Imaging iconography of gallbladder cancer. Assessment by CT.

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ABSTRACT
Gallbladder cancer is the most frequent malignant neoplasia of the bile duct.

Progress and development of diagnostic imaging methods during the last decades has allowed a notable improvement in preoperative diagnosis for this pathology, this being very important for therapeutic management and prognosis.

Likewise, numerous series report an increase in the number of incidental findings obtained with multi slice CT scanner, which on occasion represent early stage neoplasias.

However, symptoms and signs associated to gallbladder cancer (abdominal pain, jaundice, anorexia, nausea and vomiting), are insidious and non specific, due to which, in most cases, its detection is carried out in advanced stages of the disease. This determines it to be a neoplasia with a bad prognosis and low overall survival rate (less than 5 % at 5 years).

Key words: gallbladder cancer, CT scan.

INTRODUCTION
Gallbladder cancer represents the most common malignant tumor of the bile duct. It mostly originates in the lining epithelium and it is an adenocarcinoma.

It presents two patterns of growth from the anatomopathological point of view: infiltrating and exophytic. It is an aggressive neoplasia which rapidly infiltrates the adjacent tissues (most frequently the liver) and produces distant lymphatic metastases.

It is more frequent in women and in adults of more than 60 years of age. Related etiopathogenic factors are: porcelain gallbladder, primary sclerosing cholangitis, chronic cholecystitis, cholelithiasis, adenomatous polyp.

Symptoms are non specific (abdominal pain, jaundice, anorexia, nausea and vomiting), and they appear insidiously and in a later stage.

Imaging methods, especially ultrasounds, CT scans and MRI have a key role for
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MRIs perform well in detecting gallbladder carcinomas, as well as in staging (among others it has high sensibility to detect bile duct invasion) and in the monitoring. However, although its use has increased in the last years, it is less available than CT scans.

CT is a widely available study method which has a key role in this pathology, since it allows us to approach nosological and lesion extension diagnosis, which is basic for therapeutic monitoring. It also has its role in post operative controls, assessing tumor relapse.

There are three recognized imaging patterns of gallbladder carcinoma presentation: soft part mass which substitutes the gallbladder, encompasses lithiasis and invades contiguous liver (the most common one), focal or diffuse wall thickening, and intraluminal polyp.

Furthermore, CT allows an adequate staging of this neoplasia, with an 85% precision in predicting resectability. It evaluates direct extension to contiguous structures (specially the liver), identifies regional adenomegalies and distant metastases.
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OBJECTIVE
To present diverse cases of patients with gallbladder cancer with anatomopathological confirmation who have studied by CT, in order to revise CT findings associated with this pathology.

MATERIALS AND METHOD
Descriptive observational retrospective study of a group of patients with gallbladder cancer in different development stages and with diverse presentation in CT.

The cases presented correspond to patients studied in the CT Departments of CASMU and the Hospital of Tacuarembó, using multi slice units with 16 row detectors, administration of iodine contrast taken orally or intravenous. An abdomen study is performed without intravenous contrast, followed by administration of the same by continous infusion pump, acquired in parenchymatose hepatic phase at 60-70 sec.

The data acquired is post processed, which allows multi plane reconstructions.

All cases presented count with anatomopathological confirmation.

DISCUSSION AND CONCLUSIONS
Preoperative diagnosis of gallbladder cancer pathology represents a true challenge for imaging methods, especially for CT. The same allows us to approach nosological and lesion extension diagnosis (hepatic invasion, tumor adenomegalies and distant metastases), which is basic in the therapeutic monitoring of the disease and the prognosis. To these advantages of CT we can add the increase in the number of incidental findings obtained with multislice CT scanners, generally small alterations of the gallbladder wall which

However, CT scans have some limitations: wall thickening not caused by tumors (inflammatory pathology, adenomimatosi), tumor polyps not visible by CT, impossibility to assess with precision the grade of in depth wall thickening invasion and underrating lymphatic dissemination.

Figure 3. Gallbladder infiltrating diffuse carcinoma. Abdomen CT with oral and i/v contrast. Irregular and diffuse wall thickening of gallbladder can be observed, especially at body level and lithiasis in its lumen.

Figure 4. Infiltrating carcinoma in the gallbladder bottom. Abdomen CT with oral contrast and i/v. Axial plane which allows us to observe gallbladder with wall califications (porcelain gallbladder) and heterogeneous wall thickening of the anterior sector of the bottom (arrow).
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Occasionally corresponds to early stage neoplasia.

Furthermore, multi slice CT has 85% precision to determine local extension of the tumor and a similar percentage to predict its respectability.

We have presented diverse cases studied by CT and with anatomopathological confirmation in order to revise CT findings associated to this pathology.

In CT three main patterns of the disease are recognized, which are in decreasing order of frequency: soft part mass which substitutes the gallbladder, encompasses lithiasis and invades the adjacent liver, focal or diffuse wall thickening and intraluminal polyp. Associated findings include gallstones, calcification of gallbladder wall, dilation of bile tract, distant lymphatic dissemination (peritoneum and liver are the most common) and direct invasion of contiguous organs.

Figure 5. Infiltrating carcinoma. Abdomen CT with oral and i/v contrast. A solid and hypo dense process in relation to the bottom wall of the gallbladder is observed, with extra luminal growth which infiltrates the liver (black arrow), intra luminal, vegetative, with lithiasis encompassed by the mass (white arrow).

Figure 6. Infiltrating carcinoma. Abdomen CT with oral and i/v contrast. Axial plane and multi plane reconstruction (sagittal plane) in which we can observe lithiasic gallbladder with solid and hypo dense process in relation to the superior and lateral right wall of the body and bottom of the organ, which infiltrates the hepatic adjacent parenchyma (arrow).
Figure 7. Infiltrating diffuse carcinoma of gallbladder with infiltration of the liver, peritoneum and second portion of the duodenum (black arrow), which determined gastroduodenal stenosis syndrome. Peritoneum nodules adjacent to the gallbladder bottom (white arrow).

Figure 8. Infiltrating carcinoma of gallbladder with peritoneum infiltration and lymphatic metastases. Abdomen CT with oral and i/v contrast. In the axial plane a solid heterogeneous mass with hypo dense sectors in relation to the gallbladder bottom is observed. The same contacts and moves the transverse colon (white arrow), without fatty parting plane. Mesenteric adenopathic conglomerates (asterisk). In the multi plane reconstruction (coronal plane) extensive adenopathic conglomerates in relation to the hepatic pedicle, periduodenalpancreatic and mesenteric levels (asterisks). These cause a compression of the portal vein (black arrow), Furthermore, peritoneal nodules can be observed (white arrow).
Figure 9. Infiltrating carcinoma, with multiple hepatic metastases. Abdomen CT with oral contrast and i/v. Multi plane reconstruction (oblique plane) in which a soft part mass, not defined, can be observed, which substitutes the gallbladder (asterisk), encompasses lithiasis and infiltrates the adjacent hepatic parenchyma and peritoneum (white arrows). In the axial plane several hypo dense nodular lesions can be seen in the liver (white arrows) and lithic lesion in the dorsal spine (black arrow).

BIBLIOGRAPHY


