Case 3613

Gastric carcinoma – CT and US findings
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Section: Abdominal imaging
Case Type: Clinical Cases
Patient: 59 years, female

Clinical History:
A 59 years old patient presented to the emergency room with a two month history of a vague postprandial abdominal heaviness. In the past week vomiting and abdominal pain appeared suddenly. Anorexia developed and there was an average weight loss of about 5 Kg.

Imaging Findings:
A 59 years old patient presented to the emergency room with a two month history of a vague postprandial abdominal heaviness. In the past week vomiting and abdominal pain appeared suddenly. Anorexia developed and there was an average weight loss of about 5 Kg. The patient underwent an abdominal ultrasound that showed an echo-poor thickened stomach wall, with no layered structure. CT showed a focal wall thickening in the antrum with marked enhancement of the mucosal layer. There were some hepatic hypo dense nodules compatible with cysts easily confirmed by ultrasound. The histopathologic analysis revealed to be gastric adenocarcinoma.

Discussion:
Gastric cancer remains a deadly disease, with overall 5-year survival rates of less than 20%. However, early gastric cancers are curable lesions, with 5-year survival rates of more than 90%. The peak prevalence is between 50 and 70 years of age. The majority of stomach carcinomas can be detected at conventional upper abdominal ultrasound and this detection can be improved by using a water load. The cancer is seen initially as a localised thickening of the inner layer of the stomach wall with echo-poor tissue. As this progress there is loss of the layered structure with the tumour spreading and invading the muscularis propria. Recent advances in computed tomographic (CT) technology, including the introduction of multidetector row CT and the development of real-time three-dimensional (3D) imaging systems have sparked renewed interest in using CT to evaluate the gastrointestinal tract. For dedicated gastric imaging, water is used as an oral contrast agent. Water is well tolerated and results in good gastric distention as well as excellent visualization of the enhancing gastric wall. Volume rendering of CT data coupled with interactive 3D and stereoscopic display can then be used to more clearly depictgastric disease. When water is used as an oral contrast agent, gastric tumours appear as segmental or diffuse wall thickening that may demonstrate enhancement unlike that of the normal adjacent gastric wall. These tumours may be subtle but are easier to detect if low-attenuation oral contrast material is used. Tumour staging is performed histologically in a surgical specimen. CT is used to assess the presence and extent of transmural or extra gastric spread of the tumour, thereby assisting in the selection of surgical or conservative therapy. CT of the adequately fluid-distended stomach reveals focal areas of wall thickening (>4mm) that may be irregular or nodular, or intraluminal masses with asymmetric thickening of the gastric folds. Scirrhous carcinomas (linitis plastica) tend to cause concentric wall thickening with lack of distension of the affected segment. Variable enhancement of gastric carcinomas is seen after intravenous contrast injection. In early advanced gastric cancers, malignant invasion is limited to the muscularis propria or serosa and the outer border
may be smooth or show a few small linear strands of soft tissue extending into the fat plane, as is the case with a desmoplastic or inflammatory reaction. In transmural extension, the serosal contour becomes blurred and strandlike areas of increased attenuation may be seen extending into the perigastric fat. Tumour spread frequently occurs via ligamentous and peritoneal reflections to adjacent organs. The liver may be invaded via the gastrohepatic ligament, the pancreas via the lesser sac, and the transverse colon via the gastrocolic ligament. It is often difficult to distinguish infiltration into the transverse mesocolon from infiltration of the mesenteric fat. Coronal or sagittal reformatted images are best suited for this purpose.

**Differential Diagnosis List:** gastric adenocarcinoma

**Final Diagnosis:** gastric adenocarcinoma

**References:**

CT evaluation of gastric wall pathology
Merino S, Saiz A, Moreno MJ, Parlorio E, Pedrosa I, Yus M.

Dedicated multidetector CT of the stomach: spectrum of diseases
Ba-Ssalamah A, Prokop M, Uffmann M, Porieser P, Teleky B, Lechner G

Current role of CT in imaging of the stomach
Horton KM, Fishman EK
Description: Abdominal ultrasound showing the gastric stasis

Origin:
Description: Abdominal ultrasound showing echo-poor thickened stomach wall, with no layered structure (arrow)

Origin:
Figure 3

Description: Abdominal ultrasound showing the echo-poor thickened stomach wall, with no layered structure (arrows) 

Origin:
Figure 4

Description: Colour Doppler ultrasound showed the lesion to be vascular

Origin:
Figure 5

Description: Spectral Doppler confirmed the arterial flow within the lesion.

Origin:
Description: Contrast enhanced CT showing the gastric stasis Origin:
Figure 7

Description: CT showing focal wall thickening in the antrum with marked enhancement of the mucosal layer (arrows). Origin:
Description: Abdominal CT showing a focal hypo dense nodular hepatic lesion.

Origin:
Description: Ultrasound confirmed the cystic nature of the hepatic nodular lesion. Origin: