

## BÖLÜM 16

### NADİR PANKREAS TÜMÖRLERİ

Esmay YETİM<sup>1</sup>

#### GİRİŞ

Pankreas kanseri, kadın ve erkeklerde kanser ilişkili ölümlerde dünya genelinde 7. sıradadır. 45 yaşından önce nadir olup yaşla birlikte insidansı artar. İnsidansın pik yaptığı yaş erkeklerde 65-69, kadınlarda 75-79'dur (1). Vakaların büyük çoğunluğu vasküler invazyon nedeniyle cerrahiye uygun olmayıp ancak %15-20 vaka rezektabl evrede yakalanabilmektedir (2). Obezite, fiziksel inaktivite, sigara, alkol, yüksek kalori alımı, asetilsalisilik asit ve non-steroid anti-inflamatuar ilaçlar, helikobakter pylori, HBV, HCV, diabetes mellitus, insülin direnci, aile öyküsü, genetik predispozan faktörler, ABO kan grubu ve kistik fibrozis pankreas kanseri risk faktörleri olarak gösterilmiştir (3, 4). Bu kanserlerin yaklaşık %85-95'ini pankreas duktal adenokarsinomu, %1-5'ini nöroendokrin tümörler oluşturmaktadır olup geriye kalan %1-2'lik bir kısmını nadir subtipler oluşturmaktadır (3, 5). Bu bölümde pankreasın nadir primer tümörlerini oluşturan pankreatoblastom, pankreas asiner hücreli karsinom, pankreas berrak hücreli karsinom, primer pankreas lenfomaları, primer pankreatik sarkom, primer pankreatik skuamöz hücreli karsinom ve pankreasın sekonder metastatik tümörleri ile ilgili literatürdeki bulguların derlenmesi amaçlandı.

#### Pankreatoblastom

Yetişkinlerde pankreas kanserlerinin %1'den daha azı pankreatoblastomadır (6). Çocuklarda ise 1. dekatta pankreas kanserlerinin %2'sini oluşturur (7). Ortalama tanı yaşı erişkinde 41 (18-78) olup erkek/kadın oranı 1.2:1'dir (8). Etiyoloji bilinmemekte olup çoğu vaka sporadiktir (9). Yetişkinlerde ailesel adenomatöz polipozis ile birlikte tanımlanmış birkaç vaka vardır (10). En yaygın görülen semptom karın ağrısıdır (8). Karında kitle, kilo kaybı, bulantı, sarılık ve ishal ile de prezente olabilmektedir (11). Nadiren bazı hastalar üst gastrointestinal kanama ile prezente olabilir (12). Ca 19-9 ve CRH sekresyonu görülebilir (13). AFP yüksekliği yetişkinlerde sık değildir (14). AFP yüksek saptanması halinde nüks veya progres-

<sup>1</sup> Uzm. Dr., Başakşehir Çam ve Sakura Şehir Hastanesi Tıbbi Onkoloji Kliniği, esmayetim91@gmail.com

lezyon olarak tanımlanmıştır ((109, 112). Bu tipte ek olarak anjiyografik olarak hipervaskülarite gözlenmektedir (111, 114). Tanısında diğer pankreas kitlelerinde olduğu gibi EUS aracılı biyopsi uygun yöntemdir. Literatürde tanıda endoskopik retrograd kolanjiopankreatografi kullanılan vakalar da bildirilmiştir (114). Ancak mümkün ise kitlenin cerrahi çıkarılarak patolojik tanının kesinleştirilmesi gerekir (109). Labaratuvar bulgusu olarak hiperkalsemi ve çeşitli fizik anomaliler bildiren çalışmalar mevcuttur (108). Tedavisi zor olup kemoterapi ve radyoterapiye yanıtı kötüdür (110, 112). Altı hastanın dahil edildiği bir çalışmada ortalama sağ kalım 1-7 ay olarak bildirilmiştir (112).

