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Case Report

Long-Term Disease Control with Multimodal Therapy in a Patient with Initially Unresectable Locally Advanced Pancreatic Cancer: A Case Report

Pavel Yukachev, MD

*__Correspondence to__: Pavel Yukachev, MD, Radiation Oncologist, JSC MEDICINA (Academician Roytberg's Clinic), Institute of Nuclear Medicine, Khimki, Russia.

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Abstract

Introduction: *Locally advanced pancreatic cancer (LAPC) carries a poor prognosis, with surgical resection often unfeasible due to vascular involvement. The optimal management strategy after induction chemotherapy remains debated.*

Case Presentation: *A 58-year-old male presented with epigastric pain and jaundice. Diagnostic workup revealed pancreatic head tumor, cytologically confirmed as well-differentiated adenocarcinoma, staged as cT4N0M0 due to superior mesenteric artery invasion. The patient received 12 cycles of neoadjuvant mFOLFIRINOX followed by consolidative chemoradiotherapy (54 Gy with concurrent capecitabine).*

Results: *Post-treatment PET/CT demonstrated significant reduction in metabolic activity (SUVmax decrease from 2.13 to 1.91 in primary tumor; from 12.69 to 6.89 in peritumoral inflammation) with stable disease size per RECIST criteria. No progression at 5-month follow-up. Conclusion: Intensive multimodal therapy with maximum-tolerated induction chemotherapy followed by consolidative CRT can achieve sustained local disease control in selected patients with initially unresectable LAPC.*

Keywords: *pancreatic cancer, locally advanced, mFOLFIRINOX, chemoradiotherapy, case report, radiation oncology.*

Introduction

Pancreatic ductal adenocarcinoma remains one of the most lethal malignancies. Locally advanced pancreatic cancer (LAPC), characterized by tumor involvement of major peripancreatic vessels without distant metastases, precludes immediate surgical resection. While induction chemotherapy is standard initial treatment, the role of consolidative chemoradiation continues to be refined. We present a case where sequential intensive multimodal therapy achieved excellent local disease control.

Case Presentation

A 58-year-old male presented in mid-2024 with two-month history of epigastric pain, jaundice, and weakness. Initial CT showed mass in pancreatic head uncinate process (31 mm) with confluence infiltration. Cholecystostomy was performed (June 5, 2024). Subsequent MRI confirmed 23×25 mm pancreatic head mass

with malignant features. CA 19-9 was elevated (612.4 U/mL). EUS-FNA cytology confirmed well-differentiated adenocarcinoma. Diagnostic laparotomy (November 19, 2024) confirmed tumor invasion into superior mesenteric artery (1 cm segment), establishing unresectable LAPC diagnosis (cT4N0M0, Stage III). The patient received 12 cycles of mFOLFIRINOX (August 8, 2024- February 15, 2025), maintaining ECOG 1 status. Post-chemotherapy PET/CT (March 7, 2025) showed hypervascular mass with low metabolic activity (SUVmax=2.13), no distant metastasis.

From April 7 to May 16, 2025, he underwent concurrent chemoradiotherapy: VMAT technique, 54 Gy total dose in 30 fractions of 1.8 Gy with concurrent capecitabine (2500 mg/day). Treatment completed with Grade 2 radiation mucositis as only significant toxicity.

Response assessment PET/CT (October 21, 2025) showed:

- Primary tumor: stable size, decreased metabolic activity (SUVmax=1.91)
- Peritumoral inflammation: significantly reduced FDG uptake (SUVmax decreased from 12.69 to 6.89)
- No evidence of local progression or distant metastasis Patient condition remained satisfactory.

Discussion

This case demonstrates successful multimodal LAPC management from a radiation oncology perspective. Twelve cycles of mFOLFIRINOX represent maximal-intensity induction chemotherapy. Subsequent CRT consolidation contributed to sustained local control, evidenced by metabolic and morphologic stability on follow-up imaging. Significant SUVmax decrease indicates effective suppression of tumor-associated inflammation.

The technical aspects of radiotherapy delivery - VMAT technique, dose of 54 Gy in 1.8 Gy fractions - represent modern standards in radiation oncology for pancreatic cancer treatment. The favorable toxicity profile (only Grade 2 mucositis) underscores the precision of contemporary radiation techniques.

LAPC management after induction chemotherapy remains controversial. Our case supports evidence that CRT provides effective local disease consolidation in selected patients without progression on initial chemotherapy. Absence of progression five months post- treatment completion represents promising outcome in this aggressive disease.

Conclusion

Sequential intensive neoadjuvant chemotherapy followed by definitive chemoradiation can achieve prolonged local disease control in initially unresectable LAPC. This approach should be considered within multidisciplinary framework for suitable patients maintaining good performance status after induction chemotherapy. The radiation oncology perspective is crucial in optimizing local disease control while minimizing toxicity.

References

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