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Case Study RRJoOH

A Case Report of Advanced Periampullary Carcinoma: Palliative Chemotherapy Following Whipple's Surgery

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Abstract

This case report delves into the complex management of a 60-year-old female patient diagnosed with Stage 4 periampullary carcinoma, encompassing the pancreatic head. Presenting with difficulty in eating, diagnostic investigations, including ERCP, confirmed the diagnosis, leading to Whipple's surgery. Postoperatively, liver metastasis was identified, prompting palliative intervention through stenting and the initiation of a GEMOX chemotherapy regimen. The patient responded favorably to the initial chemotherapy cycle, leading to a planned four-cycle course. Notable laboratory abnormalities included elevated liver enzymes. The multidisciplinary approach involved medical oncology, surgery, and supportive care teams, focusing on symptom amelioration and optimizing the patient's overall quality of life. Despite generally low survival rates for periampullary carcinoma, the positive response to palliative chemotherapy was evident during follow-up, emphasizing the evolving nature of treatment strategies. This case underscores the imperative of expeditious diagnosis and tailored interventions, highlighting the crucial role of palliative chemotherapy in improving patient outcomes. Regular surveillance, symptom management, and comprehensive supportive care collectively contributed to an enhanced quality of life for the patient throughout the chemotherapy follow-up period. The report contributes to academic understanding, emphasizing the multidisciplinary approach's significance in addressing the complexities of periampullary carcinoma management. Discussion highlights the significance of a multidisciplinary approach in addressing periampullary carcinoma complexities. The case underscores the need for expeditious diagnosis and tailored treatment strategies. Despite generally low overall survival rates for periampullary carcinoma, the positive response to palliative chemotherapy and its impact on the patient's quality of life were evident during follow-up appointments. The report contributes to the academic understanding of periampullary carcinoma management, emphasizing the crucial role of palliative chemotherapy in enhancing patient outcomes.

Keywords: Periampullary carcinoma, Whipple's surgery, Palliative chemotherapy, Liver metastasis, Endoscopic Retrograde Cholangiopancreatography (ERCP).

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INTRODUCTION

Periampullary carcinoma

The nomenclature "periampullary carcinoma" is commonly employed to designate a diverse assortment of neoplasms originating from the pancreatic head, the distal segment of the common bile duct, and the duodenum [1]. Periampullary adenocarcinomas represent infrequent malignancies characterized by a formidable disease trajectory. Periampullary carcinoma, also referred to as pancreatic carcinoma, denotes a form of cancer impacting the periampullary region, encompassing anatomical structures such as the pancreas, bile ducts, and the ampulla of Vater [2].

Etiology

The etiology of periampullary carcinoma remains incompletely elucidated, with its onset being correlated with diverse factors including advanced age, tobacco use, chronic pancreatitis, and specific genetic predispositions and environmental factors, as indicated by scholarly investigations [3].

Pathogenesis and Clinical manifestations

The pathogenesis of periampullary carcinoma is commonly conceptualized as either a manifestation of hamartoma or pancreatic heterotopia [4]. The clinical manifestation of periampullary carcinoma frequently includes symptoms such as biliary obstruction or abdominal pain. Additionally, instances arise where the condition is serendipitously identified during surgical procedures or post-mortem examinations.

Diagnosis

Diagnosis of adenomyoma is crucial, given the inconclusive findings from endoscopic and radiological examinations; therefore, reliance on histopathological evaluation becomes imperative. In the context of periampullary carcinoma, limited resection stands out as the preferred therapeutic approach, although pancreaticoduodenectomy is frequently implemented in cases where the lesion is situated in the periampullary region due to preoperative misdiagnoses indicating carcinoma [5].

Complications and Treatments

Notably, individuals with periampullary carcinoma face an elevated susceptibility to complications, encompassing hepatic and renal dysfunction, cardiovascular issues, nutritional deficiencies, bleeding tendencies, infections, wound complications, and a heightened perioperative mortality risk [6]. Periampullary cancer exhibits diverse subtypes, encompassing pancreatic, bile duct, and duodenal cancers [7]. Its classification is commonly predicated on the TNM staging system, which meticulously evaluates the tumor's size and extent (T), the involvement of adjacent lymph nodes (N), and the presence of distant metastasis (M). Staging spans from localized tumors (Stage I) to metastatic disease (Stage IV) [8]. Treatment modalities primarily center around surgical intervention, tailored to the tumor's type and stage. Early-stage neoplasms may necessitate surgery as a standalone therapy, while advanced cases often mandate a multifaceted approach involving surgery, chemotherapy, and radiation therapy [9]. Prognosis hinges upon variables including the tumor's specific subtype and stage, along with patient-related factors such as age and overall health [10].

