan range was routinely included from hepatic dome to pubic symphysis in noncontrast and post contrast phases by scanning superiorly to inferiorly and iliac crests to pubic symphysis on delayed full bladder sequence on CT whole abdomen.

In CT lower abdomen, scan range was included from lower pole kidneys to pubic symphysis in pre and postcontrast phase and iliac crests to pubic symphysis on delayed full bladder sequence. Tube voltage was invariably set to 120 KVp and 500 mA for sixty-four detector rows MDCT or 250mAs with dose care for dual source CT.

Multiplanar reconstruction was also obtained into coronal and sagittal views on all MDCT phases. All MDCT images were transferred to a picture archiving and communication system (PACS) (Fugi Medical Solutions, Japan).

Image interpretation

Two radiologists examined all CT images routinely in axial views consistent with multiplanar reformatting in sagittal and coronal views.

The readers were blind to the clinical history, clinical findings, clinical outcome, and pathological or operative findings. In case of disagreement in two reviewers, consensus by two reviewers was done to get final imaging diagnosis.

The images were analyzed for the presence of an appendix, sign of inflammation, and associated complication. The following findings of MDCT were retrospectively revealed and described as:

- diameter of appendix is defined as diameter of outer to outer wall of appendix and measured into millimeters.

- intra-abdominal abscess is defined as a well- defined focal fluid collection with a thick wall that enhanced with intravenous contrast material administration and described into presence or absence.

- extraluminal appendicolith is defined as presence of an appendicolith outside the lumen of appendix and described into presence or absence.

- extraluminal air is defined as focal areas of free air outside the bowel lumen and described into presence or absence.

- phlegmon is characterized by diffuse and marked inflammation of the periappendiceal fat with ill-defined fluid collection and described into presence or absence.

- defect in enhancing wall of appendix is defined as interruption in the enhancement of appendiceal wall and described into presence or absence.

- cecal wall thickening is defined as cecal wall thickening than the ascending colon and described into presence or absence.

- free fluid is defined as free fluid collection in anywhere of the abdomen or the pelvis without enhancing rim and described into presence or absence.

- bowel ileus is defined as fluid-fill in dilated small bowel that equal or more than 3 cm and described into presence or absence.

- enlargement of lymph node at right lower quadrant is described into presence or absence (diameter less than 5 mm). If present lymph node is noted, the lymph node is measured into millimeters.

- adjacent appendiceal inflammation at right lower quadrant is defined as the presence or absence and degree of periappendiceal inflammatory standing which classified as absence is no increased attenuation of mesoappendix or retroperitoneal fat.

- mild degree is just perceptible haziness or increased attenuation in the mesoappendix or retroperitoneal fat.

- moderate degree is moderate haziness of mesoappendix or retroperitoneal fat.

- severe degree is marked haziness of mesoappendix or retroperitoneal fat and group as absence with mild degree and moderate with severe degree.

After that, the authors reviewed the three groups of combined specific findings in our report. Group 1 included all patients with one or more of the following classic findings of appendiceal perforation: abscess, extraluminal air or extraluminal appendicolith. Group 2 included all patients with any of these three findings or a phlegmon. Group 3 included all patients with any of these three findings or a defect in enhancing wall of appendix. Thus, group 1 was a subset of group 2 and a subset of group3.

Statistical analysis

Each patient was divided into a perforated group or non-perforated group on the basis of surgical or pathologic findings. Sensitivity, specificity, and accuracy of the specific findings in the diagnosis of perforated appendicitis were evaluated. The statistic was calculated by using t-tests.