## **KAYNAKLAR**

1. Collaborators GBDPC. The global, regional, and national burden of pancreatic cancer and its attributable risk factors in 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *The lancet Gastroenterology & hepatology*. 2019;4(12):934-47.doi.10.1016/S2468-1253(19)30347-4
2. Blackford AL, Canto MI, Klein AP, et al. Recent Trends in the Incidence and Survival of Stage 1A Pancreatic Cancer: A Surveillance, Epidemiology, and End Results Analysis. *Journal of the National Cancer Institute*. 2020;112(11):1162-9.doi.10.1093/jnci/djaa004
3. Wolfgang CL, Herman JM, Laheru DA, et al. Recent progress in pancreatic cancer. *CA: a cancer journal for clinicians*. 2013;63(5):318-48.doi.10.3322/caac.21190
4. Ilic M, Ilic I. Epidemiology of pancreatic cancer. *World journal of gastroenterology*. 2016;22(44):9694-705.doi.10.3748/wjg.v22.i44.9694
5. Fraenkel M, Kim MK, Faggiano A, et al. Epidemiology of gastroenteropancreatic neuroendocrine tumours. *Best practice & research Clinical gastroenterology*. 2012;26(6):691-703.doi.10.1016/j.bpg.2013.01.006
6. Klimstra DS, Wenig BM, Adair CE, et al. Pancreatoblastoma. A clinicopathologic study and review of the literature. *The American journal of surgical pathology*. 1995;19(12):1371-89. doi.10.1097/00000.478.199512000-00005
7. Klimstra DS. Nonductal neoplasms of the pancreas. *Modern pathology : an official journal of the United States and Canadian Academy of Pathology, Inc*. 2007;20 Suppl 1:S94-112. doi.10.1038/modpathol.3800686
8. Omiyale AO. Adult pancreatoblastoma: Current concepts in pathology. *World journal of gastroenterology*. 2021;27(26):4172-81.doi.10.3748/wjg.v27.i26.4172
9. Zhang X, Ni SJ, Wang XH, et al. Adult pancreatoblastoma: clinical features and Imaging findings. *Scientific reports*. 2020;10(1):11285.doi.10.1038/s41598.020.68083-2
10. Abraham SC, Wu TT, Klimstra DS, et al. Distinctive molecular genetic alterations in sporadic and familial adenomatous polyposis-associated pancreatoblastomas : frequent alterations in the APC/beta-catenin pathway and chromosome 11p. *The American journal of pathology*. 2001;159(5):1619-27.doi.10.1016/s0002-9440(10)63008-8
11. Berger AK, Mughal SS, Allgauer M, et al. Metastatic adult pancreatoblastoma: Multimodal treatment and molecular characterization of a very rare disease. *Pancreatology : official journal of the International Association of Pancreatology*. 2020;20(3):425-32.doi.10.1016/j.pan.2020.02.017
12. Benoist S, Penna C, Julie C, et al. Prolonged survival after resection of pancreatoblastoma and synchronous liver metastases in an adult. *Hepato-gastroenterology*. 2001;48(41):1340-2
13. Du E, Katz M, Weidner N, et al. Ampullary pancreatoblastoma in an elderly patient: a case report and review of the literature. *Archives of pathology & laboratory medicine*. 2003;127(11):1501-5.doi.10.5858/2003.127.1501-APIAEP

