

# Primary pancreatic lymphoma and metastatic lymphoma cases diagnosed with ultrasonography guided tru-cut needle biopsy: Two case reports

Işıl Bağcı, Nazlı Sena Şeker

Department of Pathology, Osmangazi University  
Medicine Faculty, Eskişehir, Turkey

**ORCID ID of the author(s)**

IB: 0000-0001-5211-5430  
NSS: 0000-0003-4588-7250

## Abstract

Secondary pancreatic involvement can be seen up to 30% of advance staged non-Hodgkin's lymphoma cases, but primary pancreatic lymphomas constitute only 1% of extranodal lymphomas. Furthermore, 0.2% of the pancreatic space-occupying lesions are primary pancreatic lymphomas, which usually present as a mass in the head of the pancreas with nonspecific symptoms. Therefore, primary pancreatic lymphomas should be considered as differential diagnosis of pancreatic solid lesions. Herein, we report two cases with different clinical presentation and different course of disease resulting in the diagnosis of primary and metastatic pancreatic lymphoma.

**Keywords:** primary pancreatic lymphoma, pancreas, metastatic disease, diffuse large B-cell lymphoma, mantle cell lymphoma

## Introduction

Hodgkin's and non-Hodgkin's lymphomas (NHL) are the two main types of lymphomas. Hodgkin's lymphomas rarely invade extranodal sites, but 30-40% of NHL's invade extranodal organs [1-5]. The gastrointestinal tract is the most common extranodal site and accounts for 15-20% of all NHL cases [2]. Secondary pancreatic involvement occurs up to 30% of cases especially in widespread nodal or extranodal disease [3,4]. Also, primary pancreatic lymphomas (PPL) accounts for approximately 1% of extranodal lymphomas and 0.2% of the pancreatic tumors [4,6].

In 1961, Dawson et al. [7] proposed criteria for the diagnosis of PPL: A pancreatic mass specified in surgery with the involvement of lymph nodes confined to the pancreas without any peripheral lymphadenopathy, involvement of mediastinal lymph node, or involvement of liver or spleen; normal peripheral white blood cell counting. In 1994, Behrns et al. [3] revised these criteria [8,9]: no palpable superficial lymphadenopathy; no enlargement of mediastinal lymph nodes on chest; normal leukocyte counting; the pancreatic mass predominates with grossly involved lymph nodes confined to the peripancreatic region at celiotomy; no hepatic or splenic involvement.

More recently, the World Health Organization (WHO) has provided the following diagnostic definition: PPL is an extranodal lymphoma of the pancreas with primary pancreatic clinical presentation and the bulk of the disease localized to this site even though contiguous lymph-node involvement and distant spread is seen [4,6]. Herein we report two cases with different clinical outcomes and resulting diagnosis.

### Corresponding Author

Işıl Bağcı

Department of Pathology, Osmangazi University  
Faculty of Medicine, 26040, Odunpazarı,  
Eskişehir, Turkey  
E-mail: bagcisi@gmail.com

### Informed Consent

The authors stated that the written consent was obtained from the patients presented with images in the study.

### Conflict of Interest

No conflict of interest was declared by the authors.