Results

On the basis of surgical and pathologic findings, 27 patients (16 female patients, 11 male patients; age range, 17-96 years; mean age, 56.7 years; median age, 59.5 years) had perforated appendicitis, while 21 patients (11 female patients, 10 male patients; age range, 15-85 years; mean age, 55 years; median age, 53 years) had non-perforated appendicitis. The ages of the patients, mean peripheral white blood cell count and mean appendix diameter in each group (perforated vs. non-perforated appendicitis) were not significantly different (Table 1). The appendix was

Table 1. Gender, age, white blood cell count and diameter of appendix of patients with perforated and non-perforated appendicitis

	Perforated appendicitis n = 27 (56.25%)	Non-perforated appendicitis n = 21 (43.75%)
Gender		
Male	11 (40.74%)	10 (47.62%)
Female	16 (59.25%)	11 (52.38%)
Age (years)		
Mean $\pm$ SD	56.7 $\pm$ 21.2	55.0 $\pm$ 18.9
Median (min, max)	59.5 (17, 96)	53.0 (15, 85)
WBC (cells/mm^3)		
Mean $\pm$ SD	13,305.8 $\pm$ 5,882.8	11,937.0 $\pm$ 6974.9
Median (min, max)	12,505 (2,070, 24,370)	12,270 (1290, 30,340)
Diameter appendix (mm)		
Mean $\pm$ SD	14.64 $\pm$ 4.92	13.67 $\pm$ 2.60
Median (min, max)	15.46 (0, 22.8)	12.95 (9.59, 21.21)

visualized in all patients with non-perforated appendicitis. Only one patient from the 27 perforated appendicitis (3.7%) that the appendix was not visualized.

The sensitivities and specificities of the individual multidetector CT findings evaluated (Table 2) indicate that the three findings that were most specific for the diagnosis of perforated appendicitis were abscess, extraluminal air and extraluminal appendicolith, all of which had a specificity higher than 90%. Of these three findings, extraluminal appendicolith was the most specific for perforation (100%) (Fig. 1). No patient in the non-perforated group had extraluminal appendicolith. The second most specific findings were abscess (Fig. 2) and extraluminal air (Fig. 3), each one showed 95.24% specificity. Eleven patients had an abscess. One diagnosis was false-positive. This one revealed rim-like enhancing hypodensity lesion at appendiceal tip (Fig. 4) However, pathological report of this case showed only an acute suppurative appendicitis without perforation. Focal marked luminal distension with pus-filled inside that combined with thick appendiceal wall enhancement may mimic finding of abscess. Fifteen patients had an extraluminal air. One diagnosis was false positive (Fig. 5). One

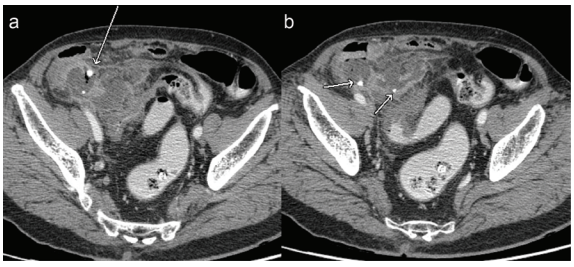

Fig. 1 Axial enhanced CT of whole abdomen in 96-year-old male with perforated appendicitis with abscess a) showed extraluminal appendicolith (arrow) with focal enhancing wall defect of enlarged appendix b) in lower level, another appendicoliths (arrows) were also seen with rim-enhancing hypodensity collection and multiple small internal free air bubbles in these collection, compatible with abscess. Surrounding fat stranding was also seen

Table 2. Sensitivity and specificity of individual for diagnosis of perforated appendicitis

CT findings	No. of patients with perforated appendicitis (n = 27)	No. of patients with nonperforated appendicitis (n = 21)	Sensitivity* (%) 95% CI	Specificity* (%) 95% CI	Accuracy (%)
Abscess	10	1	37.03 (10/27) 0.21-0.55	95.24 (20/21) 0.77-0.99	62.5
Extraluminal appendicolith	6	0	22.22 (6/27) 0.1-0.4	100 (21/21) 0.84-1	56.25
Extraluminal air	14	1	51.85 (14/27) 0.34-0.69	95.24 (20/21) 0.77-0.99	70.83
Phlegmon	5	3	18.5 (5/27) 0.08-0.36	85.71 (18/21) 0.65-0.95	47.9
Defect in enhancing appendiceal wall	23	6	88.46 (23/26)[1] 0.71-0.96	71.43 (15/21) 0.5-0.86	80.85
Cecal wall thickening	22	17	81.5 (22/27) 0.63-0.91	19 (4/21) 0.07-0.4	54.16
Free fluid	23	14	85.18 (23/27) 0.67-0.94	33 (7/21) 0.17-0.54	62.5
Bowel ileus	11	4	40.74 (11/27) 0.24-0.59	80.85 (17/21) 0.6-0.92	58.33
Adjacent appendiceal inflammation	23	12	85 (23/27) 0.67-0.94	42.85 (9/21) 0.24-0.63	66.66
Enlargement of lymph node at RLQ	24	12	88.88 (24/27) 0.72-0.96	42.85 (9/21) 0.24-0.63	68.75

