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Neoplasms of the pancreatic body and tail, incidence in University Clinical Centre of Kosova

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Abstract

Aim of the paper: The object of this paper is the incidence of the pancreatic body and tail cancers among the total cases of the pancreatic cancers diagnosed in the University Clinical Center of Kosova, with the aim to compare these research findings to similar studies made in the developed countries. This is a retrospective research study done during the period of 2012-2014. *Materials and Methodology:* This retrospective research study includes 72 patients diagnosed with pancreatic cancer, examined in the period of 2012-2014 in the University Clinical Center of Kosova. The imaging diagnostics are performed with MSCT Sensation 64 Siemens, MSCT Emotion 6 Siemens, and 1.5T MRI Symphony Siemens, in the Radiologic Clinic of UCCK; while the histopathologic diagnostics has been performed in the Pathologic Clinic of UCCK. *Results:* Out of a total of the 72 patients diagnosed with pancreas cancer, 9 cases resulted in body and tail cancers (12.5%). *Discussion and Conclusions:* Compared to studies made in the developed countries (approximately 25% of cases), the percentage found in this study is significantly smaller (12.5%). From an imaging point of view, these cancers were presented in an advanced stage, mainly due to their late clinical symptomatology, compared to pancreatic head and neck cancers.

Keywords

Incidence of the Pancreatic Body and Tail Cancers, MSCT, MRI, University Clinical Center of Kosova, Prishtine, Kosova

1. Introduction

Tumors of the body and tail of the pancreas constitute one third of the pancreatic neoplasms. They have always been associated with a poor prognosis due to the late presentation, and hence, advanced stage of the disease at moment of the established diagnosis. However, this trend is gradually on the decline with the awareness of the existence of these lesions, better radiologic imaging modalities for diagnosis, and the more aggressive treatment strategies adopted in these patients.

1.1. Pathology

Tumors in the body and tail include the entire spectrum of the exocrine and endocrine neoplasms of the pancreas. The pathological features of the most common neoplasms are discussed below:

1.2. Ductal Adenocarcinoma

Approximately 15% of these tumors are found in the body and tail. These tumors frequently invade the vascular, lymphatic, and perineural spaces.

1.3. Cystic Neoplasms

The four main classes of cystic pancreatic tumors include the serous cystic, mucinous cystic, intraductal papillary mucinous, and the unusual neoplasms.

Serous cystadenomas (SCAs) vary in size from 6 cm to 10 cm although cysts of even 25 cm have been reported. They are

well demarcated and are lined by simple, glycogen–rich cuboidal epithelium and characterized by dense, lace-like, honeycombed matrix of fibrous septae. They have been referred to as microcystic since they are made up of clusters of cysts that are filled with clear watery, non-mucinous and occasionally bloody fluid.

Mucinous neoplasms are made up of the cysts that are larger in size than the serous neoplasias and are usually larger (up to the 25 cm). The cysts contain mucinous, viscid fluid. The main features that help in distinguishing it from the other cystic neoplasias include the presence of a dense mesenchymal ovarian- like stroma, and the lack of communication with the main pancreatic ductal system [1, 2].

Intraductal papillary mucinous neoplasms (IPMN) are characterized by papillae (intestinal, hepatobiliary, gastric, or rarely, oncocytic) [3-6] arising from the intraductal proliferation of neoplastic mucinous cells. They are associated with the dilatation of the pancreatic duct and / or the ductal side branches that contain mucin.

1.4. Endocrine Tumors [7]

1) Insulinoma. Grossly, 40% of these tumors are < 1 cm, and 66% are < 1.5 cm [8]. They present as encapsulated, firm, brown, nodules that are histologically composed of cords and nests of welldifferentiated β cells that do not differ from the normal islet cells. 2) Gastrinoma. The tumor size in the pancreas is usually above 2 cm and in the duodenum below 1cm, often very tiny and often multicentric. More than 85% are identifiable in an anatomical triangle bordered by cystic duct, the junction of the second and third portions of the duodenum, and the junction of the neck and body of the pancreas that has been referred to as the 'Gastrinoma Triangle' [9]. 3) Glucagonoma. The histology of the tumor is similar to the entire group of neuroendocrine tumors with the basic difference being the production and release of large quantities of glucagon. 4) VIPoma, PPoma, etc, share the same histology except for the basic difference of the hormone produced. The aggressiveness of the tumor is defined not by the histology but rather by the behavior.

1.5. Clinical Presentation

Tumors of the body and tail, in general, tend to present late until they produce a clinically discernible swelling. By this time the tumor usually infiltrates adjacent organs or vascular structures and possibly metastasizes via lymphatics to the locoregional lymph nodes, or by haematogenous dissemination to the distant organs [10, 11]. The difference in the time of detection as compared to the tumors of the head is due to the lack of obstructive symptoms of the biliary and gastric systems. The functioning neuroendocrine tumors, with their characteristic symptom complexes, can be detected due to the provision of the clinical signs that makes possible the quick recognition of these features. The most common symptoms encountered are pain (epigastric, and radiating to the back in case of celiac plexus involvement), weight loss, and new onset of the diabetes mellitus (especially in patients > 60 yrs). The commonly encountered nonspecific symptoms include anorexia, loss of appetite, weakness and lethargy.