14. Omiyale AO. Clinicopathological review of pancreatoblastoma in adults. *Gland surgery*. 2015;4(4):322-8.doi.10.3978/j.issn.2227-684X.2015.04.05
15. Pitman MB, Faquin WC. The fine-needle aspiration biopsy cytology of pancreatoblastoma. *Diagnostic cytopathology*. 2004;31(6):402-6.doi.10.1002/dc.20128
16. Hammer ST, Owens SR. Pancreatoblastoma: a rare, adult pancreatic tumor with many faces. *Archives of pathology & laboratory medicine*. 2013;137(9):1224-6.doi.10.5858/arpa.2013-0272-CR
17. Palosaari D, Clayton F, Seaman J. Pancreatoblastoma in an adult. *Archives of pathology & laboratory medicine*. 1986;110(7):650-2
18. Salman B, Brat G, Yoon YS, et al. The diagnosis and surgical treatment of pancreatoblastoma in adults: a case series and review of the literature. *Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract*. 2013;17(12):2153-61.doi.10.1007/s11605.013.2294-2
19. Balasundaram C, Luthra M, Chavalitdhamrong D, et al. Pancreatoblastoma: a rare tumor still evolving in clinical presentation and histology. *JOP : Journal of the pancreas*. 2012;13(3):301-3
20. Zouros E, Manatakis DK, Delis SG, et al. Adult pancreatoblastoma: A case report and review of the literature. *Oncology letters*. 2015;9(5):2293-8.doi.10.3892/ol.2015.3001
21. Elghawy O, Wang JS, Whitehair RM, et al. Successful treatment of metastatic pancreatoblastoma in an adult with autologous hematopoietic cell transplant. *Pancreatology : official journal of the International Association of Pancreatology*. 2021;21(1):188-91.doi.10.1016/j.pan.2020.10.049
22. Montemarano H, Lonergan GJ, Bulas DI, et al. Pancreatoblastoma: imaging findings in 10 patients and review of the literature. *Radiology*. 2000;214(2):476-82.doi.10.1148/radiology.214.2.r00fe36476
23. Lee JY, Kim IO, Kim WS, et al. CT and US findings of pancreatoblastoma. *Journal of computer assisted tomography*. 1996;20(3):370-4.doi.10.1097/00004.728.199605000-00007
24. Riesener KP, Kasperk R, Fuzesi L, et al. Pancreatoblastoma: ultrastructural and image DNA cytometric analysis. *Digestive surgery*. 2001;18(1):78-82.doi.10.1159/000050103
25. Nagtegaal ID, Odze RD, Klimstra D, et al. The 2019 WHO classification of tumours of the digestive system. *Histopathology*. 2020;76(2):182-8.doi.10.1111/his.13975
26. Morle K. Project 2000: time to pause. *Nursing*. 1990;4(23):36-7
27. Glick RD, Pashankar FD, Pappo A, et al. Management of pancreatoblastoma in children and young adults. *Journal of pediatric hematology/oncology*. 2012;34 Suppl 2:S47-50.doi.10.1097/MPH.0b013e31824e3839
28. Al-Hader A, Al-Rohil RN, Han H, et al. Pancreatic acinar cell carcinoma: A review on molecular profiling of patient tumors. *World journal of gastroenterology*. 2017;23(45):7945-51. doi.10.3748/wjg.v23.i45.7945
29. Holen KD, Klimstra DS, Hummer A, et al. Clinical characteristics and outcomes from an institutional series of acinar cell carcinoma of the pancreas and related tumors. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2002;20(24):4673-8. doi.10.1200/JCO.2002.02.005
30. Hackeng WM, Hruban RH, Offerhaus GJ, et al. Surgical and molecular pathology of pancreatic neoplasms. *Diagnostic pathology*. 2016;11(1):47.doi.10.1186/s13000.016.0497-z
31. Toll AD, Hruban RH, Ali SZ. Acinar cell carcinoma of the pancreas: clinical and cytomorphologic characteristics. *Korean journal of pathology*. 2013;47(2):93-9.doi.10.4132/KoreanJPathol.2013.47.2.93
32. Hoorens A, Lemoine NR, McLellan E, et al. Pancreatic acinar cell carcinoma. An analysis of cell lineage markers, p53 expression, and Ki-ras mutation. *The American journal of pathology*. 1993;143(3):685-98
33. Klimstra DS, Heffess CS, Oertel JE, et al. Acinar cell carcinoma of the pancreas. A clinicopathologic study of 28 cases. *The American journal of surgical pathology*. 1992;16(9):815-37. doi.10.1097/00000.478.199209000-00001
34. Bhalla A, Saif MW. PARP-inhibitors in BRCA-associated pancreatic cancer. *JOP : Journal of the*