* Data in parentheses are raw data

[1] Defect in enhancing appendiceal wall cannot be evaluated in one patients due to cannot visualized appendix

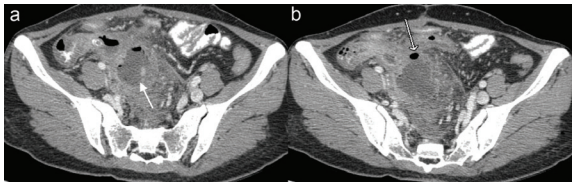

Fig. 2 Axial enhancing CT lower abdomen of 31-year-old female with rupture appendicitis
a) showed irregular rim enhancing fluid collection at right lower quadrant and pelvic cavity with small air bubbles inside (arrow) and perilesional fat stranding, measured about 5.5 x 6 cm in size, compatible with abscess. There was tubular structure connecting between the lesion and cecum which suggested to be appendix. Focal thickening of cecal wall was also noted
b) in lower level, the abscess was seen with extraluminal air (arrow). Cecal wall thickening was also seen

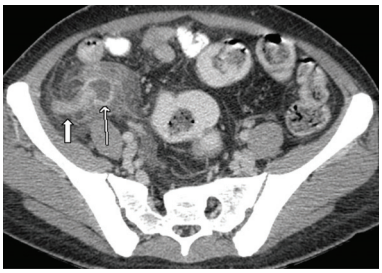

Fig. 4 Axial enhancing CT lower abdomen of 48-year-old woman with nonperforated appendicits (suppurative appendicitis from pathologic proven). Rim-like enhancing hypodensity lesion (arrow) at tip of appendix (open arrow) was seen. There was focal fat stranding around this lesion. Nonperforated appendicitis from pathologic prove was noted, possibly due to focal marked luminal distension with pus-filled inside and enhancing appendiceal wall may mimic finding of abscess

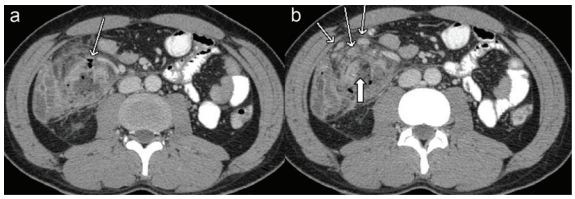

Fig. 3 Axial enhancing CT whole abdomen on 39-year-old male with perforated appendicitis
a) revealed a pericecal fluid collection with extraluminal air (arrow) at right lower quadrant. Dirty fat stranding was seen around this collection
b) in lower level, multiple mesenteric lymphadenopathies (arrow) were seen. Dilated enhancing wall of appendix (open arrow) was located inside of this collection with spots air density. All findings are compatible with ruptured appendicitis. Cecal wall thickening was also noted

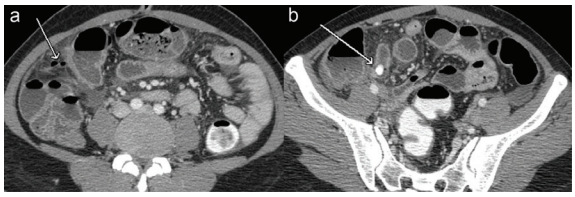

Fig. 5 Axial enhancing CT whole abdomen of 38-year-old woman with nonperforated appendicitis.
a) revealed a extraluminal air (arrow) at right lower quadrant. Dirty fat stranding was seen around this collection.
b) in lower level, enhancing wall of appendix with intraluminal appendicolith inside (arrow) was seen, measured about 12 mm. in diameter of appendix. Periappendiceal fat stranding, minimal free fluid and bowel ileus in this area were also observed. This was a false positive case of extraluminal air due to acute gangrenous appendicitis that confirmed by pathology

false-positive case of extraluminal air was acute gangrenous appendicitis that was confirmed by pathology.

