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## Contents

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*CASE REPORT*

# Primary pancreatic lymphoma: A case report and review of literature

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## Abstract

*BACKGROUND*

Primary pancreatic lymphoma (PPL) is a rare tumor that mimics pancreatic adenocarcinoma, leading to diagnostic and therapeutic challenges. PPL accounts for 0.2% of all pancreatic tumors and is typically treated with chemotherapy. However, the long-term survival rates for PPL with chemotherapy and radiotherapy alone are unsatisfactory. Due to the improvements in pancreatic surgery, there is a need to reevaluate the treatment strategies for PPL.

*CASE SUMMARY*

A 62-year-old male presented to our clinic. A biopsy was unsuccessful, and the imaging was suggestive of pancreatic adenocarcinoma. Therefore, subtotal splenopancreatectomy was performed and histopathology was performed. He was then diagnosed with primary pancreatic diffuse large B-cell lymphoma. He received adjuvant chemotherapy and radiotherapy. Currently, the patient is alive with no evidence of disease 36 months after surgery.

*CONCLUSION*

The potential role of surgery in the treatment of PPL should be emphasized and added in the management protocol of early stage lymphoma.

**Key Words:** Lymphoma; Primary; Pancreas; Treatment; Strategy; Surgery; Case report

**Core Tip:** Primary pancreatic lymphoma (PPL) is typically treated with chemotherapy. However, the long-term survival rates are unsatisfactory. Improvements in pancreatic surgery have led to the reevaluation of treatment strategies for PPL. We present the case of a 62-year-old male who was diagnosed with primary pancreatic diffuse large B-cell lymphoma. He was treated with subtotal splenopancreatectomy due to initial imaging suggesting pancreatic adenocarcinoma. He received adjuvant chemotherapy and radiotherapy. After 36 months the patient showed no evidence of disease or recurrence. The potential role of surgery in the treatment of PPL should be considered in the management protocol of early stage lymphoma.

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## INTRODUCTION

Primary pancreatic lymphoma (PPL) is a rare malignant tumor of the pancreas that has a very similar clinical presentation and is difficult to distinguish from pancreatic cancer without a histological diagnosis. PPL is a very rare disease, representing only 0.1% of malignant lymphomas and 0.6% of extranodal lymphomas, which is unlike secondary pancreatic involvement with the presence of widespread nodal or extranodal disease that represents up to 30% of cases[1,2]. PPL accounts for 0.2% of all pancreatic tumors. It is typically treated with chemotherapy with a low prevalence of surgical treatment[1,3].

Pancreatic adenocarcinoma has similar clinical and radiological features of PPL but has different therapeutic management and a worse clinical outcome. Diagnosis of PPL and differentiation of pancreatic adenocarcinoma can be difficult. PPL is accompanied with constitutional symptoms (weight loss, fever, and night sweats), elevated lactic acid dehydrogenase level, elevated beta-2 microglobulin level, and normal serum CA 19-9. Therefore, it is very important to have a histopathological and cytopathological diagnosis of suspected pancreatic lesions[4]. This can be accomplished by percutaneous biopsy, endoscopic fine needle aspiration or biopsy, or exploratory laparoscopy/laparotomy, with a high rate of failure and complication risk for any type of pancreatic biopsy. Preoperative pathohistological diagnosis is not necessary for resectable lesions like adenocarcinoma. Therefore, a large number of pancreatic lymphomas are discovered during intraoperative or postoperative pathohistological analysis of the lesion[5,6].

The long-term survival rates for pancreatic non-Hodgkin's lymphoma (NHL) with chemotherapy and radiotherapy alone are unsatisfactory as well. However, improvements in morbidity and mortality associated with pancreatic surgery have led to a reevaluation of therapeutic strategies for NHL of the pancreas[7,8]. Recent studies showed complete response rates of 100% and long-term survival rates of 94% in patients treated with surgery and adjuvant chemotherapy compared to a 5-year survival rate of less than 50% and an overall 3-year disease-free survival rate of 44% in patients treated with current chemotherapy, radiotherapy, or a combination[7-11].

