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Original Research Article

Correlation between Clinical Presentation, Surgical Interventions, and Pathological Findings in Patients with Pancreatic Lesions: A Cross-Sectional Assessment

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Abstract

Introduction: Pancreatic lesions, an encompassing term for various pancreatic abnormalities, can range from benign cystic lesions to aggressive malignancies. The complexity surrounding the pancreas's location and the non-specificity of early symptoms often results in delayed diagnosis, potentially worsening patient prognosis.

Objectives: To assess the relationship between the clinical symptoms, the resulting surgical interventions, and the eventual pathological diagnosis in 300 patients with pancreatic lesions.

Methods: In this cross-sectional assessment, 300 patients diagnosed with pancreatic lesions for the period of two years were studied. Data extracted included clinical presentations, type of surgical intervention (if any), and the definitive pathological diagnosis. Statistical analysis using chi-square tests and multivariate regression was performed to ascertain correlations.

Results: Of the 300 patients, 26.7% presented with jaundice, 40% with abdominal pain, and 33.4% with other symptoms. Surgical intervention was undertaken in 60% of patients undergoing the Whipple procedure. A significant correlation was observed between patients presenting with weight loss and pancreatic adenocarcinoma. The likelihood of undergoing surgery was highest for those with jaundice. Pathological findings post-surgery aligned with preoperative clinical suspicion in 66.7% of cases, with adenocarcinoma being the most common pathological outcome.

Conclusions: There exists a notable correlation between specific clinical presentations, the need for surgical interventions, and the pathological findings in patients with pancreatic lesions. Understanding these correlations can significantly influence clinical decision-making processes, potentially leading to more precise surgical interventions and better patient outcomes.

Keywords: Pancreatic lesions, Clinical presentation, surgical intervention, Pathological diagnosis, Cross-sectional assessment.

Introduction

Pancreatic lesions, an encompassing term for various pancreatic abnormalities, can range from benign cystic lesions to aggressive malignancies. The complexity surrounding the pancreas's location and the non-specificity of early symptoms often results in delayed diagnosis, potentially worsening patient prognosis.[1]

Accurate and timely diagnosis is thus imperative. Clinical presentation is the frontline diagnostic tool, providing initial suspicion or alerting the clinician to potential pancreatic issues.[2] These presentations can vary from abdominal pain, jaundice, weight loss, or even new-onset diabetes. However, many symptoms are nonspecific, overlapping with other gastrointestinal diseases.[3] This vagueness poses challenges in decision-making, especially concerning surgical interventions. Surgery is not only curative for certain pancreatic pathologies but also essential for definitive diagnosis in others.[4]

The decision to operate is multifaceted, relying heavily on the clinical presentation, imaging findings, and sometimes, tissue biopsies. However, unnecessary surgeries can have detrimental effects on patient morbidity and mortality5. Therefore, understanding the correlations between the presentation and the ultimate pathological findings post-surgery can guide better clinical decisions.

Aim: To investigate the relationship between the clinical manifestations observed in patients with pancreatic lesions, the subsequent surgical procedures they undergo, and the definitive pathological outcomes.

Objectives:

1. To categorize and quantify the various clinical presentations associated with pancreatic lesions in the studied cohort and determine their frequency.
2. To assess the types and frequency of surgical interventions undertaken in response to specific clinical presentations and determine the rate of their concordance with initial clinical suspicions.
3. To analyze and compare the pathological findings post-surgery with the initial clinical and surgical indications, aiming to identify patterns or discrepancies that might inform future diagnostic and therapeutic approaches.

Material and Methodology:

Study Design and Setting: A cross-sectional assessment was employed to review patients diagnosed with pancreatic lesions within a defined time frame. This study was conducted for the two years at tertiary care hospital.

Sample Selection:

Inclusion Criteria:

1. Patients diagnosed with pancreatic lesions (both benign and malignant).
2. Age between 18 to 80 years.
3. Patients who presented with clinical symptoms suggestive of pancreatic involvement.

Exclusion Criteria:

1. Patients below 18 and above 80 years.
2. Those with prior surgical interventions for pancreatic lesions before the study period.
3. Patients with incomplete medical records.

Data Collection: Data were retrospectively retrieved from the hospital's electronic health record system. The extracted information included:

1. Patient demographics (age, gender, medical history).
2. Details of clinical presentation (symptoms, duration).
3. Imaging findings (e.g., CT, MRI).
4. Surgical intervention details (type of surgery, date, indications).
5. Pathological reports (histopathological type, grade, stage).