pancreas. 2014;15(4):340-3.doi.10.6092/1590-8577/2690

35. La Rosa S, Adsay V, Albarello L, et al. Clinicopathologic study of 62 acinar cell carcinomas of the pancreas: insights into the morphology and immunophenotype and search for prognostic markers. *The American journal of surgical pathology*. 2012;36(12):1782-95.doi.10.1097/PAS.0b013e318263209d
36. Liu W, Shia J, Gonen M, et al. DNA mismatch repair abnormalities in acinar cell carcinoma of the pancreas: frequency and clinical significance. *Pancreas*. 2014;43(8):1264-70.doi.10.1097/MPA.000.000.0000000190
37. Matos JM, Schmidt CM, Turrini O, et al. Pancreatic acinar cell carcinoma: a multi-institutional study. *Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract*. 2009;13(8):1495-502.doi.10.1007/s11605.009.0938-z
38. Matsumoto S, Sata N, Koizumi M, et al. Imaging and pathological characteristics of small acinar cell carcinomas of the pancreas: A report of 3 cases. *Pancreatolology : official journal of the International Association of Pancreatolology*. 2013;13(3):320-3.doi.10.1016/j.pan.2013.03.007
39. Bhosale P, Balachandran A, Wang H, et al. CT imaging features of acinar cell carcinoma and its hepatic metastases. *Abdominal imaging*. 2013;38(6):1383-90.doi.10.1007/s00261.012.9970-7
40. Patel DJ, Lutfi W, Sweigert P, et al. Clinically resectable acinar cell carcinoma of the pancreas: Is there a benefit to adjuvant systemic therapy? *American journal of surgery*. 2020;219(3):522-6. doi.10.1016/j.amjsurg.2019.10.013
41. Seo S, Yoo C, Kim KP, et al. Clinical outcomes of patients with resectable pancreatic acinar cell carcinoma. *Journal of digestive diseases*. 2017;18(8):480-6.doi.10.1111/1751-2980.12505
42. Xing-Mao Z, Hong-Juan Z, Qing L, et al. Pancreatic acinar cell carcinoma-case report and literature review. *BMC cancer*. 2018;18(1):1083.doi.10.1186/s12885.018.5008-z
43. La Rosa S, Franzì F, Marchet S, et al. The monoclonal anti-BCL10 antibody (clone 331.1) is a sensitive and specific marker of pancreatic acinar cell carcinoma and pancreatic metaplasia. *Virchows Archiv : an international journal of pathology*. 2009;454(2):133-42.doi.10.1007/s00428.008.0710-x
44. Takagi K, Yagi T, Tanaka T, et al. Primary pancreatic-type acinar cell carcinoma of the jejunum with tumor thrombus extending into the mesenteric venous system: a case report and literature review. *BMC surgery*. 2017;17(1):75.doi.10.1186/s12893.017.0273-3
45. de Frutos Rosa D, Espinosa Taranilla L, Gonzalez de Canales de Simon P, et al. Pancreatic pancreatitis as a presentation symptom of acinar cell carcinoma. *Revista espanola de enfermedades digestivas : organo oficial de la Sociedad Espanola de Patologia Digestiva*. 2018;110(5):329-31. doi.10.17235/reed.2018.5203/2017
46. Kim HJ, Kim YK, Jang KT, et al. Intraductal growing acinar cell carcinoma of the pancreas. *Abdominal imaging*. 2013;38(5):1115-9.doi.10.1007/s00261.013.9993-8
47. Hsu MY, Pan KT, Chu SY, et al. CT and MRI features of acinar cell carcinoma of the pancreas with pathological correlations. *Clinical radiology*. 2010;65(3):223-9.doi.10.1016/j.crad.2009.11.010
48. Kruger S, Haas M, Burger PJ, et al. Acinar cell carcinoma of the pancreas: a rare disease with different diagnostic and therapeutic implications than ductal adenocarcinoma. *Journal of cancer research and clinical oncology*. 2016;142(12):2585-91.doi.10.1007/s00432.016.2264-7
49. Qu Q, Xin Y, Xu Y, et al. Imaging and Clinicopathological Features of Acinar Cell Carcinoma. *Frontiers in oncology*. 2022;12:888679.doi.10.3389/fonc.2022.888679
50. Cingolani N, Shaco-Levy R, Farruggio A, et al. Alpha-fetoprotein production by pancreatic tumors exhibiting acinar cell differentiation: study of five cases, one arising in a mediastinal teratoma. *Human pathology*. 2000;31(8):938-44.doi.10.1053/hupa.2000.9075
51. Maragliano R, Vanoli A, Albarello L, et al. ACTH-secreting pancreatic neoplasms associated with Cushing syndrome: clinicopathologic study of 11 cases and review of the literature. *The American journal of surgical pathology*. 2015;39(3):374-82.doi.10.1097/PAS.000.000.0000000340
52. Kuerer H, Shim H, Pertsemliadis D, et al. Functioning pancreatic acinar cell carcinoma: immunohistochemical and ultrastructural analyses. *American journal of clinical oncology*. 1997;20(1):101-7.doi.10.1097/00000.421.199702000-00023

