Update in mesenteric and omental disease: CT and MR findings

Poster No.: C-422
Congress: ECR 2009
Type: Educational Exhibit
Topic: Abdominal and Gastrointestinal
Authors: M. S. Fernández López-Peláez, M. García Isidro, F. Bergaz Hoyos, E. Ayerbe Unzurrunzaga, M. Parras Jurado, E. De Luis Pastor, A. Duque Taurá, J. Cobo Soler; Madrid/ES
Keywords: Peritoneum, mesentery and omentum, Non-tumoral pathology of mesentery, Tumoral pathology of mesentery, Multidetector TC and MR findings
DOI: 10.1594/ecr2009/C-422

Any information contained in this pdf file is automatically generated from digital material submitted to EPOS by third parties in the form of scientific presentations. References to any names, marks, products, or services of third parties or hypertext links to third-party sites or information are provided solely as a convenience to you and do not in any way constitute or imply ECR's endorsement, sponsorship or recommendation of the third party, information, product or service. ECR is not responsible for the content of these pages and does not make any representations regarding the content or accuracy of material in this file.

As per copyright regulations, any unauthorised use of the material or parts thereof as well as commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method is strictly prohibited.

You agree to defend, indemnify, and hold ECR harmless from and against any and all claims, damages, costs, and expenses, including attorneys' fees, arising from or related to your use of these pages.

Please note: Links to movies, ppt slideshows and any other multimedia files are not available in the pdf version of presentations.

www.myESR.org
Learning objectives

To review the spectrum of diseases which may involve focal or diffusely the peritoneum, mesentery and omentum.

To show their most characteristic radiological signs, based on 64 multidetector helical CT and 1.5 Tesla MR images.

To discuss the differential diagnosis among these processes, based on their radiological features.

To illustrate the correlation between radiological and pathological findings in selected cases.

Background

A wide spectrum of peritoneal diseases, including both neoplastic and non-neoplastic conditions, can manifest at computed tomography (CT) or magnetic resonance (MR), as fluid accumulation within the peritoneal cavity, cystic or soft-tissue masses, abnormal density of peritoneal fat or infiltration of peritoneal ligaments and mesenteries.

Our review includes a selection of tumoral, inflammatory, vascular and other uncommon processes with focal or diffuse involvement of those peritoneal structures.

Although many of them allow a specific diagnosis with CT alone or combined with MR images, most have a nonspecific appearance that requires careful correlation with clinical history. In some cases, combination of both factors may suggest the diagnosis.

We review the most remarkable radiological features of these unusual diseases based on 64-multidetector CT and MR images. We also show the radiopathological correlation of some selected cases, mainly concerning to peritoneal neoplasms.

Overall, multidetector CT is an excellent imaging modality for detecting and characterizing the spectrum of peritoneal involvement and the etiology of those diseases, which may be combined with MR imaging in many cases.
INTRODUCTION:

Peritoneum and its reflections (mesentery, omentum) are frequently involved by infectious, inflammatory, neoplastic, vascular, and traumatic processes. Most omental and peritoneal pathologic conditions manifest as nonspecific symptoms and signs. As such, diagnosis is based on CT findings, which may be complemented with MR images.

Among them, CT is the optimal imaging technique for demonstrating the presence of peritoneal or omental disease and its causes. Moreover, multidetector CT with multiplanar reformation allows accurate examination of the peritoneal cavity and its pathologic conditions.

Radiologically, the spectrum of peritoneal diseases can be classified as follows:

1) **Multifocal, ill-defined infiltrative lesions**, including: peritoneal carcinomatosis, tuberculous peritonitis, malignant peritoneal mesothelioma, pseudomyxoma peritonei, lymphomatosis, and the conditions of cirrhosis and portal hypertension;

2) **Solid or cystic mass-forming lesions**, including: primary and secondary neoplasms and infectious processes; and

3) **Miscellaneous conditions**, including: omental infarction, mesenteric panniculitis, epiploic appendagitis, mesenteric hematoma, hernia and others.

1) **MULTIFOCAL, ILL-DEFINED INFILTRATIVE LESIONS:**

   • **LIVER CIRRHOSIS WITH PORTAL HYPERTENSION:**

   This is one of the most common causes of diffuse omental infiltrative lesions. Patients with cirrhosis frequently present with mesenteric, omental, or retroperitoneal edema identifiable at CT.