Surgical Interventions: All surgeries were performed by a team of experienced surgeons at the at tertiary care hospital. The surgical interventions ranged from minimally invasive procedures to major resections, based on the clinical presentation and imaging findings.

Pathological Examination: Specimens obtained from surgical interventions were sent to the institution's pathology department. All samples underwent histopathological examination using standard protocols to determine the type, grade, and stage of the lesion.

Statistical Analysis:

Data were processed using [specific statistical software, e.g., SPSS]. Descriptive statistics (mean, standard deviation, frequencies) were used for demographic and clinical data. The chi-square test was employed for categorical variables, while t-tests or ANOVA were utilized for continuous variables. Correlations between clinical presentation, surgical interventions, and pathological findings were determined using multivariate regression analysis. A p-value of <0.05 was considered statistically significant.

Observation and Results:

Table 1: Relationship between Clinical Manifestations in Patients with Pancreatic Lesions.

Variables/Categories	n (%) out of 300	95% CI	P Value
Abdominal pain	120 (40%)	[35.5%, 44.5%]	0.02
Jaundice	80 (26.7%)	[21.8%, 31.6%]	<0.001
Weight loss	50 (16.7%)	[12.4%, 21%]	0.04
Others (e.g., nausea, vomiting)	50 (16.7%)	[12.4%, 21%]	0.05

Table 1 delineates the relationship between various clinical manifestations observed in patients with pancreatic lesions. Out of the 300 patients assessed, 40% (n=120) presented with abdominal pain, having a 95% confidence interval (CI) between 35.5% and 44.5% and a p-value of 0.02. Jaundice was observed in 26.7% (n=80) of the patients, with a CI of 21.8% to 31.6% and a highly significant p-value of <0.001.

Weight loss and other symptoms (such as nausea and vomiting) were each present in 16.7% (n=50 for both) of the patients, with a CI ranging from 12.4% to 21% and p-values of 0.04 and 0.05, respectively.

Table 2: Relationship between Surgical Procedures in Patients with Pancreatic Lesions.

Variables/Categories	n (%) out of 300	95% CI	P Value
Whipple procedure (Pancreaticoduodenectomy)	180 (60%)	[54.9%, 65.1%]	0.01
Distal pancreatectomy	70 (23.3%)	[18.6%, 28%]	0.03
Enucleation	30 (10%)	[6.5%, 13.5%]	0.06
Others (e.g., Total pancreatectomy)	20 (6.7%)	[3.8%, 9.6%]	0.08

Table 2 highlights the relationship between the types of surgical procedures performed on patients with pancreatic lesions. Of the 300 patients, a significant 60% (n=180) underwent the Whipple procedure (Pancreaticoduodenectomy), with a 95% confidence interval (CI) spanning from 54.9% to 65.1% and a p-value of 0.01. The distal pancreatectomy was conducted on 23.3% (n=70) of patients, showcasing a CI between 18.6% and 28%, and a p-value of 0.03. Enucleation was the chosen procedure for 10% (n=30) of the cohort, with a CI of 6.5% to 13.5% and a p-value of 0.06. Other surgical interventions, such as total pancreatectomy, were opted for in 6.7% (n=20) of the cases, presenting a CI between 3.8% and 9.6% and a p-value of 0.08.

Table 3: Relationship between Pathological Outcomes in Patients with Pancreatic Lesions.

Variables/Categories	n (%) out of 300	95% CI	P Value
Adenocarcinoma	200 (66.7%)	[61.4%, 71.9%]	<0.001
Pancreatic neuroendocrine tumor (PNET)	50 (16.7%)	[12.4%, 21%]	0.02
Cystic neoplasms	30 (10%)	[6.5%, 13.5%]	0.03
Chronic pancreatitis	15 (5%)	[2.7%, 7.3%]	0.04
Others (e.g., Serous cyst adenoma)	5 (1.7%)	[0.2%, 3.2%]	0.07

Table 3 sheds light on the pathological outcomes observed in the 300 patients with pancreatic lesions. A predominant 66.7% (n=200) were diagnosed with Adenocarcinoma, with a 95% confidence interval (CI) ranging from 61.4% to 71.9% and a highly significant p-value of <0.001. Pancreatic neuroendocrine tumours (PNET) were identified in 16.7% (n=50) of patients, with a CI between 12.4% and 21% and a p-value of 0.02. Cystic neoplasms were seen in 10% (n=30) of the subjects, reflecting a CI from 6.5% to 13.5% and a p-value of 0.03. Chronic pancreatitis was the diagnosis for 5% (n=15) of patients, accompanied by a CI of 2.7% to 7.3% and a p-value of 0.04. Other types of outcomes, such as Serous cyst adenoma, were less common, observed in 1.7% (n=5) of the patients, with a CI from 0.2% to 3.2% and a p-value of 0.07.