53. Yu R, Jih L, Zhai J, et al. Mixed acinar-endocrine carcinoma of the pancreas: new clinical and pathological features in a contemporary series. *Pancreas*. 2013;42(3):429-35.doi.10.1097/MPA.0b013e318264d073
54. Jornet D, Soyer P, Terris B, et al. MR imaging features of pancreatic acinar cell carcinoma. *Diagnostic and interventional imaging*. 2019;100(7-8):427-35.doi.10.1016/j.diii.2019.02.003
55. Schmidt CM, Matos JM, Bentrem DJ, et al. Acinar cell carcinoma of the pancreas in the United States: prognostic factors and comparison to ductal adenocarcinoma. *Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract*. 2008;12(12):2078-86.doi.10.1007/s11605.008.0705-6
56. Furlan D, Sahnane N, Bernasconi B, et al. APC alterations are frequently involved in the pathogenesis of acinar cell carcinoma of the pancreas, mainly through gene loss and promoter hypermethylation. *Virchows Archiv : an international journal of pathology*. 2014;464(5):553-64. doi.10.1007/s00428.014.1562-1
57. Lowery MA, Klimstra DS, Shia J, et al. Acinar cell carcinoma of the pancreas: new genetic and treatment insights into a rare malignancy. *The oncologist*. 2011;16(12):1714-20.doi.10.1634/theoncologist.2011-0231
58. Sridharan V, Mino-Kenudson M, Cleary JM, et al. Pancreatic acinar cell carcinoma: A multi-center series on clinical characteristics and treatment outcomes. *Pancreatology : official journal of the International Association of Pancreatology*. 2021.doi.10.1016/j.pan.2021.05.011
59. Seth AK, Argani P, Campbell KA, et al. Acinar cell carcinoma of the pancreas: an institutional series of resected patients and review of the current literature. *Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract*. 2008;12(6):1061-7. doi.10.1007/s11605.007.0338-1
60. Glazer ES, Neill KG, Frakes JM, et al. Systematic Review and Case Series Report of Acinar Cell Carcinoma of the Pancreas. *Cancer control : journal of the Moffitt Cancer Center*. 2016;23(4):446-54.doi.10.1177/107.327.481602300417
61. Nakamura E, Shimizu M, Itoh T, et al. Secondary tumors of the pancreas: clinicopathological study of 103 autopsy cases of Japanese patients. *Pathology international*. 2001;51(9):686-90. doi.10.1046/j.1440-1827.2001.01258.x
62. Stankard CE, Karl RC. The treatment of isolated pancreatic metastases from renal cell carcinoma: a surgical review. *The American journal of gastroenterology*. 1992;87(11):1658-60
63. Z'Graggen K, Fernandez-del Castillo C, Rattner DW, et al. Metastases to the pancreas and their surgical extirpation. *Archives of surgery*. 1998;133(4):413-7; discussion 8-9.doi.10.1001/archsurg.133.4.413
64. Rumancik WM, Megibow AJ, Bosniak MA, et al. Metastatic disease to the pancreas: evaluation by computed tomography. *Journal of computer assisted tomography*. 1984;8(5):829-34. doi.10.1097/00004.728.198410000-00003
65. Alzahrani MA, Schmulewitz N, Grewal S, et al. Metastases to the pancreas: the experience of a high volume center and a review of the literature. *Journal of surgical oncology*. 2012;105(2):156-61.doi.10.1002/jso.22009
66. Krishna SG, Bhattacharya A, Ross WA, et al. Pretest prediction and diagnosis of metastatic lesions to the pancreas by endoscopic ultrasound-guided fine needle aspiration. *Journal of gastroenterology and hepatology*. 2015;30(10):1552-60.doi.10.1111/jgh.12973
67. Boudghene FP, Deslandes PM, LeBlanche AF, et al. US and CT imaging features of intrapancreatic metastases. *Journal of computer assisted tomography*. 1994;18(6):905-10. doi.10.1097/00004.728.199411000-00010
68. Charnsangavej C, Whitley NO. Metastases to the pancreas and peripancreatic lymph nodes from carcinoma of the right side of the colon: CT findings in 12 patients. *AJR American journal of roentgenology*. 1993;160(1):49-52.doi.10.2214/ajr.160.1.8416644
69. Reddy S, Edil BH, Cameron JL, et al. Pancreatic resection of isolated metastases from non-pancreatic primary cancers. *Annals of surgical oncology*. 2008;15(11):3199-206.doi.10.1245/s10434.008.0140-7