Herein, we present a case of PPL successfully treated with surgery and adjuvant chemotherapy and radiotherapy.

## CASE PRESENTATION

### *Chief complaints*

A 62-year-old man was referred to our hospital with unspecified abdominal symptoms in terms of dyspepsia and heaviness in the upper abdomen.

### *History of present illness*

Dyspepsia and mild pain in the left hypochondria started 4 months prior to admission. The patient reported rapid weight loss (10 kg in 3 months).

### *Personal and family history*

The patient experienced mild hypertension. Family history was unremarkable.

### *Physical examination*

Clinical examination was normal, except slight tenderness in the left hypochondria with no clinical visceromegaly registered.

### *Laboratory examinations*

The laboratory data including complete blood count, hydroelectrolyte status, renal, hepatic and pancreatic functional tests, and lactic acid dehydrogenase were within normal range. Tumor marker levels were also normal (carcinoembryonic antigen: 2.4 U/mL; CA 19-9: 22.8 U/mL; CA 125: 37 U/mL).

### *Imaging examinations*

Ultrasonography (US) of the abdomen revealed one hypoechogenic, solid, relatively well-demarcated lesion located on the neck and body of the pancreas. The diameter of the lesion was 57 mm × 38 mm × 27 mm. T1-weighted magnetic resonance imaging (MRI) also showed a well-circumscribed oval hypointense lesion with similar dimensions located in the neck and body region (Figure 1A). The lesion was hyperintense on the T2-weighted MRI (Figure 1B). Slight post-contrast enhancement was revealed (Figure 1C). Despite the proximity of splenomesenteric venous confluence, the involvement of any major vascular structures was not observed. There was no regional lymphadenopathy. The suspicion of a solid pancreatic tumor that was slightly more hypointense than a classic pancreatic adenocarcinoma was raised by the radiologist and surgeon. Detailed clinical examination, abdominal magnetic resonance, Multislice computerized tomography (CT) of the chest and US excluded the existence of all secondary changes, including lymph nodes outside the pancreas.

## MULTIDISCIPLINARY EXPERT CONSULTATION

The multidisciplinary team indicated percutaneous fine needle aspiration biopsy, which was unsuccessful due to inadequate tissue sampling.

## FINAL DIAGNOSIS

Explorative diagnostic and possibly curative surgery indicated the diagnosis of a resectable tumor of the neck and body of the pancreas.

## TREATMENT

Laparotomy revealed a tumorous intraparenchymatous formation involving the region of the neck and body of the pancreas. The lesion was 57 mm in diameter at the largest region. The tumor was a little softer than the pancreatic tissue after palpation (Figure 1D). No regional lymphadenopathy or major vascular involvement was observed. A total abdominal exploration was performed with no other pathological findings. The patient underwent classic subtotal left splenopancreatectomy with systematic D2 lymphadenectomy (removal of the lymph nodes at positions 7, 9, 10, 11, 16 A2, and 16 B1).

Surgical biopsies were fixed in 10% formaldehyde overnight, processed in paraffin, and sliced at 4 μm. The sections were stained with hematoxylin and eosin, AB-PAS, van Gieson, and immunohistochemical avidin biotin complex techniques. Tumor cells were oval or polygonal shaped. We observed amphiphile cytoplasm with pleomorphic large vesiculous nuclei and irregular clotted chromatin with a centroblastic pattern. Numerous atypical mitotic figures were present. The immunohistochemical profile was CD20+, CD79a+, CD10+, Bcl2+, Bcl6-, MUM11-, CD3-, CD5-, CD30-, CD56-, Cyclin D1-, CKAE1/AE3-, synaptophysin-, chromogranin A-, CDX2-, and TTF1-. The fraction of proliferating cells was based on a count of at least 500 tumor cells. The Ki-67 values were expressed as the percentage of positive cells in each case. The positivity in 80% tumor cells indicates a very high proliferation index, which indicates the aggressiveness of the tumor, and on the other hand, it was an absolute indication for adjuvant chemotherapy.