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## Case presentation

### Case 1

A 90-year-old male patient applied to the emergency department with the complaint of epigastric pain. Liver function tests (AST, ALT, and bilirubin) were high. Abdominal CT showed a 7-cm-diameter mass in the head of the pancreas. An USG guided tru-cut biopsy was performed on the pancreatic mass of the case followed up in the general surgery service. Histological evaluation revealed diffuse infiltration of medium-large sized neoplastic cells with lymphoid nature. Neoplastic cells were diffusely positive for CD20. Most of the cells were positive with Bcl-2 and MUM1, 20% of the cells were positive for Bcl-6, and few cells were positive for c-myc immunohistochemically. CyclinD1, CD5, CD21, CD23, CD43, and pan-cytokeratin immunohistochemical stains were negative. CD10 was nonspecific pale positive. There were CD3, CD5, CD43 positive T lymphocytes in between. The Ki-67 proliferation index was 80-90% (Figure 1). For the differential diagnosis of double/triple hit high grade B-cell lymphoma, Bcl-2, Bcl-6 and myc rearrangements were examined by fluorescent in situ hybridization method, and a Bcl-6 rearrangement was determined. The definitive diagnosis of the case was determined as diffuse large B-cell lymphoma and activated B-cell type. The case was evaluated as primary pancreatic lymphoma with clinical and radiological findings. Chemotherapy treatment was started for the patient by the hematology service. Antibiotic therapy was started due to fever, pleural effusion, and consolidated areas in the lung. The patient was taken to the intensive care unit due to his hypoxic state and died approximately 1 month after the diagnosis in the follow-ups.

### Case 2

A 79-year-old male patient with a history of hypertension, diabetes, and Parkinson's disease was admitted to the hospital due to wheezing. Upon detection of a mass in the pancreas, an USG-guided biopsy was performed with the preliminary diagnosis of primary pancreatic tumor. On histological evaluation there were diffuse atypical small-medium sized lymphocytic infiltration. Tumor cells were diffusely positive with CD5, CD20, Bcl-2, and cyclinD1 immunohistochemical stains (Figure 2). Few cells were positive for CD23, CD21, CD10, Bcl-6, LEF1, pan-cytokeratin, and synaptophysin were negative. There were CD3-positive T lymphocytes in between. The Ki-67 proliferation index was 10-20%. The findings were consistent with mantle cell lymphoma. Imaging methods were used for staging after diagnosis. In the thorax CT, lymph nodes were detected in the mediastinum and around the lesser curvature of the stomach. PET CT showed lymph nodes with high glucose uptake detected in the cervical region, right hilar region, and distal end of the esophagus. In addition, high glucose uptake (SUV max 7.63) was detected in the 3.5 x 2.5 cm mass in the body-tail part of the pancreas. The case was clinically evaluated as stage 4 mantle cell lymphoma. The mass in the pancreas was evaluated as secondary involvement of lymphoma. Control PET CT was recommended after three cycles of chemotherapy, and the patient was followed up without complications.

Figure 1: A. Diffuse lymphoid neoplastic infiltration. (H&E staining-x400) B. Diffuse CD20 positivity on neoplastic cells. (CD20 staining-x100) C. High Ki-67 proliferation index of the tumor. (Ki-67 staining-x100)

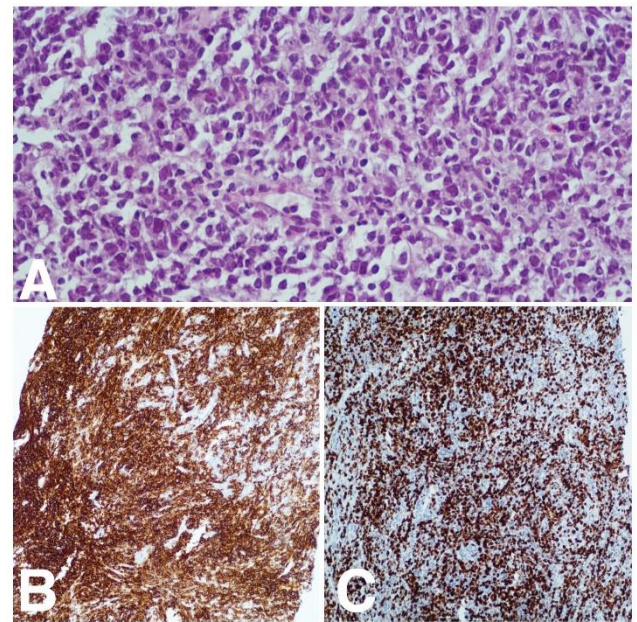
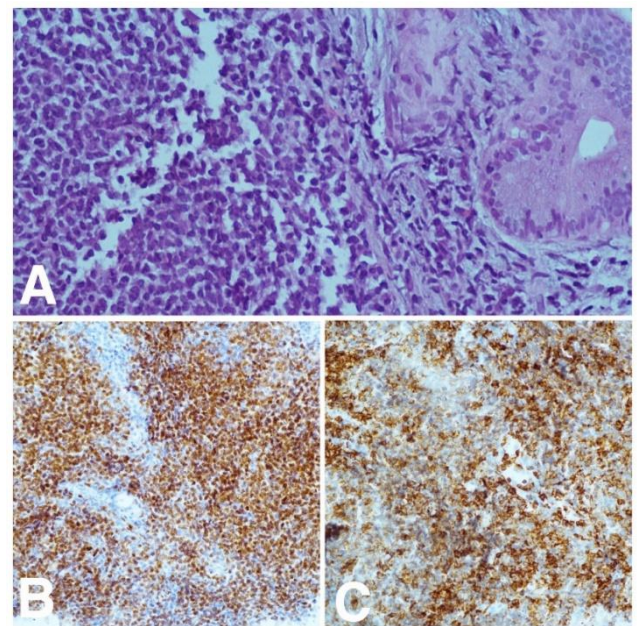