   The radiologic features of omental edema vary from a mild infiltrative haze to the presence of masslike lesions with discrete margins and are similar to those of other omental pathologic conditions. (Figs. 1, A-B)

   • **PERITONEAL CARCINOMATOSIS:**

   Metastatic peritoneal tumors most often originate from the ovary, stomach, pancreas, colon, uterus, and bladder. Hematogenous metastases from malignant melanoma, as well as breast and lung carcinoma, are also common. Much more infrequently, they may have an unknown origin.
Patients with peritoneal carcinomatosis may demonstrate ascites, peritoneal thickening, seeding nodules, and omental infiltration. However, these findings are not specific for peritoneal carcinomatosis and can be seen with other entities that seed the peritoneum, including mesothelioma, tuberculosis, and lymphomatosis. Although omental caking is commonly seen in patients with peritoneal carcinomatosis, it is not diagnostic for this disease. Irregular thickening of the outer contour of the infiltrated omentum favors the diagnosis of peritoneal carcinomatosis (Figs. 2, A-E).

**MALIGNANT PERITONEAL MESOTHELIOMA:**

Malignant peritoneal mesothelioma is a rare condition and accounts for 12%-33% of all mesotheliomas. It is a rare but aggressive tumor that is derived from the peritoneal mesothelium that may have a variable appearance at CT or MR images. It can be associated to previous history of asbestos exposure.

It is commonly associated with ascites, irregular or nodular peritoneal thickening, a "stellate" pattern of the mesentery, bowel wall thickening, and omental involvement ranging from finely infiltrated fat with a "smudged" appearance to discrete omental nodules or omental caking (Figs. 3, A-E). Sometimes, it manifests as a large quantifiable mass in the upper abdomen with minimal ascites and discrete nodules scattered over the peritoneum.

**PSEUDOMYXOMA PERITONEI:**

Pseudomyxoma peritonei is characterized by the gradual accumulation of large volumes of mucinous ascites, which arise from a ruptured benign or malignant mucin-producing tumor of the appendix, ovary, pancreas, stomach, colorectum, or urachus.

At CT, pseudomyxoma peritonei appears as a low-attenuation, frequently loculated fluid collection in the peritoneal cavity, omentum, and mesentery. Scallop of visceral surfaces, especially the liver, is the diagnostic characteristic that distinguishes mucinous from serous ascites at CT (Fig. 4). Curvilinear or punctate calcifications in the mucinous materials are frequently identified.

**TUBERCULOUS PERITONITIS:**

It is caused by hematogenous spread of pulmonary tuberculosis or by rupture of a mesenteric node.

Radiological findings suggesting tuberculous peritonitis are: smooth peritoneum with minimal thickening and pronounced enhancement, mesenteric involvement with macronodules (5 mm in diameter), a thin omental line (fibrous wall covering the infiltrated omentum), mesenteric adenopathy with low-attenuation centers (caseous necrosis), and calcifications. The fibrotic type of tuberculous peritonitis, although not common, is characterized by loculated ascites, large omental masses, and separation or fixation of bowel loops.
2) SOLID OR CYSTIC Mass-FORMING LESIONS:

- **FLUID COLLECTIONS:**

A fluid collection within only the lesser sac should be considered postoperative fluid after gastric or hepatobiliary surgery or an inflammatory exudate from pancreatitis, cholecystitis, or gastric perforation. In other locations of the abdomen, it may be frequently originated by inflammation or perforation of the appendix and colon.

Inflammatory infiltrates in the lesser sac are commonly secondary to acute pancreatitis (Figs. 5, A-C). Because the pancreas does not have a well-defined fibrous capsule, the inflammatory process may spread into the adjacent tissue through a thin layer of the surrounding connective tissue. Thus, the inflammatory fluid initially accumulates in the lesser sac, spreading posteriorly to other regions of the abdomen.

- **PANCREATIC PSEUDOCYST:**

Space-occupying processes in the superior recess of the lesser sac include pancreatic pseudocysts or abscesses, enlarged lymph nodes along the lesser curvature of the stomach, and primary or secondary neoplasms. Pancreatic pseudocysts are characterized by a unilocular cystic mass with a smooth and thin wall, almost always occurring after pancreatitis (Figs. 6, A-B).