Definitive diagnosis showed non-Hodgkin's diffuse large B-cell lymphoma (DLBCL)-not otherwise specified, germinative center subtype (Figures 2 and 3).

## OUTCOME AND FOLLOW-UP

Postoperative recovery was uneventful. The patient was discharged on the 10$^{th}$ postoperative day. Six weeks after the operation, treatment with six cycles of the R-CHOP (rituxumab, cyclophosphamide, oncovin, adriamycin, and prednisone) protocol was started. The patient received adjuvant involved-field radiation therapy to the pancreas and regional nodes with the three-dimensional conformal technique. He received a dose of 45 Gy in 25 fractions (1.8 Gy per fraction) over 5 weeks. Post-operative follow-up of our patient includes Total Body Scanner, laboratory and PET scan which were done. A CT scan 1 month after the R-CHOP protocol was completed and showed no evidence of disease. At the 36 months follow-up, the patient remained disease free with no signs of recurrence.

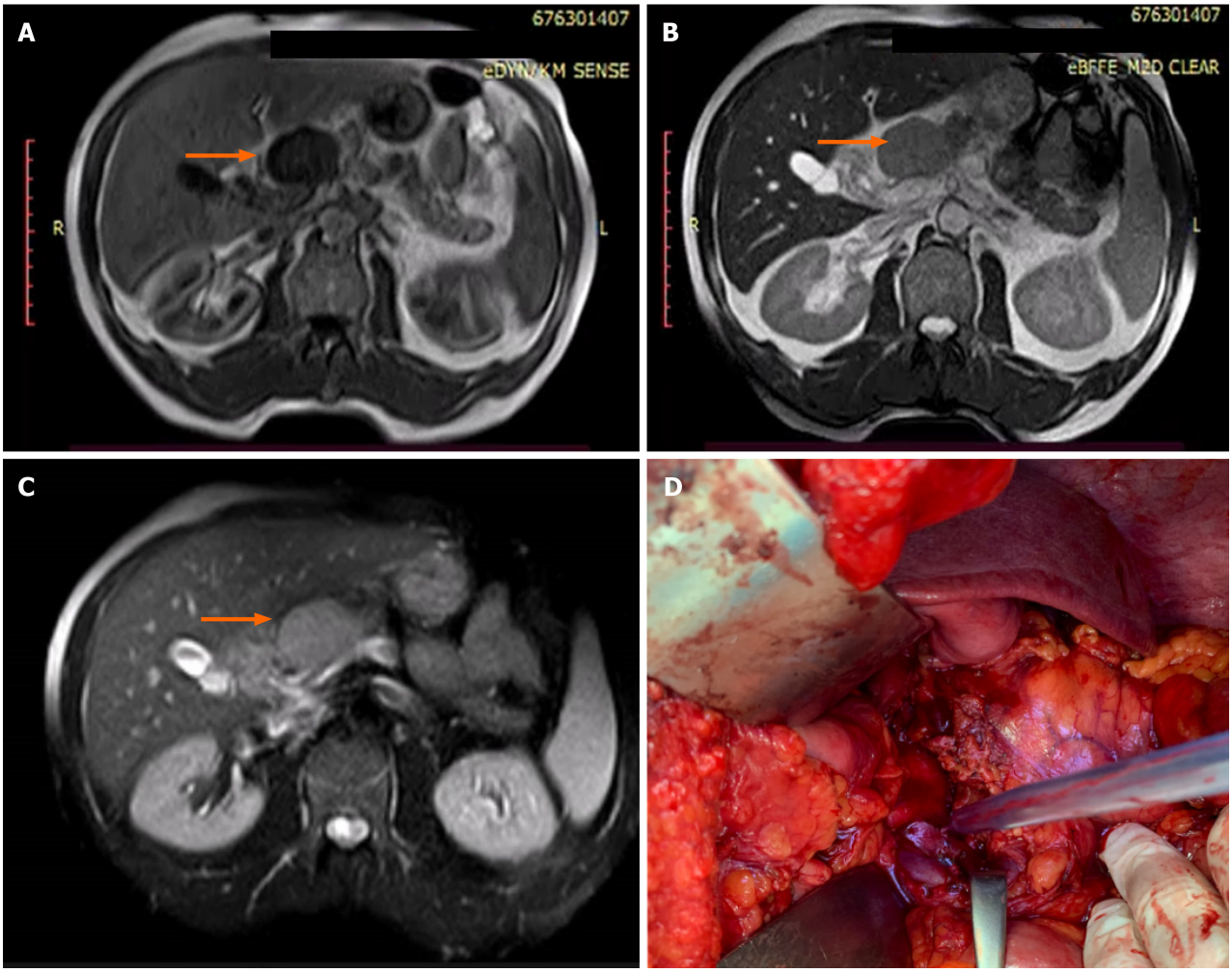