Whipple surgery

Pancreaticoduodenectomy, colloquially known as Whipple surgery, constitutes a intricate surgical intervention characterized by the excision of the pancreatic head, the initial segment of the small intestine (duodenum), the gallbladder, and the associated bile ducts [11]. This procedure is primarily employed in the treatment of pancreatic cancer, although its application extends to other pathological conditions such as chronic pancreatitis, ampullary cancer, and neuroendocrine tumors [12].

Indications for the undertaking of Whipple surgery encompass the following medical conditions

- Pancreatic cancer
- Ampullary cancer
- Chronic pancreatitis
- Neuroendocrine tumors

Preparatory measures for Whipple surgery encompass a comprehensive array of diagnostic tests and procedures aimed at ascertaining the patient's fitness for the impending operation. This regimen typically involves blood assays, imaging investigations, and a thorough physical examination [13].

Subsequent to the surgical procedure, postoperative care necessitates an extended hospitalization period, typically spanning 7 to 10 days, during which the patient is administered analgesics and

subjected to vigilant monitoring to detect and address potential complications [14]. The convalescent phase following Whipple surgery spans several months, during which adherence to a specialized diet and the administration of prescribed medications become integral components in managing postoperative sequelae [15].

In summation, Whipple surgery, recognized for its complexity, finds application in the management of diverse medical conditions, notably pancreatic cancer. Preparatory measures encompass a battery of diagnostic evaluations, while postoperative care mandates an extended hospital stay and protracted convalescence, accompanied by dietary modifications and pharmacological interventions [16].

The Case Description

A 60-year-old female Patient, admitted in female surgical ward, oncology medicine department had complained of difficulty in eating and presented with a one-month history of difficulty in eating and her asymptomatic state noted a year earlier. Diagnostic investigations, including Endoscopic Retrograde Cholangiopancreatography (ERCP) which was performed under general anesthesia and Olympus CV 170 Scope was used and the diagnostic results indicated for (CBD) common bile duct stone and Papilla showed Ulcero proliferative growth was seen at the ampulla and Pancreatic duct was not cannulated and colon angiogram was done and it showed Dilated CBD with Distal CBD stricture, 7f 5 cmt stent was placed in to the CBD, Biliary stenting was done, Impression revealed the presence of periampullary carcinoma originating from the pancreas.

HISTOPATHOLOGY

Microscopic Findings

I-B1-B3. Multiple sections studied show duodenal wall with an infiltrating tumor in the region of ampulla. The tumor is composed of cells arranged in papillary and acinar pattern separated by fibrovascular stroma. The papillae and the acini are lined by multilayered columnar tumor cells and show loss of polarity. The tumor cells show a moderate degree of nuclear pleomorphism. The tumor cells have hyperchromatic to vesicular nucleus with nucleoli and moderate amount of eosinophilic cytoplasm. few mitoses seen. The adjacent stroma is desmoplastic and shows moderate chronic inflammatory cellular infiltrate. Focal areas of necrosis seen. No vascular emboli or lymphatic or perineural invasion seen. The tumor is seen infiltrating into the muscularis propria. No infiltration into the pancreatic tissue seen. The adjacent mucosa of the ampulla of vater is lined by dysplastic epithelium.

I-A1-A5: Section from proximal, distal, common bile duct margin and pancreatic margin are free of tumor. Section studied from retroperitoneal margin shows 2 lymphnodes with reactive change.

I-C1 & I-C2: Section from adjacent intestine and pancreas are unremarkable.

I-D1. The section studied shows 2 lymphnodes with all show reactive change. No evidence of metastasis in the sections studied.

1-D2: Section studied shows 2 lymphnodes with both show metastatic deposits.

I-D3: Section studied shows 3 lymphnodes with all show reactive change. No evidence of metastasis in the sections studied.

II-E: Section studied from gall bladder features chronic cholecystitis.

Biopsy

Biopsy showed periampullary carcinoma.

Abdomen and pelvis ultrasonography report

Liver

Measures 14 cm and is normal in size and shows multiple, variable sized fairly circumscribed hypoechoic lesions in both the lobes largest measuring 23x19 mm in segment VI, right lobe of liver. No obvious vascularity noted on color doppler studies.

The patient underwent Whipple's surgery, and the procedure was performed. post-surgical assessment disclosed the development of liver metastasis. and laboratory values were elevated as shown in Table 1 Palliative intervention ensued, with stenting procedures and initiation of chemotherapy on 28th February 2023 and follow up was done up to 4 months and patients palliative care chemotherapy was monitored.

Table 1. Abnormal laboratory values.