The good sensitive findings (more than 80% sensitivity) for perforated appendicitis were enlarged mesenteric lymph nodes at right lower quadrant region, a defect in enhancing appendiceal wall (Fig. 6), free fluid, moderate to severe periappendiceal inflammation (Fig 1, 3a, 3b) and cecal wall thickening (Fig 2a, 2b, 3b). The two most sensitive findings were enlarged regional mesenteric lymph nodes (88.88%) and a defect in enhancing appendiceal wall (88.46%).

The most accurate finding was a defect in enhancing appendiceal wall (80.85%).

Results of groups with combined specific findings were reported (Table 3). Among the groups, group 3 had the best sensitivity (92.59%) and accuracy (83.3%). Seven patients with perforated appendicitis had only a single finding of defect in enhancing appendiceal wall.

Discussion

Preoperative knowledge of perforated appendicitis has clinical importance. Once perforation

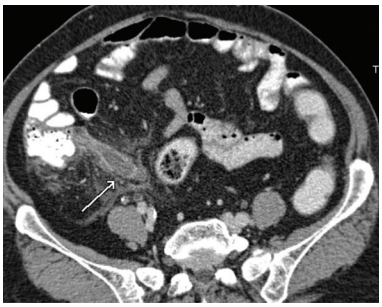

Fig. 6 Axial enhancing CT whole abdomen of 76-year-old woman with perforated appendicitis. Dilated appendix was noted, measured about 15 mm in diameter, with defect in enhancing wall of appendix (arrow). Periappendiceal fat standing was seen

has occurred, the complications, which include reoperation and intraabdominal sepsis, increase[6]. The use of CT to distinguish perforated from non-perforated appendicitis has been assessed by various investigators[1,4-5,7]. Horrow et al[7] reported the five specific CT findings for perforated appendicitis including abscess, extraluminal air, extraluminal appendicolith, phlegmon, and defect in enhancing appendiceal wall. All of these findings had excellent specificities (94.5-100%).

Tsuboi et al[4] found 100% specificity of individual CT findings for the diagnosis of perforated appendicitis including abscess, extraluminal air and extraluminal appendicolith. However, the findings of a defect in enhancing appendiceal wall and phlegmon also had high specificity, 96.8% and 95.2%, respectively.

The present, only the three findings (extra-luminal appendicolith, extraluminal air and abscess) had high specificity (95.24-100%). Nevertheless, the other two findings (phlegmon and defect in enhancing appendiceal wall) had relatively low specificity (85.7% and 71.43%, respectively) compared to previous studies.

Table 3. Diagnostic performance of groups of combined specific findings

Group*	Sensitivity (%)	Specificity (%)	Accuracy (%)
Group 1	62.96 (17/27)	90.48 (19/21)	75.00 (36/48)
Group 2	66.66 (18/27)	80.95 (17/21)	72.92 (35/48)
Group 3	92.59 (25/27)	71.43 (15/21)	83.33 (40/48)

* Group 1 = one or more of the following classic findings: abscess, extraluminal air or extraluminal appendicolith
Group 2 = group 1 or phlegmon
Group 3 = group 1 or defect in enhancing wall of appendix
Data in parentheses are raw data

One diagnosis of abscess was false-positive. This one revealed rim-like enhancing hypodensity lesion at appendiceal tip. Pathological report of this case showed only an acute suppurative appendicitis without perforation. Focal marked luminal distension with pus-filled inside that combined with thick appendiceal wall enhancement may mimic the finding of abscess.