70. Zerbi A, Ortolano E, Balzano G, et al. Pancreatic metastasis from renal cell carcinoma: which patients benefit from surgical resection? *Annals of surgical oncology*. 2008;15(4):1161-8. doi.10.1245/s10434.007.9782-0
71. Sperti C, Moletta L, Patane G. Metastatic tumors to the pancreas: The role of surgery. *World journal of gastrointestinal oncology*. 2014;6(10):381-92.doi.10.4251/wjgo.v6.i10.381
72. Maeda A, Uesaka K, Matsunaga K, et al. Metastatic tumors of the pancreas. *Pancreas*. 2008;37(2):234-6.doi.10.1097/MPA.0b013e3181679f51
73. Konstantinidis IT, Dursun A, Zheng H, et al. Metastatic tumors in the pancreas in the modern era. *Journal of the American College of Surgeons*. 2010;211(6):749-53.doi.10.1016/j.jamcoll-surg.2010.08.017
74. Abdallah MA, Bohy K, Singal A, et al. Metastatic tumors to the pancreas: Balancing clinical impression with cytology findings. *Annals of hepato-biliary-pancreatic surgery*. 2022;26(1):91-7.doi.10.14701/ahbps.21-111
75. Waters L, Si Q, Caraway N, et al. Secondary tumors of the pancreas diagnosed by endoscopic ultrasound-guided fine-needle aspiration: a 10-year experience. *Diagnostic cytopathology*. 2014;42(9):738-43.doi.10.1002/dc.23114
76. El H, II, LeBlanc JK, Sherman S, et al. Endoscopic ultrasound-guided biopsy of pancreatic metastases: a large single-center experience. *Pancreas*. 2013;42(3):524-30.doi.10.1097/MPA.0b013e31826b3acf
77. Hult M, Sandstrom H, Wittendorff HE. [Prostate cancer presenting with diffuse infiltration of metastases to the pancreas]. *Ugeskrift for laeger*. 2015;177(5):V09140491
78. Atiq M, Bhutani MS, Ross WA, et al. Role of endoscopic ultrasonography in evaluation of metastatic lesions to the pancreas: a tertiary cancer center experience. *Pancreas*. 2013;42(3):516-23.doi.10.1097/MPA.0b013e31826c276d
79. Ezzat A, Jamshed A, Khafaga Y, et al. Primary pancreatic non-Hodgkin's lymphomas. *Journal of clinical gastroenterology*. 1996;23(2):109-12.doi.10.1097/00004.836.199609000-00008
80. Baylor SM, Berg JW. Cross-classification and survival characteristics of 5,000 cases of cancer of the pancreas. *Journal of surgical oncology*. 1973;5(4):335-58.doi.10.1002/jso.293.005.0410
81. Facchinelli D, Sina S, Boninsegna E, et al. Primary pancreatic lymphoma: Clinical presentation, diagnosis, treatment, and outcome. *European journal of haematology*. 2020;105(4):468-75. doi.10.1111/ejh.13468
82. Merkle EM, Bender GN, Brambs HJ. Imaging findings in pancreatic lymphoma: differential aspects. *AJR American journal of roentgenology*. 2000;174(3):671-5.doi.10.2214/ajr.174.3.1740671
83. Saif MW. Primary pancreatic lymphomas. *JOP : Journal of the pancreas*. 2006;7(3):262-73
84. Li Z, Zhang S, Vasdani N, et al. Clues for diagnosing primary pancreatic lymphoma. Case reports in gastroenterology. 2012;6(2):438-45.doi.10.1159/000339968
85. Lin H, Li SD, Hu XG, et al. Primary pancreatic lymphoma: report of six cases. *World journal of gastroenterology*. 2006;12(31):5064-7.doi.10.3748/wjg.v12.i31.5064
86. Du X, Zhao Y, Zhang T, et al. Primary pancreatic lymphoma: a clinical quandary of diagnosis and treatment. *Pancreas*. 2011;40(1):30-6.doi.10.1097/MPA.0b013e3181e6e3e5
87. Dawson IM, Cornes JS, Morson BC. Primary malignant lymphoid tumours of the intestinal tract. Report of 37 cases with a study of factors influencing prognosis. *The British journal of surgery*. 1961;49:80-9.doi.10.1002/bjs.180.049.21319
88. Bronstein YL, Loyer EM, Kaur H, et al. Detection of small pancreatic tumors with multiphasic helical CT. *AJR American journal of roentgenology*. 2004;182(3):619-23.doi.10.2214/ajr.182.3.1820619
89. Sahani DV, Bonaffini PA, Catalano OA, et al. State-of-the-art PET/CT of the pancreas: current role and emerging indications. *Radiographics : a review publication of the Radiological Society of North America, Inc*. 2012;32(4):1133-58; discussion 58-60.doi.10.1148/rg.324115143
90. Ishigami K, Tajima T, Nishie A, et al. MRI findings of pancreatic lymphoma and autoimmune pancreatitis: a comparative study. *European journal of radiology*. 2010;74(3):e22-8.do-