**Figure 1 Magnetic resonance imaging and intraoperative finding of primary pancreatic lymphoma.** A: T1-weighted magnetic resonance imaging (MRI) revealed a well-circumscribed, oval, hypointense lesion (58 mm in diameter) located in the neck and body region; B: Lesion was hyperintense on the T2-weighted MRI; C: Slight post-contrast MRI enhancement; D: Intraoperative finding after resection of the pancreas.

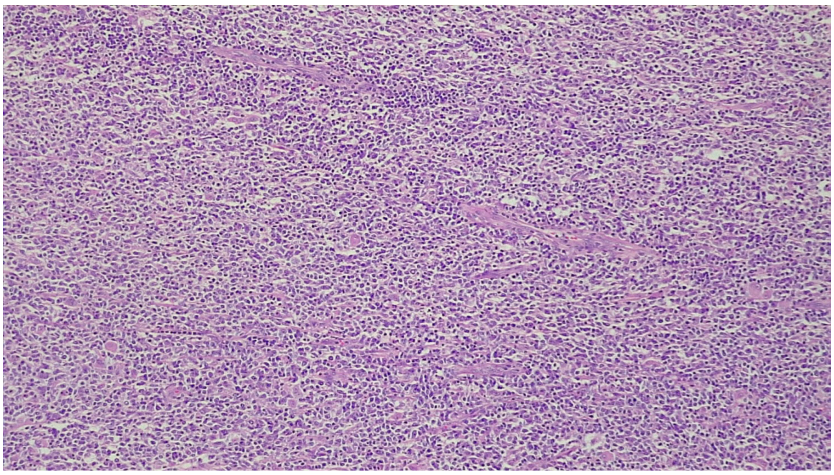

**Figure 2 Hematoxylin and eosin staining revealed diffuse large B-cell lymphoma.** × 10 magnification.

## DISCUSSION

PPL is a very rare disease representing only 0.1% of malignant lymphomas and 0.6% of extranodal lymphomas[1,2]. Unlike primary PPL, secondary involvement of the pancreas in the case of disseminated nodal or extranodal form of the disease is relatively common and is registered in one third of cases[1,12]. PPL is commonly associated with immunosup-

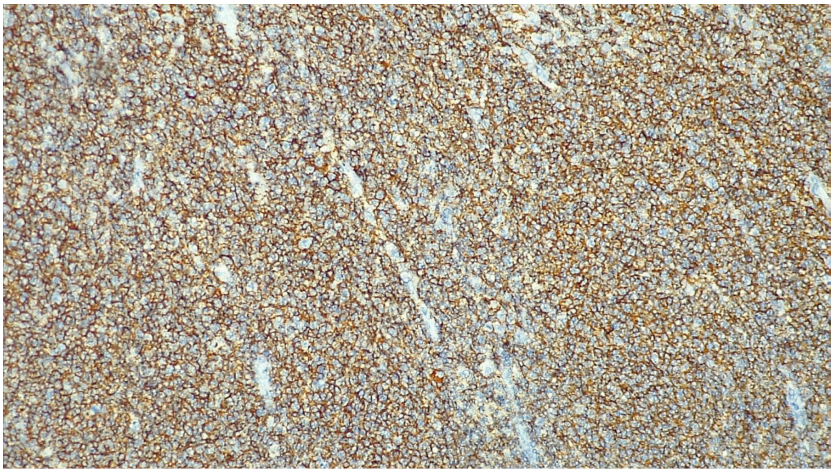

**Figure 3 CD20 positivity.** × 10 magnification.

pression and is common in patients with HIV infection or solid organ transplantation. Hepatitis C virus (HCV) or hepatitis B virus (HBV) infection has been associated with PPL[11]. In our case, HBV and HCV testing was done as part of the standard preoperative preparation, without knowing that it was PPL The results were negative.