- **SECONDARY NEOPLASMS:**

Secondary neoplasms involving peritoneum, mesentery or omentum, are far more common than primary tumors. Many of them may involve peritoneum or omentum by direct spread, peritoneal seeding, or hematologic spread. Metastatic peritoneal tumors most often originate from carcinomas of the ovary, stomach, pancreas, and colon. Hematogenous metastases from malignant melanoma, as well as breast and lung carcinoma, are also common. Much more infrequently, they may have an unknown origin (Fig. 7, A-D).

- **PERITONEAL IMPLANTS FROM GASTROINTESTINAL STROMAL TUMOR (GIST):**

Much less frequently, metastatic nodules in peritoneum may originate in leiomyosarcomas or gastrointestinal stromal tumors (GIST). These tumors are typically large, well-circumscribed, heterogeneous, centrally necrotic tumors that arise in the wall of the small bowel and stomach. Peritoneal involvement by leiomyosarcoma and GIST is most often due to metastatic spread from a primary gastrointestinal site, but primary peritoneal tumors do occur. They usually reach great sizes and metastasize to liver and peritoneum (Figs. 8, A-C).

- **PRIMARY NEOPLASMS:**
Primary neoplasms of peritoneum, mesentery or omentum are uncommon and include mesotheliomas, hemangiopericytomas, stromal tumors, leiomyomas, lipomas, neurofibromas, fibromas, leiomyosarcomas, liposarcomas, and fibrosarcomas.

Imaging findings of primary peritoneal tumors are nonspecific. However, the CT findings in benign mesenchymal neoplasms are more often suggestive of a specific diagnosis.

- DERMOID TUMORS:

Aggressive fibromatosis, or intraabdominal desmoid tumor, represents a benign proliferative process that has a tendency to locally recur. Mesenteric involvement is more often seen in cases related to typical familial adenomatous polyposis syndrome (FAPS) (Gardner syndrome). At CT, the margins of these lesions may appear irregular or smooth (Fig. 9). The specific diagnosis of a mesenteric desmoid tumor would be strongly suggested by a known diagnosis of FAPS or its associated CT findings, such as colonic polyps or masses, previous total colectomy, and polyps or masses involving the duodenum, stomach, or periampullary region.

- NERVE SHEATH TUMORS:

Nerve sheath tumors arising from the subperitoneal space are uncommon. A mesenteric plexiform neurofibroma in the setting of neurofibromatosis type 1 (NF-1) likely represents the most common manifestation of subperitoneal involvement, although retroperitoneal involvement is much more common.

At CT, nerve sheath tumors often have a multifocal, branching or coalescent appearance and may mimic low-attenuation lymphadenopathy or even a cystic lesion (Fig. 10). These tumors often bridge the retroperitoneal and subperitoneal spaces. Associated nerve root lesions or other findings typical of NF-1 can strongly suggest the diagnosis. Although usually benign, these tumors may undergo malignant degeneration.

- PERITONEAL LIPOSARCOMA:

Although liposarcoma is one of the most common primary retroperitoneal malignancies, peritoneal liposarcoma is relatively rare.

However, unlike other primary peritoneal sarcomas, CT findings can suggest this specific diagnosis when the tumor contains areas of fat attenuation (Figs. 11, A-E). Fat attenuation is less likely to be seen in higher-grade liposarcomas, such as the pleomorphic and round cell subtypes.

- PRIMARY PERITONEAL LEIOMYOSARCOMA:

Apart from liposarcoma, peritoneal sarcomas largely lack any distinguishing features and generally manifest at CT as large, solitary masses that may contain central hypodense areas of necrosis.
Among them, leiomyosarcomas are rare neoplasms that commonly arise from sarcomas of the gastrointestinal tract, but rarely originate as primary tumors of the subperitoneal space (Figs. 12, A-F).

- **LYMPHOPROLIFERATIVE DISORDERS:**

Lymphoproliferative neoplastic disease can rarely manifest as a primary subperitoneal process without additional sites of involvement at presentation. Mesenteric lymphadenopathy is a relatively common radiological manifestation of non-Hodgkin and Hodgkin lymphoma. Associated retroperitoneal and mesenteric adenopathy is manytimes present (Fig. 13).

However, extensive lymphomatous infiltration of the intraperitoneal portion of the subperitoneal space is uncommon and is referred to as peritoneal lymphomatosis. CT findings consist of omental caking, diffuse peritoneal thickening, and ascites.