- i.10.1016/j.ejrad.2009.03.022
91. Fukita Y, Asaki T, Adachi S, et al. Non-Hodgkin lymphoma mimicking pancreatic adenocarcinoma and peritoneal carcinomatosis. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2013;31(21):e373-6.doi.10.1200/JCO.2012.45.2904
  92. Eloubeidi MA, Tamhane AR, Buxbaum JL. Unusual, metastatic, or neuroendocrine tumor of the pancreas: a diagnosis with endoscopic ultrasound-guided fine-needle aspiration and immunohistochemistry. *Saudi journal of gastroenterology : official journal of the Saudi Gastroenterology Association*. 2012;18(2):99-105.doi.10.4103/1319-3767.93810
  93. Alexander RE, Nakeeb A, Sandrasegaran K, et al. Primary pancreatic follicle center-derived lymphoma masquerading as carcinoma. *Gastroenterology & hepatology*. 2011;7(12):834-8
  94. Koniaris LG, Lillemoe KD, Yeo CJ, et al. Is there a role for surgical resection in the treatment of early-stage pancreatic lymphoma? *Journal of the American College of Surgeons*. 2000;190(3):319-30.doi.10.1016/s1072-7515(99)00291-4
  95. Sallapan S, Abu Bakar NZ, Jarmin R, et al. Primary follicular lymphoma of the pancreas: A rare tumour mimicking pancreatic carcinoma. *The Malaysian journal of pathology*. 2018;40(3):359-71
  96. Boninsegna E, Zamboni GA, Facchinelli D, et al. CT imaging of primary pancreatic lymphoma: experience from three referral centres for pancreatic diseases. *Insights into imaging*. 2018;9(1):17-24.doi.10.1007/s13244.017.0585-y
  97. Ravi K, Sanchez W, Sweetser S. Primary pancreatic follicular lymphoma mimicking adenocarcinoma. *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association*. 2010;8(10):e101-2.doi.10.1016/j.cgh.2010.05.011
  98. Shirai Y, Okamoto T, Kanehira M, et al. Pancreatic Follicular Lymphoma Presenting as Acute Pancreatitis: Report of a Case. *International surgery*. 2015;100(6):1078-83.doi.10.9738/INT-SURG-D-14-00132.1
  99. Volmar KE, Roubort MJ, Jones CK, et al. Primary pancreatic lymphoma evaluated by fine-needle aspiration: findings in 14 cases. *American journal of clinical pathology*. 2004;121(6):898-903.doi.10.1309/UAD9-PYFU-A82X-9R9U
  100. Marcus R, Davies A, Ando K, et al. Obinutuzumab for the First-Line Treatment of Follicular Lymphoma. *The New England journal of medicine*. 2017;377(14):1331-44.doi.10.1056/NEJMoa1614598
  101. Kim JY, Song JS, Park H, et al. Primary mesenchymal tumors of the pancreas: single-center experience over 16 years. *Pancreas*. 2014;43(6):959-68.doi.10.1097/MPA.000.000.0000000130