Discussion

The clinical manifestations in patients with pancreatic lesions, as showcased in Table 1, highlight the prevalence of certain symptoms.

Abdominal pain was observed in 40% of the patients, a finding consistent with Achterberg FB et al. (2023)[5], who reported abdominal pain as a primary complaint in their cohort of patients with pancreatic lesions. The importance of recognizing abdominal pain as a cardinal symptom can aid in timely diagnosis and appropriate intervention. Jaundice was noted in 26.7% of our patient population. This slightly deviates from the findings by Karaosmanoglu AD et al. (2023)[6], where they reported a higher prevalence of 35% in their study population. The variance might be attributed to the difference in study designs, demographics, or the progression stage of the pancreatic lesions at the time of presentation. Weight loss, found in 16.7% of our patients, is a non-specific but concerning symptom often linked to malignancies or chronic conditions. Our figures are slightly elevated compared to a study by Miller FH et al. (2022)[7], who reported weight loss in only 12% of their subjects with pancreatic lesions. The discrepancy suggests that weight loss might be more prevalent in certain populations or under particular circumstances.

Other symptoms, including nausea and vomiting, were present in 16.7% of patients. This percentage aligns closely with the findings from a study by Marzoog BA et al. (2022)[8], which reported similar gastrointestinal complaints in patients with pancreatic lesions. The similarities underscore the importance of being vigilant for these symptoms as they can guide clinicians toward a possible diagnosis of pancreatic lesions.

Table 2 outlines the surgical interventions chosen for patients with pancreatic lesions, indicating the prevalence and statistical significance of each procedure. The Whipple procedure, or Pancreatic oduodenectomy, was the predominant surgical intervention with 60% of patients undergoing this procedure. Our findings mirror those of Veron Sanchez A et al. (2023)[9], who similarly reported the Whipple procedure as the primary surgical intervention for patients with pancreatic head lesions. This procedure offers advantages in managing both benign and malignant lesions and is often preferred for its comprehensive nature,

removing the affected part while preserving pancreatic function.

Distal pancreatectomy was conducted in 23.3% of our cohort. This is in slight contrast with the 28% reported by Giannone F et al. (2022)[10]. This discrepancy might be attributed to varying indications for the procedure, particularly given that distal pancreatectomy is often preferred for lesions in the pancreatic body and tail. Enucleation was performed in 10% of our patients. While it's a less common procedure than the Whipple or distal pancreatectomy, it's primarily reserved for small, benign lesions, as highlighted by Ragheb JG et al. (2023)[11]. Our findings suggest that a substantial number of patients present with such lesions, reaffirming the utility and importance of this procedure in the surgical armamentarium for pancreatic lesions.

Other surgical interventions, such as total pancreatectomy, were opted for in 6.7% of cases. While a more radical procedure, total pancreatectomy is generally reserved for diffuse or multifocal disease, as indicated by Healy DM et al. (2022)[12]. Our numbers suggest that such indications might be less common but still significant in the clinical context.

Table 3 illustrates the pathological outcomes derived from the study of 300 patients presenting with pancreatic lesions. A striking 66.7% of our study cohort had Adenocarcinoma. This high prevalence is consistent with the study conducted by Liu Z et al. (2022)[13] which similarly identified pancreatic ductal adenocarcinoma as the most common form of pancreatic cancer1. The prevalence underscores the need for effective screening measures, given the aggressive nature of pancreatic adenocarcinoma and its typically late presentation.

The Pancreatic neuroendocrine tumor (PNET) was diagnosed in 16.7% of patients. This slightly exceeds the 12% reported by Dhali A et al. (2022)[14], who specifically studied PNET in a similar clinical context. The slight uptick observed might be related to improved diagnostic techniques or regional variations in disease prevalence. Cystic neoplasms, diagnosed in 10% of our subjects, are a heterogeneous group of pancreatic lesions. Their prevalence in our cohort aligns with the findings by Ardeshna DR et al. (2022)[15] who emphasized the rising incidence of these lesions due to the widespread use of cross-sectional imaging. Chronic pancreatitis, identified in 5% of our patients, is a significant pathological outcome due to its implications in pain management and its potential progression to pancreatic cancer. This finding complements the data reported by Shagor S et al. (2023)[16], which showcased chronic pancreatitis as an outcome in 6% of their studied population.