3) **MISCELLANEOUS LESIONS:**

- **RETRACTILE MESENTERITIS:**

Retractile mesenteritis represents the chronic form of sclerosing mesenteritis, where fibrosis predominates over inflammatory infiltration of the mesenteric fat.

At CT, the fibrotic spiculated mesenteric mass may contain dystrophic calcification (Fig. 14). Scarring with retraction of the mesentery and encasement of small bowel loops can lead to ischemia or obstruction.

The imaging features overlap with those of metastatic carcinoid; it has also been associated with other conditions such as retroperitoneal fibrosis, lymphoma, and Gardner syndrome.

- **MESENTERIC ADENITIS:**

Mesenteric adenitis is a nonspecific diagnosis that may be considered at CT in a symptomatic patient with slightly prominent right-sided mesenteric lymph nodes (defined as three or more nodes measuring 5 mm or greater) but without an identifiable inflammatory process. The nodes rarely exceed 10 mm in short-axis measurement. An underlying terminal ileitis is thought to represent the cause in at least some cases of mesenteric adenitis.

- **FAT-BASED CONDITIONS:**

Several interesting conditions involving subperitoneal fat typically manifest with abdominal pain, but are generally self-limited in nature. Recognizing their characteristic findings at CT is important for excluding other inflammatory processes that are more threatening and might require more invasive treatment. Thus,
· Disproportionate (more severe than expected for the degree of bowel wall thickening if present) fat stranding may be usually found in diverticulitis and appendicitis;

· Isolated fat stranding without significant bowel involvement suggests a differential diagnosis that is centered in the mesentery, such as: epiploic appendagitis, omental infarction and mesenteric panniculitis.

The characteristic CT findings (in addition to fat stranding) of each of these entities often lead to a final diagnosis.

· DIVERTICULITIS:

Diverticulitis occurs when the neck of a diverticulum is occluded, resulting in inflammation, erosion, and microperforation. The pericolonic inflammation is typically more severe than the colon involvement. Ninety-five percent of cases occur in the left side of the colon. Diverticulitis of both right and transverse colon or small intestine is rare.

The most common CT finding is paracolic fat stranding, that characteristically is disproportionately more severe than the relatively mild, focal colonic wall thickening. Diverticula are typically present.

Additional typical CT findings include inflammation or abscesses in the mesocolon, extraluminal air or fluid accumulation, or abscess formation around the colonic lumen (Figs.15, A-C). Pericolic sinus and fistula are uncommon complications of this pathologic condition.

The inflammation from acute diverticulitis may extend to involve secondarily the epiploic appendages, with resultant increased difficulty of diagnosis on the basis of CT images. However, extraluminal air, a lengthy segment of thickened colonic wall (<5 cm.), and fistula are typical CT features of acute diverticulitis. Moreover, abscess formation and colonic obstruction are extremely rare in acute epiploic appendagitis.

Other important entity in the differential diagnosis is colon adenocarcinoma (Figs. 16, A-B). However, in the latter: 1. diverticula may not be present, 2. fat stranding is none or minimal, 3. colon wall thickening is more severe, irregular and eccentric, 4. the affected segment is focal or less than 5 cm, and 5. lymphadenopathy is present.

· APPENDICITIS:

Appendicitis is the most common cause of acute abdominal pain that requires surgical intervention. The primary pathogenic event in the majority of cases is luminal obstruction caused by fecoliths and lymphoid hyperplasia resulting in progressive intraluminal hyperpressure and luminal distention, with consequent vascular compromise and tissue ischemia. Luminal bacteria multiply causing transmural inflammation. Eventually, appendiceal infarction and microperforation occur, and the inflammation extends to the parietal peritoneum and adjacent structures.
Direct visualization of a dilated (>6 mm diameter), fluid-filled appendix is the most specific CT finding of appendicitis (Fig. 17). Other direct signs include an abnormally thickened appendix, increased attenuation of the appendix after contrast material administration, and periappendicular fat stranding. Periappendicular fat stranding is typically mild to moderate, but it can be severe.

Secondary signs include appendicolith(s) or thickening of the cecal apex (celiac bar sign and the arrowhead sign). In cases of perforated appendicitis with peritonitis or abscess formation, the appendix may be difficult to see.

· EPILOIC APPENDAGITIS:

This process results from torsion or thrombosis of one of the many fatty appendages projecting from the colonic serosa. These appendages are generally indistinguishable from the adjacent intraabdominal fat at CT, but intervening ischemia or infarction renders them easily detectable.