2. Material and Methods

This retrospective research study includes 72 patients diagnosed with pancreatic cancer, examined in the period of 2012-2014 in the Clinic of Radiology at University Clinical Center of Kosova. Only patients with body and tail pancreatic neoplasm were included and evaluated in this research.

MSCT 64 slice Sensation and MSCT 6 slice Emotion were used for CT examination of patients. MRI images are obtained with MRI 1.5T Symphony.

Adequate CT and MR imaging protocol for highlight pancreas have been applied. Protocols consisted on optimal administration of contrast material for differentiating pancreatic parenchyma and lesions. Water was administrated orally to fill the gastrointestinal tract and was routinely used at CT examinations to improve the visualization of peripancreatic anatomic structures. Maximal enhancement was obtained at pancreatic phase with 40-45 sec. delay after intravenous administration of contrast agent at a rate of 3-4 mL/sec. Dual-phase protocol was applied to get optimal enhancement of pancreas and liver due to hypo-vascular characteristics of pancreatic adenocarcinoma. Tri-phase dynamic enhanced CT is used to characterize pancreas. At arterial dominated phase, most of contrast material is staying in the arterial blood vessels, and the enhancement of the pancreatic parenchyma is mild even though pancreas is a hyper-vascular organ. If neuroendocrine tumor is suspected or if there is suspect for blood vessels invasion, arterial phase is necessary. Pancreatic phase is important in visualization of peripancreatic vessels, including veins for assessment of possible invasion. Conventional MR imaging protocol for pancreas included T1-weighted images, T2-weighted images, Magnetic resonance cholangiopancreatography (MRCP), and dynamic enhancement with arterial phase, port vein phase, and delay phase using fast gradient recall sequence were applied too. Fat-suppressed T1 weighted imaging was applied to improve the dynamic contrast enhancement of pancreatic parenchyma. MRCP is routinely used in evaluating pancreatic adenocarcinoma to depicture morphological changes of biliary and pancreatic ducts, which has substituted diagnostic ERCP[12].

3. Results

Out of 72 patients included in this study, only 9 cases (12.5%) result with the localization of the cancer in the pancreatic body and tail. Imaging findings in this pool of patients are characterized with an advanced stage of the process (Fig 1, 2, 3). Three our patients presented pancreatic canal (ductus pancreaticus) obstruction, where the process localization is more evident in the pancreatic body (Fig. 1a, 1b, 2a). Five patients presented infiltrations in the neighboring structures, including also the stomach (Fig. 1b, 3b). Four of the patients presented distant infiltrations – liver metastasis

(Fig. 1c, 2d, 2a, 2b). Two patients presented neither close nor distant infiltrations (Fig. 1c, 1d). One patient presented micro neoplasm (Fig. 3a). Eight patients presented heterogeneous neoplasm - cystic component with changeable signals and contrast enhancement of solid component.

From a histopathologic point of view three cases resulted with cystic mucinous appearance, three cases with cystic serous, two cases with intraductal mucinous and a single case with insulinoma.Tab.1.

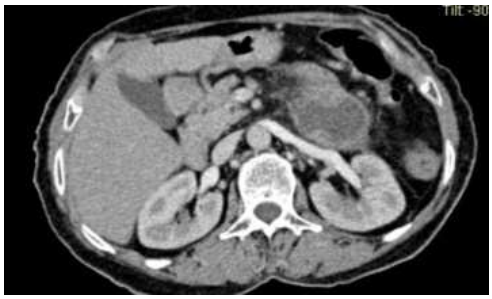

Fig. 1a. *CE MSCT scan of the pancreas: Axial plane. Expansive process of tail and body of pancreas.*

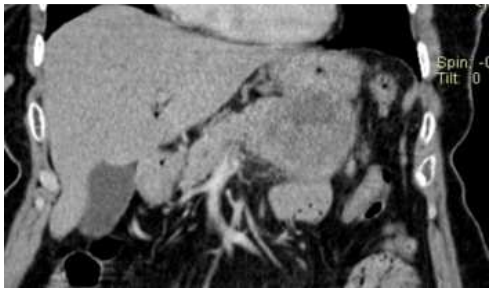

Fig. 1b. *Same patient a 1a: Coronal plane. Expansive process of tail and body of pancreas with infiltration of adjacent gastric wall.*

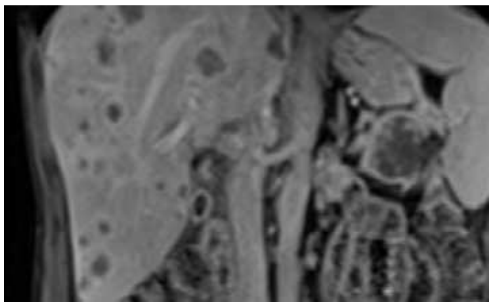

Fig. 1c. *CE MRI of upper abdomen; Coronal plane; Pancreatic tail neoplasm with infiltration of spleen and liver metastases.*