PPL occurs most often in the sixth decade of life, and is more common in men (64%) compared to women. Two thirds of PPL are registered in the head of the pancreas[1,13,14]. The mean diameter of PPL at the time of presentation is greater than 5 cm[14], which is consistent for our case.

The major prognostic factor in nodal and extranodal lymphomas is histological subtype[15]. The most common histological subtype of PPL is DLBCL, which accounts for approximately 30% of all cases[2]. DLBCL presents with extranodal involvement in 30% of the cases[4]. The most frequent site of extranodal DLBCL involvement is the gastrointestinal tract, specifically the stomach and intestines[6]. Primary liver and pancreatic involvement of DLBCL is a rarity as it accounts for only 1.6% of all DLBCL cases and approximately 5.1% of all extranodal DLBCL cases[2]. The 1-year actuarial survival rate for B-cell lymphomas (51.9%) is better than that of T-cell lymphomas (0%)[10].

Differential diagnosis of PPL and adenocarcinoma can be difficult. PPL is accompanied with constitutional symptoms (weight loss, fever, and night sweats), elevated lactic acid dehydrogenase level, elevated beta-2 microglobulin level, and normal serum CA 19-9. PPL lesions are typically larger than 6 cm[8]. Our patients did not display symptoms that were suggestive of PPL.

According to the World Health Organization guidelines, PPL diagnostic criteria includes: (1) Majority of the disease is located in the pancreas; and (2) Primary clinical presentation involving the pancreatic gland, although adjacent lymph node involvement and metastasis may exist[3,16]. The Ann Arbor Diagnostic and Prognostic Staging System is the most popular system for classifying all types of NHL. Surgical treatment is possible in stage I (localized) and some stage II (regional) cases of the PPL[1,8].

The most common primary pancreatic malignancy is pancreatic adenocarcinoma, which has very similar clinical and radiological features as PPL. The nonspecific clinical and radiological presentation of PPL leads to the misdiagnosis and confusion with pancreatic adenocarcinoma. On imaging, PPL can appear in two forms: a localized tumor (as in this case) or diffuse pancreatic enlargement. The finding of a large tumor in the pancreas without proximal dilatation of the canalicular system with highly pronounced lymphadeopathy below the level of the renal veins indicates the diagnosis of PPL, while the presence of calcification or necrosis can rule it out[8,15,17,18].

Since both malignancies have different therapeutic management and clinical outcomes, it is very important to have a histopathological and cytopathological diagnosis of suspected pancreatic lesions[8,18,19]. This can be accomplished by percutaneous biopsy, endoscopic fine needle aspiration or biopsy, or exploratory laparoscopy/laparotomy, with a high rate of failure and complication risk for any type of pancreatic biopsy[19,20]. Percutaneous pancreas biopsy guided by CT or US can be performed with high sensitivity (94.42%) and specificity (97.94%). The mean accuracy of diagnosis is 95.76% with a complication rate of 2.08%[21]. Endoscopic US biopsy of the pancreas requires a skilled gastroenterologist and expensive equipment. This method has a success rate of 84.9% in tumors larger than 15 mm with a 2.1% total complication rate[22]. In 5%-10% of cases, percutaneous or endoscopic US biopsy is not valuable. In these situations, surgery, especially minimally invasive (laparoscopic or robotic), could be a useful diagnostic tool[23]. The fine needle aspiration biopsy performed on our patient was unsuccessful. Therefore, surgery was indicated for this patient. Other forms of benign tumors or IgG4 pancreatic disease disease has to exhibit symptoms similar to those of pancreatic malignancies, including lymphoma-but in our case, that possibility was not taken into account.