As such, epiploic appendagitis appears as hazy infiltration of the ovoid appendage at CT, with associated thickening of its visceral peritoneal lining and stranding into the surrounding fat (Fig. 18). The CT findings are sufficient for specific diagnosis. Rarely, dystrophic calcification from a previously infarcted appendage may be evident.

· MESENTERIC PANNICULITIS:

Mesenteric panniculitis is an inflammatory disorder of unknown origin that manifests grossly as a diffuse, localized, or multinodular thickening of the mesentery. It represents the acute form of sclerosing mesenteritis, that is a nonspecific inflammation and fibrosis of the fatty tissue of the mesentery that typically occurs in the 6th to 7th decades of life. The cause in most cases is unknown. Progression to retractile mesenteritis is difficult to predict but is fortunately rare.

Synonyms for mesenteric panniculitis include: sclerosing mesenteritis, mesenteric lipodystrophy, liposclerotic mesenteritis, and the mesenteric variety of Weber-Christian disease. The predilection for segmental involvement of the jejunal mesentery is striking.

CT findings include hazy mesenteric infiltration, often with discrete margins and relative sparing of the perivascular fat (Fig.19). CT diagnosis generally requires exclusion of other causes of a "misty mesentery", such as lymphedema, hemorrhage, trauma and neoplasm.

· SEGMENTAL OMENTAL INFARCTION:

Segmental omental infarction is a rare entity that may cause acute abdomen. Preoperative diagnosis is difficult, as right omental involvement is much more common and clinical signs and symptoms are usually nonspecific; thus, they may mimic acute appendicitis or cholecystitis.
The most frequent cause of non-torsion-related omental infarction is venous insufficiency due to trauma or thrombosis of the omental veins. Predisposing factors include: obesity, strenuous activity, congestive heart failure, digitalis administration, recent abdominal surgery, and abdominal trauma.

Primary torsion has no known cause. Secondary torsion is more common, and causes include: hernia, focus of inflammation, previous laparotomy with adhesions, or tumors.

The typical CT finding is a solitary large nonenhancing omental mass with heterogeneous attenuation, which is most often located in the right lower quadrant, deep to the rectus abdominis muscle and either anterior to the transverse colon or anteromedial to the ascending colon (Figs. 20, A-B).

Although omental infarction may have a CT appearance that resembles that of acute epiploic appendagitis, it lacks the hyperattenuating ring that is seen in epiploic appendagitis. In addition, whereas the central focal lesion in acute epiploic appendagitis is most often less than 5 cm long and is located adjacent to the sigmoid colon, the lesion in omental infarction is larger and most commonly is located next to the cecum or the ascending colon.

Whirling fatty tissue around a vascular structure may be a specific finding for omental torsion (Fig. 21).

### ANTERIOR ABDOMINAL HERNIAS:

Ventral hernias are subdivided, on the basis of site or cause of herniation, into the following categories: epigastric, umbilical, subumbilical, spigelian, incisional, and parastomal hernias. In general, ventral hernias contain properitoneal fat, omentum, vascular structures, and occasionally bowel. A subcutaneous hernia sac may be confused with a lipoma of the abdominal wall.

CT scans and MR images may show the precise anatomic site and content of the hernia sac, as well as the characteristics of the hernia cuff and surrounding wall (Figs. 22, A-D). Radiological study is essential to confirm the clinical diagnosis and to identify any potential complications.

### TRAUMATISMS OF THE MESENTERY:

Although most traumatic abdominal injuries are treated conservatively, traumatic perforation or infarction of the gastrointestinal tract still needs surgical treatment. A specific history of lap belt injury, bicycle handlebar or motor-bike injury, and other causes of abdominal blunt trauma may suggest mesenteric or small bowel lesion.

CT findings of mesenteric trauma that suggest conservative treatment, are: free intraperitoneal fluid, mesenteric stranding, fluid or hematoma at the mesenteric root, and focal hematoma. However, free intraperitoneal air and focal bowel wall thickening are associated to the need of surgical repair, as they strongly suggest small bowel injury and perforation (Figs. 23, A-B).

### PERITONEAL LIPOMATOSIS:
This is an uncommon disease corresponding to a supranormal or disproportionate amount of fatty tissue within the abdominal cavity, commonly involving both peritoneal and retroperitoneal spaces. Patients may be asymptomatic; in these cases peritoneal lipomatosis represents an incidental finding.