One false-positive case of extraluminal air had an acute gangrenous appendicitis without area of perforation that was confirmed by pathology. This severity of acute appendicitis tends to perforate at the necrotic or ischemic part. Thus, this case may be perforated at any part. Microscopic examination was performed for a restricted portion, a different site with perforation might not have been examined.

There were six false-positive findings of a defect in enhancing appendiceal wall. Thin-section CT is more likely associated with artifacts, such as low-density artifacts in the appendiceal wall due to nearby bones or intestinal peristalsis that can be misdiagnosed as focal defects of the enhancing wall. This reason was like that previously reported by Tsuboi et al[4]. However, three of six false-positive cases in the present study were pathological proof of acute gangrenous appendicitis without area of perforation. This is not surprising since non-enhancing area that represent ischemic or necrotic part in acute gangrenous appendicitis can be seen as focal defects of the enhancing wall. Mori et al[8] found that 70.4% of acute gangrenous appendicitis showed deficiency of appendiceal wall, possibly seen as focal defects of the enhancing wall.

There were three false-positive findings of a phlegmon. This is because diagnosis of a phlegmon is more subjective, and phlegmon is part of a spectrum of inflammatory change[7]. Therefore, a combination of periappendiceal inflammation and free fluid can be misread as a phlegmon.

Although, the aforementioned three specific findings had high specificity, their sensitivity was low (22.22-51.85%). While a defect in enhancing appendiceal wall had higher sensitivity (88.5%). The differences observed in sensitivity between a defect in enhancing appendiceal wall and the other three specific findings might have been because the former was direct evidence of perforation, while the latter were indirect evidence. These results were also

demonstrated in another study by Tsuboi et al[4]. They found that the most sensitive finding for perforated appendicitis was the defect in enhancing appendiceal wall (95% sensitivity). However, in the present study, the most sensitive finding was enlarged mesenteric lymph nodes at right lower quadrant (88.88%). This result was similar to a previous study by Bixby et al[5]. They also found that the most sensitive finding was enlarged mesenteric lymph nodes (73%).

Among the individual CT findings in the present study, a defect in enhancing appendiceal wall was the most accurate (80.85%) diagnostic finding for perforated appendicitis. Of the three groups of combined findings, group 3 (that means one or more of the classic findings (abscess, extraluminal air, extraluminal appendicolith) or defect in enhancing appendiceal wall) had the highest accuracy (83.3%) and highest sensitivity (92.59%). Therefore, considering the use of a combination of several findings is clinically valuable. These results were also seen in a previous report[4,7].

However, in patients with early appendiceal perforation may not be seen substantial periappendiceal inflammation or three most specific findings. For such a therapeutic strategy to be undertaken, the early stage of perforated appendicitis must be accurately diagnosed. From the present results, the diagnosis of early-perforated appendicitis may be achieved by detecting the single finding of a defect in enhancing appendiceal wall.

The present study, inclusion of phlegmon in a group of combined findings (group 2) cannot be improved by the sensitivity, specificity, and accuracy for the diagnosis of perforated appendicitis. These results were different from other studies[4,7].

The other sensitive CT findings including cecal wall thickening, free fluid and moderate to severe periappendiceal inflammation were helpful for diagnosis of perforated appendicitis with good sensitivity (more than 80%). However, their specificities were poor (19-42.85%).

The appendix was not visualized in one patient with perforated appendicitis. In this case, the authors found secondary or indirect findings that included intra-abdominal abscess, extraluminal air, extraluminal appendicolith, severe right lower quadrant fat inflammation, enlargement of right lower quadrant mesenteric lymph nodes, and cecal wall thickening. Therefore, if there is evident extraluminal appendicolith, right lower quadrant abscess, extraluminal air, or other aforementioned findings without visualization of the appendix, one must consider perforated appendicitis in the differential diagnosis.

There were limitations to our study. It was retrospective and had a small sample size.

Conclusion

Multi-detector CT can help to differentiate perforated from non-perforated appendicitis. The most accurate finding is defect in the enhancing appendiceal wall. Abscess, extraluminal air, and extraluminal appendicolith are highly specific for the diagnosis of perforated appendicitis. The good sensitive findings are enlarged mesenteric lymph nodes at right lower quadrant and defect in enhancing appendiceal wall. The group of combined findings including three most specific findings or defect in enhancing appendiceal wall increase sensitivity and accuracy for diagnosis of perforated appendicitis.