The R-CHOP protocol (rituximab, cyclophosphamide, doxorubicin, prednisone, and vincristine) has been established for many years as the first-line treatment of all NHLs. However, the overall results have not been satisfactory. Approximately 30%-40% of the patients relapse or develop refractory disease[13]. The 1-year and 5-year survival with chemotherapy only is 68% [95% confidence interval (CI): 65.3%-70.3%) and 48% (95%CI: 44.7%-50.5%), respectively[10]. Moreover, 5-year overall survival rates are 83%, 69%, 46%, and 32% in low-risk, low-intermediate-risk, high-intermediate-risk, and high-risk groups, respectively, classified by the age-adjusted International Prognostic Index[24].

Chemoradiotherapy could be used in the treatment of PPL. The mean survival of 26 months in patients receiving combined chemoradiotherapy was increased from 13 months in patients receiving chemotherapy alone[3,10]. Novel treatments for patients with resistant or relapsed DLBCL include chimeric antigen receptor T-cell therapy, polatuzumab vedotin + bendamustine and rituximab, tafasitamab + lenalidomide, loncastuximab, and selinexor. These can improve the prognosis of patients with refractory pancreatic DLCBC[25]. Due to the unsatisfactory long-term survival rates for PPL with chemotherapy and radiotherapy alone and the improvements in morbidity and mortality associated with pancreatic surgery, there is a need to reevaluate the therapeutic strategies for NHL of the pancreas[7,9,10,26-28].

Surgical treatment of PPL has not been the gold standard because radical resection of the pancreas is historically accompanied with high morbidity and mortality. However, recent advances in pancreatic surgery have diminished rates to 2% mortality and 30% morbidity[29,30]. Minimally invasive percutaneous or endoscopic dilatation and stent placement or drainage is also valuable for the palliative treatment of obstructive complications of PPL including jaundice and duodenal or gastric outlet obstruction. We extensively reviewed the literature and found a total of 28 studies including 92 patients with PPL who were surgically treated by radical pancreas resection (Table 1)[3-53].

Webb *et al*[23] reported 25 years ago that no evidence supported radical surgical resection in the management of patents with pancreatic lymphoma and that the majority of patients should be managed with chemotherapy and without surgery. However, this influential article was not confirmed by valid evidence. It was based on the results of the treatment of only 1 patient surgically treated with distal pancreatectomy compared to 8 patients treated with chemotherapy. Moreover, the disease-free period for that patient was 95 months[23].

A study conducted by Behrns *et al*[3] showed that surgical resection in combination with chemotherapy and radiotherapy was associated with increased long-term survival of PPL patients. Because of that, they advised a more aggressive surgical approach including pancreatic resection or tumor debulking. However, this study was also conducted with a small sample size ($n$ = 1). Based on these two studies, surgical treatment of PPL was abandoned[1]. As in other areas of oncological surgery, it is theoretically, possible to remove tumors with regional spread by performing some of the multiorgan resections. or to combine pancreatic resection with simultaneous resections of oligometastatic disease. However, both stages of the disease are already considered advanced, so there are no papers on the basis of which such an approach could be competently recommended. Our position is that surgery should not be considered unless we are sure we can achieve an R0 resection.

The positive value of radical resection for other forms of extranodal lymphoma has been shown and should be considered in selected cases. Multivariate regression analysis showed that patients with primary intestinal lymphomas treated with surgery and chemotherapy had better overall survival [hazard ratio (HR): 0.83; 95%CI: 0.75-0.93; $P$ = 0.0009] and cancer-specific survival (HR: 0.87; 95%CI: 0.77-0.99; $P$ = 0.0404) compared with the non-surgical group[31]. Based on these and similar results, surgery remains part of the standard care in the treatment of small bowel lymphoma[27]. Similarly, surgical resection has been associated with improved long-term survival of both gastric and primary hepatic lymphomas[27,32].