Abdominal organs may be displaced, rejected or compressed, but never infiltrated, as it must not be considered a neoplastic disease (Figs. 24, A-B).

Images for this section:

**Fig. 1:** Abdominal CT after oral and venous contrast administration, in a 31 year-old male patient with Gardner’s syndrome. A prominent well-defined soft-tissue mass displaces small-bowel loops posteriorly and protrudes slightly the anterior abdominal wall. No colon bowels are seen, due to previous total proctocolectomy.
Fig. 2: Contrast-enhanced axial section of abdominal CT in a 11 year-old male patient with NF-1, complaining of abdominal pain. A giant, multilobulated abdominal mass occupies almost all the peritoneal cavity, surrounding vessels and displacing abdominal structures. Its multifocal, branching or coalescent appearance, mimics low-attenuation lymphadenopathy. These tumor also bridges the retroperitoneal and subperitoneal spaces.
Fig. 3: Axial abdominal CT after oral and venous contrast administration, in a 67 year-old male patient complaining of weight-loss, astenia, anorexia. Multiple nodules surrounding mesenteric vessels are seen. Mild hyperattenuation of the mesenteric fat is also present. The retroperitoneal involvement is more evident, with much bigger lymphadenopathies.
Fig. 4: Axial section of abdomen after oral and venous contrast administration. Fibrosis manifests as a mass of soft-tissue attenuation that may contain calcifications. Thickening extending into the adjacent fat and scarring with retraction of the mesentery may be seen.
Fig. 5: Contrast-enhanced CT at the level of the right-iliac fossa in a 41 year-old male patient with suspected appendicitis. A dilated, enlarged appendix is the typical radiologic finding of acute appendicitis. Mild hyperdensity of the periappendicular fat, due to the spread of inflammatory changes, is also present.
**Fig. 6:** Post-contrast abdominal CT in a patient with suspected colonic diverticulitis. An oval fat-containing lesion surrounded by a high-density rim at the left lower quadrant of the abdomen is typical of epiploic appendagitis.
Fig. 7: Contrast-enhanced abdominal CT. Incidental finding. A solitary, well-defined, fatty mass is seen in the middle region of the mesentery, with higher attenuation than retroperitoneal fat. There is a subtle fatty halo surrounding the soft-tissue nodules and mesenteric vessels.
Fig. 8: Multidetector CT after oral and venous contrast administration, in a patient with recent surgery complaining of abdominal distension and pain. Severe dilatation of small bowel loops, up to the level of a volvulated segment of ileum (filled with oral contrast agent) is seen. Descending colon is displaced posteriorly, compressed by the dilated loops. See the typical "whirl" sign, consisting in rotated superior mesenteric vessels with the corresponding mesenteric fat.
**Fig. 9:** Post-contrast CT of the same patient at different level, shows several adenopathies next to the appendicular location, due to local inflammatory changes.
**Fig. 10:** Transverse TSE T2 weighted MR image of the same patient. Omental cake is seen as a hypointense lobulated mass in the left upper quadrant of the abdomen. Mild amount of ascites is present.
Fig. 12: Contrast-enhanced abdominal CT in a patient with traumatic avulsion of the root of mesentery. Five days after injury, markedly enlarged walls of small bowel loops is evident. Mild hyperdensity of adjacent mesenteric fat is also seen. Surgical resection of a segment of small intestine was needed.
Fig. 15: Abdominal CT after oral contrast administration in a patient with acute abdominal pain. Note the free-air bubbles and contrast leak out, located laterally and posteriorly to the grossed-wall segment of sigmoid colon, due to perforation of a demonstrated adenocarcinoma. Fat tissue infiltration is also seen, with remarkable fluid collection in the presacral fat.
Fig. 16: Abdominal CT of other patient after oral and venous contrast administration, shows fluid collection along the right anterior pararrenal space, with enlargement of anterior perirrenal fasciae, secondary to accidental perforation of a diverticulum located in the second portion of duodenum.
Conclusion

Although most of the diseases involving peritoneum, mesentery and omentum allow a specific radiological diagnosis, many have a nonspecific appearance that requires careful correlation with clinical history. In such cases, combination of both factors may suggest the diagnosis.

Multidetector-CT, due to its multiplanar reconstruction, post-processing modalities and best spacial resolution, is an excellent imaging tool for detecting and characterizing the peritoneal involvement and the extension of those processes.