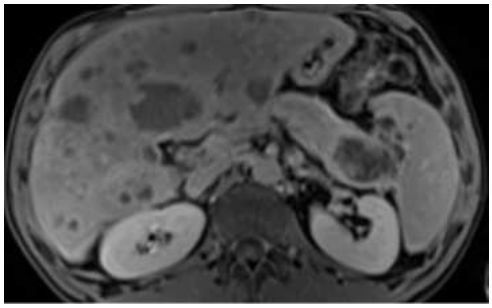

Fig. 1d. *CE MRI of upper abdomen; Axial plane; Pancreatic tail neoplasm with infiltration of spleen and liver metastases.*

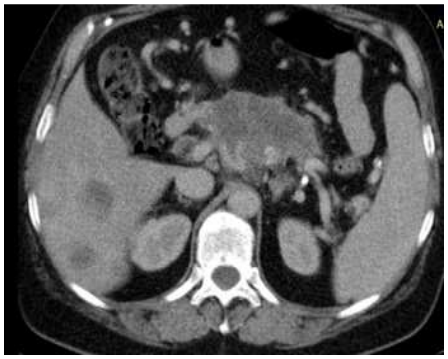

Fig. 2a. *CE MSCT of upper abdomen; Axial plane; Pancreas body neoplasm with infiltration of adjacent blood vessels and distant metastases (liver).*

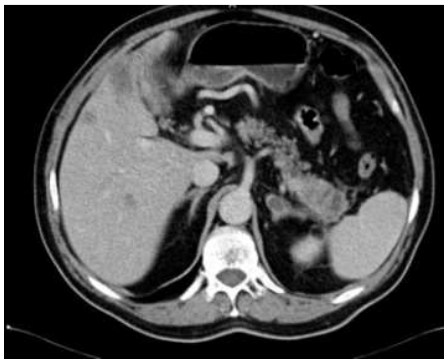

Fig. 2b. *CE MSCT of upper abdomen; Axial plane; Pancreas tail neoplasm with local infiltration and distant metastases (liver).*

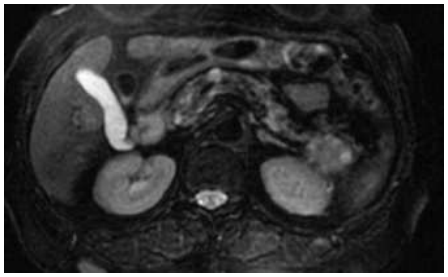

Fig. 3a. *CE MRI of upper abdomen; Axial plane; Pancreas tail neoplasm with local infiltration.*

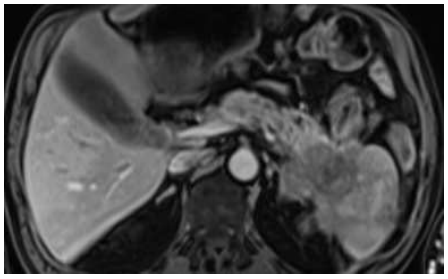

Fig. 3b. *CE MRI of upper abdomen; Axial plane; Pancreas tail and body massive neoplasm with local infiltration, and infiltration of spleen.*

Tab. 1. *Histopathology of pancreatic body&tail neoplasms.*

Histopathology	
Cystic mucinous	3
Cystic serous	3
Intraductal mucinous	2
Insulinoma	1
Total of body&tail neoplasms	9

4. Discussion and Conclusions

From this retrospective research study it is concluded that the number of patients in Kosova diagnosed with pancreatic cancer localized in the body and tail is very small (12.5%) compared to those located in the pancreatic head and neck. These statistics also results to be significantly smaller that the percentage of cases found in the developed countries (25%). These figures are a reflection of the lack of a national strategy to combat pancreatic cancer in Kosova, the lack of basic public health insurance and the late clinical and non-specific symptoms of this type of cancer. These circumstances are factors that limit a certain number of patients from conduction of initial clinical examination that will be consequently followed by radiology imaging researches, surgical/conservative treatment and finalized by histological examination. In line with this argument, the figures do not state that patients in this geographic area have fewer predispositions for this cancer localization.

From an imaging point of view, these cancers were presented in an advanced stage, mainly due to their late clinical symptoms, compared to pancreatic head and neck cancers.

The imaging methods that were used in our study showed that the US examination was useful as a rough orientation in certain number of cases. The classic obstacles - air-filled intestinal structures, poor definition of body and tail, dependence on operators' knowledge and experience etc., did not allow the establishment of definitive diagnosis of cancer, the extension of eventual peri-focal infiltration and detection of possible deep intrapulmonary metastases.

In contrary, the use of either CT or MRI showed advantages in imaging diagnosis of primary tumor, local infiltration, distant metastasis and surgical planning of pancreatic body and tail tumors.

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