Promising results of radical surgical resection for early-stage PPL emerged after the year 2000. Koniaris *et al*[27] retrospectively reviewed 122 cases of pancreatic lymphoma. Medical treatment had a 46% curative rate. A small group of 15 patients received surgical resection for localized disease and showed a 100% response rate and 94% cure rate. They proposed a treatment algorithm based on a resectable solid pancreatic mass visualized by multi-slice CT or MRI, whether it could be a lymphoma, and if it should be resected without preoperative biopsy. Preoperative fine needle aspiration or a perioperative frozen section should be considered if resectability is questionable. Debulking of large and inoperable PPL may be considered. A neoadjuvant approach may also be considered, but currently no efficacy data exist. Adjuvant chemotherapy should be used after surgical resection in all cases of intermediate and high-grade lymphoma. In the setting of localized low-grade disease, chemotherapy may be omitted[27].

One of the largest series of early-stage PPL treated with radical resection was reported by Nishimura *et al*[7]. Among the 10 cases, 6 underwent chemotherapy after surgery. A comparison of the follow-up data for patients receiving surgery with and without chemotherapy did not reveal any differences in prognosis. This suggested that radical surgery is appropriate in this disease. Battula *et al*[9] reviewed 15 PPL patients treated with surgery (in the period from 1951-2006) who had at least 36 months of follow-up. They reported a 100% response rate and a 94% survival rate during this time period. This was compared to a 5-year survival rate of less than 50% and an overall 3-year disease-free survival rate of 44% in patients treated with chemotherapy, radiotherapy, or a combination[8]. Luo *et al*[33] concluded that the curative rate of the surgery-adjuvant chemotherapy group (5%) was higher than that of the chemotherapy alone group (51%). More recent findings from Ullah *et al*[10] found that chemotherapy with surgery improved 1-year and 5-year survival. Using the Surveillance, Epidemiology, and End Results database, which contains around 28% of the United States population, 493 patients with the diagnosis of DLBCL of the pancreas during 2000-2018 were obtained.

These data suggest that for surgically resectable stage I or early-stage II pancreatic NHL, resection should be an option in the multimodal therapeutic regimen[7,10,14,34]. The potential role of surgery in the treatment of PPL should be added in the management of lymphoma involving other gastrointestinal organ systems, such as gastric and small bowel lymphomas[34-40].

## CONCLUSION

The positive value of radical resection surgery of extranodal lymphoma in multiple organs has been shown. Our report and others have shown that surgery is a feasible treatment in selected cases of surgically resectable stage I or early-stage II PPL. Resection should be an option in the multimodal therapeutic regimen. Future studies could be directed to define the