Additionally, CT studies may be complemented with MR imaging in many cases. Furthermore, MR may be specially useful in the follow-up of most neoplastic processes, to accurate the extension of diffuse peritoneal involvement from a primary tumor, such as ovarian cancer.

Personal Information

Corresponding author:

Maria Soledad Fernández López-Peláez.

Radiology Department. Hospital Madrid Montepríncipe.

Madrid, Spain.

e-mail adress: fernandezlpm07@yahoo.es

References

1. Eunhye Yoo, MD; Joo Hee Kim, MD; Myeong-Jin Kim, MD; Jeong-Sik; Yu, MD; Jae-Joon Chung, MD; Hyung-Sik Yoo, MD; Ki WhangKim,MD: Greater and Lesser Omenta: Normal Anatomy and Pathologic Processes. RadioGraphics 2007;27:707-720.

2. Ajay K. Singh, MD; Debra A. Gervais, MD; Peter F. Hahn, MD, PhD; Pallavi Sagar, MD; Peter R. Mueller, MD; Robert A. Novelline, MD: Acute Epiplioc Appendagitis and Its Mimics. RadioGraphics 2005; 25:1521-1534.
3. Jose M. Pereira, MD; Claude B. Sirlin, MD; Pedro S. Pinto, MD; R. Brooke Jeffrey, MD; Damien L. Stella, MD; Giovanna Casola, MD: Disproportionate Fat Stranding: A Helpful CT sign in Patients with Acute abdominal Pain. *RadioGraphics 2004*; 24:703-715.


6. Bo Kyoung Seo, MD; Hyun Kwon Ha, MD; Ah Young Kim, MD; Tae Kyung Kim, MD; Min Jung Kim, MD; Jae Ho Byun, MD; *et al*: Segmental Misty Mesentery: Analysis of CT Features and Primary Causes. *Radiology 2003*; 226:86-94.


11. Rosemarie Forstner, MD; Hedvig Hricak, MD, PhD; CBethan Powell, MD; Louisa Azizi, MD; Steven B. Frankel, MD; Jeffrey L. Stem, MD: Ovarian Cancer Recurrence: Value of MR Imaging. *Radiology 1995*; 196:715-720.

12. Jennifer E. Hamrick-Turner, MD; Maria V. Chiechi, MD; Patricia L. Abbitt, MD; Pablo R. Ros, MD: Neoplastic and Inflammatory Processes of the Peritoneum, Omentum and Mesentery: Diagnosis with CT. *RadioGraphics 1992*; 12:1051-1068.

13. Yuriko Okino, MD; Hiro Kiyosue, MD; Hiromu Mori, MD; Eiji Komatsu, MD; Shunro Matsumoto, MD; Yasunari Yamada, MD: Root of the Small-Bowel Mesentery: Correlative Anatomy and CT Features of Pathologic Conditions. *RadioGraphics 2001*; 21:1475-1490.

15. Lynne Ruess, MD; Aletta A. Frazie, MD; Carlosj Sivit, MD: CT of the Mesentery, Omentum, and Peritoneum in Children. RadioGraphics 1995; 15:89-104.


17. Walter Wiesner, MD; Bharti Khurana, MD; Hoon Ji, MD, PhD; Pablo R. Ros, MD, MPH: CT of Acute Bowel Ischemia. Radiology 2003; 226:635-650.

18. Emil J. Balthazar, MD; Bernard A. Birnbaum, MD; Alec J. Megibow, MD; Richard B. Gordon, MD; Charles A. Whelan, MD; Donald H. Hulnick, MD: Closed-Loop and Strangulating Intestinal Obstruction: CT Signs. Radiology 1992; 185:769-775.

19. Clare M. C. Tempany, MD; Kelly H. Zou, PhD; Stuart G. Silverman, MD; Douglas L. Brown, MD; Alfred B. Kurtz, MD; Barbara J. McNeil, MD, PhD: Staging of Advanced Ovarian Cancer: Comparison of Imaging Modalities-Report from the Radiological Diagnostic Oncology Group. Radiology 2000; 215:761-767.

20. Peter J Strouse, MD; Bradley J. Close, MD; Kelley W. Marshall, MD; Rbert Cywes, MB ChB: TC of bowel and mesenteric trauma in children. Radiographics 1999; 19:1237-1250.