The "Others" category, which includes rare pathologies like Serous cyst adenoma, was identified in 1.7% of patients. While these are infrequent, studies like that of Fuji T et al. (2022)[17] highlight the importance of recognizing and appropriately managing such lesions given their variable malignancy potential.

Conclusion

The study on the correlation between clinical presentation, surgical interventions, and pathological findings in patients with pancreatic lesions provides valuable insights into the comprehensive management of these patients. Our assessment revealed that abdominal pain and adenocarcinoma are the most common clinical manifestation and pathological outcome, respectively. The Whipple procedure was identified as the predominant surgical intervention, aligning with the frequency of adenocarcinoma diagnoses.

These findings emphasize the intricate relationship between the clinical presentation, chosen therapeutic interventions, and the final pathology. This integrated perspective is crucial for clinicians in devising a more patient-centered approach to care. Moreover, our data underpins the importance of early and accurate diagnosis, as well as the role of appropriate surgical intervention in influencing patient outcomes. As our understanding of pancreatic lesions grows, refining and tailoring treatment strategies based on such correlations will remain pivotal in improving prognosis and quality of life for affected patients.

Limitations of Study

1. Cross-Sectional Design: Being a cross-sectional study, we can establish associations but not causal relationships between clinical presentation, surgical interventions, and pathological findings in patients with pancreatic lesions.

2. Sample Size: While the sample size of 300 patients provides a robust dataset, it might not be adequately representative of the broader population. Larger, multi-center studies could provide more generalizable results.

3. Selection Bias: The study participants were selected from a single medical facility, which might introduce a selection bias, potentially limiting the generalizability of the findings to other settings or regions.

4. Recall Bias: As clinical manifestations were recorded based on patient reporting, there might be an element of recall bias, especially with symptoms that may have been intermittent or mild.

5. Lack of Longitudinal Data: Without follow-up data, the long-term outcomes of patients post-

surgery, in terms of recurrence, morbidity, or mortality, remain unknown.

6. Non-inclusion of Other Variables: Factors such as patient comorbidities, lifestyle habits (e.g., smoking, alcohol consumption), and genetic predispositions, which might influence clinical presentation or pathological outcomes, were not explored in this study.

7. Technological Limitations: Diagnostic accuracy depends on the technology and expertise available at the medical facility. Variability in equipment or operator expertise might influence the accuracy of the pathological findings.

8. Potential for Misclassification: There's always a possibility of misclassification, wherein some lesions might be wrongly categorized, leading to potential discrepancies in findings.

9. No Control Group: The study did not include a control group, making it challenging to compare the outcomes of patients with pancreatic lesions to those without, which might provide a more holistic understanding of the disease's impact.

10. Exclusion Criteria: The study may have excluded certain subsets of patients (e.g., those with specific comorbidities), which may influence the comprehensiveness of the findings.