**Table 1 Early-stage primary pancreatic lymphoma cases treated with surgical resection**

| Ref. | Year | Patients | Size in cm | Operation | Chemotherapy | Radiotherapy | Response | Outcome | Survival in month |
|---|---|---|---|---|---|---|---|---|---|
| Feather *et al* [41] | 1951 | 1 | 6 | Total pancreatectomy | None | None | CR | NED | 16 |
| Freed *et al*[42] | 1983 | 1 | NR | Distal pancreatectomy | None | None | CR | NED | 12 |
| Hart *et al*[43] | 1987 | 1 | NR | Distal pancreatectomy | None | None | NR | NR | NR |
| Webb *et al et al*[23] | 1988 | 1 | NR | Distal pancreatectomy | CAMEL | None | CR | NED | 95 |
| Mansour *et al* [44] | 1989 | 1 | NR | Distal pancreatectomy | NR | NR | NR | NR | NR |
| Hirabayashi *et al*[39] | 1991 | 1 | NR | Distal pancreatectomy | NR | NR | NR | NR | NR |
| Behrns *et al*[3] | 1994 | 2 | | Pancreaticoduodenectomy | CHOP | None | | | |
| Borrowdale and Strong [45] | 1994 | 1 | 6 | Pancreaticoduodenectomy | Yes | None | CR | NED | 1 |
| Ezzat *et al*[46] | 1996 | 1 | 2.5 | Pancreaticoduodenectomy | CHOP | None | CR | Death | 12 |
| Tanaka *et al* [47] | 1996 | 1 | 4 | Pancreaticoduodenectomy | CHOP | None | CR | NED | 36 |
| Misdraji *et al* [48] | 1997 | 1 | 4 | Pancreaticoduodenectomy | None | Yes | CR | NED | 5 |
| Bouvet *et al* [49] | 1998 | 3 | 3-13 | Pancreaticoduodenectomy (1); Distal pancreatectomy (2) | CHOP | None | CR | NED | 23, 13, 11 |
| Koniaris *et al* [27] | 1999 | 3 | 2-8 | Pancreaticoduodenectomy | CHOP (2) | Yes (2) | CR | NED | 64, 2, 53 |
| Arcari *et al* [50] | 2005 | 2 | 3, 3.5 | Pancreaticoduodenectomy | CHOP | None | CR | Death (1); NED (1) | 8, 160 |
| Nishimura *et al*[7] | 2001 | 10 | 4-17 | Pancreaticoduodenectomy (7); Distal pancreatectomy (3) | CHOP (8) | None | CR | DOD (3); NED (7); NR (2) | 9, 10, 27, 3, 4, 11, 11, 12, 19 |
| Ji *et al*[40] | 2005 | 1 | NR | Pancreaticoduodenectomy | NR | NR | NR | NR | NR |
| Lin *et al*[14] | 2006 | 3 | > 6 | Pancreaticoduodenectomy (2); Distal pancreatectomy (1) | CHOP | SBRT (1) | CR | NED | 49, 37, 21 |
| Battula *et al* [9] | 2006 | 1 | NR | Pancreaticoduodenectomy | CHOP | None | CR | NR | NR |
| Liakakos *et al* [28] | 2008 | 1 | 5 | Pancreaticoduodenectomy | CHOP | None | CR | NED | 21 |
| Hashimoto *et al*[51] | 2008 | 1 | | Pancreaticoduodenectomy | R-CHOP | None | CR | NED | 7 |
| Haji *et al*[37] | 2009 | 1 | NR | Pancreaticoduodenectomy | R-CHOP | None | CR | NED | 1 |
| Luo *et al*[33] | 2009 | 4 | 4-11 | Pancreaticoduodenectomy | R-CHOP | None | CR | NED | NR |
| Sugishita *et al* [26] | 2010 | 1 | 4.5 | Pancreaticoduodenectomy | R-CHOP | None | CR | NED | 48 |
| Alexander *et al*[52] | 2011 | 1 | 4.5 | Pancreaticoduodenectomy | R-CHOP | None | CR | NED | 18 |
| Yu *et al*[36] | 2017 | 1 | | Pancreaticoduodenectomy | R-CHOP | None | CR | NED | 16 |
| Sallapan *et al* [53] | 2018 | 1 | 5.8 | Pancreaticoduodenectomy | R-CHOP | NR | NR | NR | NR |
| Xia *et al*[13] | 2023 | 1 | NR | Distal pancreatectomy | R-CHOP | None | NR | NR | NR |
| Ullah *et al*[10] | 2023 | 44 | | | | | | | |
| Present | 2024 | 1 | 5. 6 | Distal pancreatectomy | R-CHOP | Yes | CR | NED | 36 |

| | | |
|---|---|---|
| Total | 28 studies | 92 patients |

CAMEL: Camrelizumab plus carboplatin and pemetrexed; CHOP: Cyclophosphamide, doxorubicin, vincristine, prednisone; CR: Complete response; DOD: Died of disease; NED: No evidence of disease; NR: Not reported; R-CHOP: Rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone; SBRT: Stereotactic body radiation therapy.

value of novel neoadjuvant and adjuvant therapy.

## FOOTNOTES

**Author contributions:** Stojanovic MM, Brzacki V, Marjanovic G, Zivadinovic J, Nestorovic M, Gmijovic M, Golubović I and Stojanovic PM treated the patient and designed the case study; Krstic M analyzed the histopathology; Jovanovic S and Terzic K analyzed the recent literature and contributed to writing the manuscript. All authors read and approved the final manuscript.

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