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การศึกษาเพื่อแยกภาวะไส้ติ่งอักเสบชนิดแตก และไม่แตกด้วยเครื่องเอกซเรย์คอมพิวเตอร์

วรรณวรางค์ สุทธิคีรี, ลัสนรรห์ เลิศดำรงค์เดช, อภิญญา เจริญศักดิ์

วัตถุประสงค์: *เพื่อประเมินประสิทธิภาพ และความแม่นยำของการตรวจด้วยเครื่องเอกซเรย์คอมพิวเตอร์ ในการแยกภาวะไส้ติ่งอักเสบชนิดแตกและไม่แตก*

วัสดุและวิธีการ: *เป็นการศึกษาย้อนหลังระหว่างเดือนมิถุนายน พ.ศ. 2549 ถึงเดือนพฤษภาคม พ.ศ. 2552 โดยทำการศึกษาในผู้ป่วยที่มีอายุมากกว่า 15 ปี ที่ได้รับการวินิจฉัยว่ามีภาวะไส้ติ่งอักเสบจากผลการตรวจทางพยาธิวิทยา หรือ จากบันทึกการผ่าตัด และได้รับการตรวจวินิจฉัยทางช่องท้องด้วยเครื่องเอกซเรย์คอมพิวเตอร์ชนิดหลายหัวตรวจร่วมด้วยก่อนการรักษาโดยการผ่าตัดหรือทางยา ซึ่งพบว่ามีผู้ป่วยจำนวน 48 คน ที่สามารถเข้าร่วมในการศึกษานี้ โดยรังสีแพทย์สองคนจะทำการวินิจฉัยภาพทางรังสีของการตรวจทางช่องท้อง ด้วยเครื่องเอกซเรย์คอมพิวเตอร์ชนิดหลายหัวตรวจของผู้ป่วยทั้งหมด แล้วนำลักษณะที่พบทางรังสีมาวิเคราะห์ทางสถิติ โดยเทียบกับผลการตรวจทางพยาธิวิทยา หรือจากบันทึกการผ่าตัดว่ามีภาวะไส้ติ่งแตกร่วมด้วยหรือไม่ โดยวิเคราะห์เป็นค่าความไว ความจำเพาะ และความแม่นยำ*

ผลการศึกษา: *จากจำนวนผู้ป่วยทั้งหมด 48 คน พบว่ามีภาวะไส้ติ่งอักเสบชนิดไม่แตก 21 คน และชนิดแตก 27 คน โดยพบว่าลักษณะ abscess, extraluminal appendicolith และ extraluminal air มีค่าความจำเพาะต่อภาวะไส้ติ่งอักเสบชนิดแตกสูงที่สุด คือ 95.24%, 100%, 95.24% ตามลำดับ ลักษณะทางรังสีที่มีความแม่นยำที่สุด ในการวินิจฉัยภาวะไส้ติ่งอักเสบชนิดแตกคือ ลักษณะ defect in enhancing appendiceal wall ในส่วนของลักษณะทางรังสีที่มีความไวมากที่สุดคือ ต่อมน้ำเหลือง mesenteric โตที่บริเวณช่องท้องด้านขวาล่าง และลักษณะ defect in enhancing appendiceal wall โดยมีค่าความไวเท่ากับ 88.88% และ 88.46% ตามลำดับ นอกจากนี้เมื่อนำลักษณะทางรังสีหลายชนิดมารวมกันในรูปแบบที่สามพบว่าจะเพิ่มความไว และความแม่นยำมากที่สุด โดยเพิ่มเป็น 92.59% และ 83.3% ตามลำดับ*

สรุป: *การตรวจวินิจฉัยด้วยเครื่องเอกซเรย์คอมพิวเตอร์ สามารถนำมาใช้เพื่อจำแนกภาวะไส้ติ่งอักเสบชนิดแตกและไม่แตกได้ดี*