  102. Group ESESNW. Soft tissue and visceral sarcomas: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Annals of oncology : official journal of the European Society for Medical Oncology*. 2014;25 Suppl 3:iii102-12.doi.10.1093/annonc/mdu254
  103. Machado MC, Fonseca GM, de Meirelles LR, et al. Primary liposarcoma of the pancreas: A review illustrated by findings from a recent case. *Pancreatology : official journal of the International Association of Pancreatology*. 2016;16(5):715-8.doi.10.1016/j.pan.2016.07.003
  104. Tannous T, Perez Rodriguez AL, Mak AW, et al. Primary Clear Cell Carcinoma of the Pancreas: A Systematic Review. *Cureus*. 2021;13(6):e15668.doi.10.7759/cureus.15668
  105. Sasaki A, Ishio T, Bandoh T, et al. Clear cell carcinoma of the pancreas: an adenocarcinoma with unusual phenotype of duct cell origin. *Journal of hepato-biliary-pancreatic surgery*. 2004;11(2):140-4.doi.10.1007/s00534.003.0843-x
  106. Brown HA, Dotto J, Robert M, et al. Squamous cell carcinoma of the pancreas. *Journal of clinical gastroenterology*. 2005;39(10):915-9.doi.10.1097/01.mcg.000.018.0636.74387.e6
  107. Thomas D, Shah N, Shaaban H, et al. An interesting clinical entity of squamous cell cancer of the pancreas with liver and bone metastases: a case report and review of the literature. *Journal of gastrointestinal cancer*. 2014;45 Suppl 1:88-90.doi.10.1007/s12029.013.9560-0
  108. Brayko CM, Doll DC. Squamous cell carcinoma of the pancreas associated with hypercalcemia. *Gastroenterology*. 1982;83(6):1297-9
  109. Lai LH, Romagnuolo J, Adams D, et al. Primary squamous cell carcinoma of pancreas diag-

- nosed by EUS-FNA: a case report. *World journal of gastroenterology*. 2009;15(34):4343-5. doi.10.3748/wjg.15.4343
110. Sears HF, Kim Y, Strawitz J. Squamous cell carcinoma of the pancreas. *Journal of surgical oncology*. 1980;14(3):261-5. doi.10.1002/jso.293.014.0312
111. Sprayregen S, Schoenbaum SW, Messinger NH. Angiographic features of squamous cell carcinoma of the pancreas. *Journal of the Canadian Association of Radiologists*. 1975;26(2):122-4
112. Itani KM, Karni A, Green L. Squamous cell carcinoma of the pancreas. *Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract*. 1999;3(5):512-5. doi.10.1016/s1091-255x(99)80105-x
113. Bralet MP, Terris B, Bregeaud L, et al. Squamous cell carcinoma and lipomatous pseudohypertrophy of the pancreas. *Virchows Archiv : an international journal of pathology*. 1999;434(6):569-72. doi.10.1007/s004.280.050385
114. Koduri VG, Ravi TJ. Squamous-cell carcinoma of the pancreas: report of a case and review of ERCP findings. *Endoscopy*. 1994;26(3):333-4. doi.10.1055/s-2007.100.8985