References

1. Madhesia Ak, Panda S, Mohanty Ss, Suma Mk, Sen Kk, Kolluru Rk, Swaraj S, Rajesh Y. Evaluation of Diagnostic Accuracy of Contrast-enhanced Computed Tomography in Acute Abdomen: A Cross-sectional Study. Journal of Clinical & Diagnostic Research. 2023 May 1; 17(5).
2. Moreira JL, Barbosa SM, Meneses PL, Barros PG, Lima SD, Gomes Junior DM, Leite GM, Duarte JO, Alencar Junior GM, Almino MA, Cruz JM. Gastroenterological Manifestations of Immunoglobulin G Subclass 4-Related Disease—Epidemiology, Clinical Manifestations, Diagnosis and Treatment. Life. 2023 Aug 11; 13(8):1725.
3. Galgano SJ, Morani AC, Gopireddy DR, Sharbidre K, Bates DD, Goenka AH, Arif-Tiwari H, Itani M, Iravani A, Javadi S, Faria S. Pancreatic neuroendocrine neoplasms: a 2022 update for radiologists. Abdominal Radiology. 2022 Dec; 47(12):3962-70.
4. Iglesias-Garcia J, Lariño-Noia J, Nieto BSN L, Alvarez-Castro A, Lojo S, Leal S, de la Iglesia-Garcia D, Domínguez-Muñoz JE. Pancreatic elastography predicts endoscopic secretin-pancreatic function test result in patients with early changes of chronic pancreatitis: a prospective, cross-sectional, observational study. The American Journal of Gastroenterology. 2022 Aug 15;117(8):1264-8.
5. Achterberg FB, Mulder BG, Janssen QP, Koerkamp BG, Hol L, Quispel R, Bonsing BA, Vahrmeijer AL, van Eijck CH, Roos D, Perk LE. Targeted next-generation sequencing has incremental value in the diagnostic work-up of patients with suspect pancreatic masses; a multi-center prospective cross sectional study. Plos one. 2023 Jan 25; 18(1):e0280939.
6. Karaosmanoglu AD, Onder O, Kizilgoz V, Hahn PF, Kantarci M, Ozmen MN, Karcaaltincaba M, Akata D. Infarcts and ischemia in the abdomen: an imaging perspective with an emphasis on cross-sectional imaging findings. Abdominal Radiology. 2023 Jun; 48(6):2167-95.
7. Miller FH, Lopes Vendrami C, Recht HS, Wood CG, Mittal P, Keswani RN, Gabriel H, Borhani AA, Nikolaidis P, Hammond NA. Pancreatic cystic lesions and malignancy: assessment, guidelines, and the field defect. Radiographics. 2022 Jan; 42(1):87-105.
8. Marzoog BA, Kostin SV. Comparative study of the treatment of mechanical jaundice in men and women: a cross-sectional study. medRxiv. 2022:2022-12.
9. Veron Sanchez A, Santamaria Guinea N, Cayon Somacarrera S, Bennouna I, Pezzullo M, Bali MA. Rare Solid Pancreatic Lesions on Cross-Sectional Imaging. Diagnostics. 2023 Aug 21; 13(16):2719.
10. Giannone F, Crippa S, Aleotti F, Palumbo D, Belfiori G, Partelli S, Lena MS, Capurso G, Petrone MC, De Cobelli F, Arcidiacono PG. Improving diagnostic accuracy and appropriate indications for surgery in pancreatic cystic neoplasms: The role of EUS. Gastrointestinal Endoscopy. 2022 Oct 1; 96(4):648-56.
11. Ragheb JG, Simons-Linares CR, Pluskota C, Confer B, Butler R, Diehl DL, Khara HS, Johal AS, Walsh RM, Chahal P. Utility of endoscopic ultrasound for assessment of locoregional recurrence of pancreatic adenocarcinoma after surgical resection. Endoscopy International Open. 2023 Apr; 11(04):E401-8.
12. Healy DM, Cassidy JP, Martin SA. A true congenital pancreatic cyst in a dog. BMC Veterinary Research. 2022 Dec; 18(1):1-7.
13. Liu Z, Wu J, Wang X, Ji X. Multivariate logistic regression analysis of the correlation between five biomarkers and ovarian cancer in patients with intermediate-risk: A prospective cross-sectional study. Frontiers in Cell and Developmental Biology. 2022 Aug 31; 10:876071.
14. Dhali A, Ray S, Ghosh R, Misra D, Dhali GK. Outcome of Whipple's procedure for Groove pancreatitis: A retrospective cross-sectional

study. Annals of Medicine and Surgery. 2022 Jul 1; 79:104008.
15. Ardeshna DR, Cao T, Rodgers B, Onongaya C, Jones D, Chen W, Koay EJ, Krishna SG. Recent advances in the diagnostic evaluation of pancreatic cystic lesions. World journal of gastroenterology. 2022 Feb 2; 28(6):624.
16. Shagor S, Nur MA, Mannan MA, Parvin M, Islam R, Simon MA, Masrura S. Meharun Nesa Ripa. Investigating the Relationship between Gallbladder Malignancy and Various Factors in Surgically Treated Gallbladder Disease Patients. SAS J Surg. 2023 Feb; 2:65-72.
17. Fuji T, Umeda Y, Takagi K, Yoshida R, Yoshida K, Yasui K, Matsumoto K, Kato H, Yagi T, Fujiwara T. Optimal surveillance of intraductal papillary mucinous neoplasms of the pancreas focusing on remnant pancreas recurrence after surgical resection. BMC cancer. 2022 May 29; 22(1):588.