Test Parameters	Results	Reference range
Aspartate transaminase (AST/ SGOT)	48 U/L	Upto 31
Alkaline Phosphatase serum	209 U/L	42-98
Gamma Glutamyl Transferase (GGT)	55 U/L	< 38

Palliative Chemotherapy Treatment

The prescribed palliative chemotherapy regimen, GEMOX therapy, encompassed a comprehensive drug protocol administered over a two-day period. The therapeutic agents included Tablet Paracetamol 500 mg, Tablet Ranitidine 150 mg, Injection Palonosetron hydrochloride 0.25mg in 100ml Normal saline (NS), Injection Hydrocortisone, Injection Gemcitabine 1000mg in 250ml NS, and Injection Oxaliplatin 100 mg in 250 ml 5% Dextrose in glass bottle. Additionally Tablet Paracetamol 500mg and Subcutaneous Filgrastim 300 mcg were administered on Day 2 to mitigate potential hematological sequelae. This therapy was given first week of each month and a follow-up appointment after 2 weeks was recommended and patient was monitored for the palliative chemotherapy procedure up to 4 months, with a total of four cycles of chemotherapy planned for 4 months where each cycle was done per month.

Outcomes and Recommendations

The patient exhibited favorable response to the initial chemotherapy cycle, and clinical response assessments at follow-up and post four cycles demonstrated positive responses to the palliative intervention. Patient was monitored up to four cycles till the fourth month and patient responded well and improvement in the overall health and positive hike in suppression of symptoms was observed supporting quality of life improvement in the patient was observed from the response. Subsequently D1 CST evaluation after the fourth cycle was advised as per the treatment plan. The management approach adopted involved a multidisciplinary collaboration encompassing medical oncology, surgical expertise, and supportive care teams. The primary focus of this integrated care model was the amelioration of symptoms and optimization of the patient's overall quality of life.

DISCUSSION

This case highlights the challenges in managing advanced periampullary carcinoma, necessitating a multidisciplinary approach. The utilization of Whipple's surgery followed by palliative chemotherapy underscores the evolving nature of treatment strategies for such cases. Periampullary carcinoma refers to a collection of cancerous growths that develop either in the pancreas or in close proximity to the ampulla of Vater.[17] It encompasses a less common condition known as ampullary carcinoma (AC), constituting around 0.2% of total gastrointestinal solid tumors and representing 20% of all cancers arising in the periampullary region.[18] There is debate surrounding the advantages of preoperative biliary drainage for malignant obstructive jaundice. The formulation of clinical guidelines has been hindered by the absence of compelling randomized data, resulting in diverse approaches to treatment options.[19] Micrometastasis in periampullary carcinoma could represent an initial phase of tumor spread. The detection of micrometastasis is notably reliant on elevated levels of CK antibodies. Research utilizing the Surveillance, End Results, and Epidemiology (SEER) database revealed that ampullary carcinomas exhibit the most favorable survival outcomes compared to other periampullary malignancies. Despite this, the overall survival rates for periampullary carcinoma remain generally low, with a median survival of 20 months for individuals without adjuvant radiotherapy and 25 months for those who undergo adjuvant radiotherapy.[20] Palliative chemotherapy assumes a pivotal role in the therapeutic approach to periampullary carcinoma, a form of cancer affecting the region proximal to the major papilla near the terminus of the bile duct. Its application is particularly pertinent in instances

where the cancer is advanced and curative measures are deemed improbable. The determination to employ palliative chemotherapy hinges upon various factors, including the patient's performance status, cancer prognosis, and individual preferences.[21] Within the realm of periampullary cancer, investigations have been conducted on both adjuvant and first-line palliative chemotherapy regimens. Notably, the ESPAC-3 study scrutinized the efficacy of adjuvant chemotherapy in periampullary carcinomas.[22] Furthermore, exploration into the use of second-line chemotherapy agents in a palliative context has revealed notable improvements in survival outcomes.[23] Hence, the integration of palliative chemotherapy stands as a crucial facet in the holistic management of periampullary carcinoma, necessitating a judicious decision-making process in collaboration with a healthcare team, tailored to the specific circumstances of each patient.[24]

CONCLUSION

This case underscores the intricate nature of periampullary carcinomas, emphasizing the imperative of expeditious diagnosis and the formulation of tailored treatment strategies. The positive response observed during palliative chemotherapy and its subsequent impact on the patient's quality of life was meticulously monitored during follow-up appointments and the patient responded well to the palliative chemotherapy. This case report elucidates the intricate management of a patient with Stage 4 periampullary carcinoma and liver metastasis, undergoing palliative chemotherapy subsequent to Whipple's surgery. Regular surveillance, symptom management, and comprehensive supportive care collectively contributed to an enhanced quality of life for the patient which was observed during the chemotherapy follow up.

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