Figure 2: Diffuse lymphoid neoplastic infiltration. (H&E staining-x400) B. Diffuse cyclinD1 positivity on neoplastic cells. (cyclinD1 staining-x200) C. Diffuse CD5 positivity on neoplastic cells. (CD5 staining-x200)



## Discussion

Based on latest Global Cancer Incidence, Mortality, and Prevalence (GLOBOCAN) 2020 data, pancreatic tumors are the 12<sup>th</sup> most common tumors worldwide [10]. Of these, 85% of the pancreatic tumors are pancreatic ductal adenocarcinomas (PDAC), and 0.2% of tumors are PPLs [4,6]. Most cases of PPL are NHL's with diffuse large B cell lymphoma seen in 53.6% of the cases [7,8,12,13]. However, marginal zone lymphoma, follicular lymphoma, Burkitt's lymphoma, Hodgkin's lymphoma, small lymphocytic lymphoma, and T-cell non-Hodgkin lymphoma may also be detected [4,14]. As mentioned before, secondary pancreatic involvement of lymphomas occurs in up to 30% of cases [4] with the dominant subtype as diffuse large B cell lymphoma [15]. The tumors are mostly located in the pancreatic head, but the body and tail are also rarely involved [11]. Patients with PPL are usually seen around the 6th or 7th decade of life, and there is a slight male predominance. The main clinical

manifestations are abdominal pain, abdominal mass, weight loss, jaundice, nausea, vomiting, diarrhea. Some patients may also show up with pancreatitis, anorexia, early satiety, and bowel obstruction. Unfortunately, these are non-typical symptoms and symptoms of NHL such as fever, chills, and night sweats are rare [12]. With these nonspecific clinical manifestations, PPL should be considered as differential diagnosis of pancreatic space-occupying lesions. The differential diagnoses should be included for neuroendocrine tumors, gastrointestinal stromal tumors, PDAC, acinar cell carcinomas, PPL, inflammatory processes, and metastatic diseases [7,11].

### Conclusion

Seeing that the clinical and radiological findings are not pathognomonic for PPL, the possibility of lymphoid neoplasia in pancreatic masses should be kept in mind even though PDAC's are more common. PPLs have a better outcome and different treatment options; thus, to prevent a delay or a mistake in diagnosis, a morphological and/or immunohistochemical examination should be made before any surgical treatment. A final diagnosis can be obtained with the help of minimal invasive diagnostic sampling methods such as guided tru-cut biopsies and fine needle aspirates. A correct diagnosis of PPL can prevent unnecessary surgeries, and patients can be provided with the right treatment.

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