CASE REPORT
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Musinous cystic neoplasia mimicking hydatid cyst in the liver: Two rare cases

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ABSTRACT

Mucinous cystic neoplasm of the liver (MCN-L) is a rare tumor which accounts for less than 5% of all liver cysts. Although they are considered to be "benign cysts" radiologically and clinically because of their slow growth, they are considered as premalignant. We present two radiologically misdiagnosed cases that operated in a short time range, in order to increase awareness for these rare tumors. A 47-year-old female patient who had no active complaints 58 x 40 mm cystic lesion was detected in the liver, which was diagnosed hydatid cyst radiologically. The pathological examination showed multiloculated cysts which was covered by low-grade mucinous epithelium and ovarian-type stroma on the cyst wall. A 50-year-old female patient presented with abdominal distention. The radiographical screening revealed a 204 x 140 mm cystic lesion that completely fills left lobe of liver which interpreted in favor of hydatid cyst. Histopathologically, the inner surface of the cyst was covered with low grade mucinous epithelium. Ovarian-type stroma was detectable only by immunohistochemistry due to significant bleeding and edema on the wall. The diagnosis of both of our cases was low grade MCN-L. Since cysts were not intact at the time of gross examination, we could not make any comment about surgical margins or total excision. MCN-L is a tumor that creates difficulty in presurgical differential diagnosis because of its rarity and lack of specific radiologic features. Although the prognosis is excellent as a result of total excision in the benign group, relapses have also been reported.

Keywords: Liver, musinous cystic neoplasia, hydatid cyst

INTRODUCTION

MCN-L, formerly known as hepatobiliary cystadenoma/cystadenocarcinoma, is a very rare tumor and clinically important. MCN-L is also interesting regarding its ovarian-type stroma and unknown pathogenesis. It constitutes less than 5% of all liver cysts. These tumors may considered to be completely harmless cysts, due to their good long-term clinical behavior, or they may cause diagnostic difficulties, because they might appear suspicious radiologically (1). While 90% of noninvasive forms are seen in women, invasive ones are equally distributed between both sexes. The mean age at diagnosis is 45 in noninvasive tumors, but they are typically seen a decade later in patients with invasive disease. Most tumors originate from the intrahepatic biliary system and typically grow slowly (2). It has been reported in the literature that cysts can reach 1.2 cm to 40 cm in size (3).

The most important cause of diagnostic and surgical errors is thought to be low awareness due to rarity of these tumors (4). We aimed to raise awareness to these rare but prognostically important tumors by presenting two cases of MCN-L, which had the same incorrect radiological pre-diagnosis before surgery, with their clinical, radiological and pathological features, and also with review of the literature and current developments.

CASE REPORT

Case 1

A 47-year-old female patient was diagnosed with thyroid papillary carcinoma six months ago, and during the follow up examinations, liver and spleen mass was detected. On ultrasonography, cystic, lobulated mass lesion was observed in the third segment of the liver. The lesion was 58 x 40 mm in size and contained smaller multiple cysts in the lumen which appear to be daughter vesicles. The findings were interpreted as consistent with hydatid cyst radiologically. The patient was sched-

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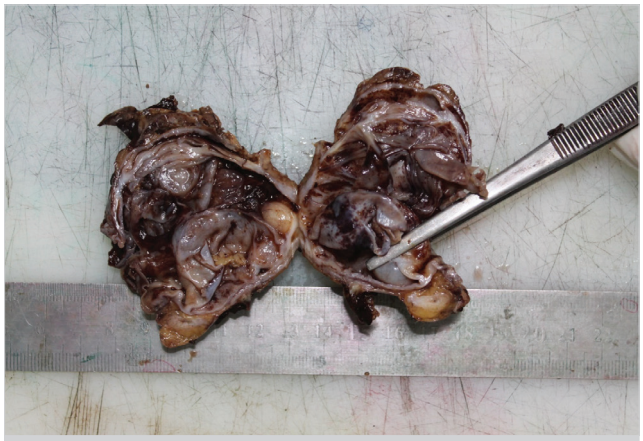

Figure 1. Cystic and multiloculated appearance, case 1, macroscopic feature.

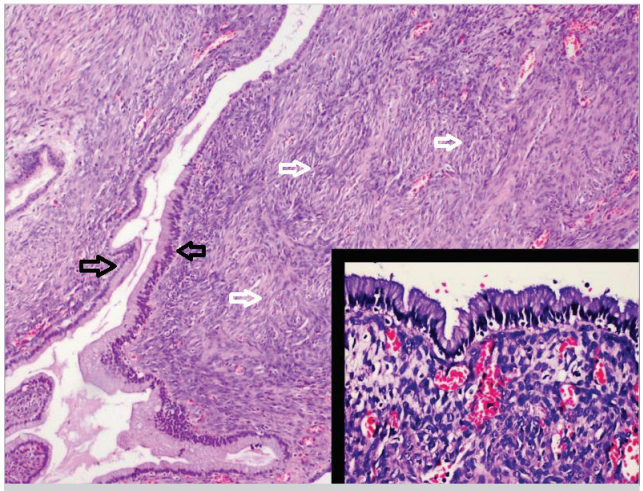

Figure 2. Low grade mucinous epithelium in inner surface of cyst (black arrows), prominent ovarian-type stroma in cyst wall (white arrows), case 1, H&E.

uled to undergo splenectomy because of the solid mass in the spleen. During that operation, the lesion in the liver was also excised in the same session. The specimen was disrupted, 6.9 x 6 x 3 cm in size and was of gray-purple color in most areas. It contained normal liver tissue measuring 3 x 2 x 0.8 cm. The rest of it was of cystic nature, appearing multiloculated with septations (Figure 1). Histopathological examination showed that the inner surface of multiloculated cyst was covered with low grade mucinous epithelium. A prominent ovarian-type stroma was noted in the cyst wall (Figure 2). Immunohistochemistry panel showed cytokeratin 19, MUC 1, MUC 5AC and MUC 6 expression in epithelial cells lining the cyst wall (Figure 3). Ovarian-type stroma was revealed by Estrogen receptor immunohistochemistry. Surgical margins could not be interpreted due to the disruption of tumor integrity. In addition, the pathological evaluation of the patient's spleen mass was diagnosed as diffuse large B cell lymphoma.

Case 2

A 50-year-old female patient whom was admitted to hospital with abdominal distention complaint was found to have a liver mass. Computed tomography revealed a nodular lesion, which involved the entire left lobe of the liver, starting from segment 4A. The lesion was 204 x 140 mm in size, and of purely cystic density with a contrast-free septa. This lesion was reported radiologically in favor of the hydatid cyst. (Figure 4). With the preliminary diagnosis of hydatid cyst, surgical excision of the cystic lesion from the liver was performed. The specimen was disrupted, irregularly shaped and 20 x 12 x 7 cm in size. It appeared hemorrhagic and the thickest area of the cyst wall was 0.6 cm. On histopathological sections of the specimens, the lesion was multiloculated and the cyst epithelium was not observed in most areas depending on the pressure of the cyst content or due to the intervention during the surgical procedure. The internal surface of the cyst was covered with low-grade mucinous

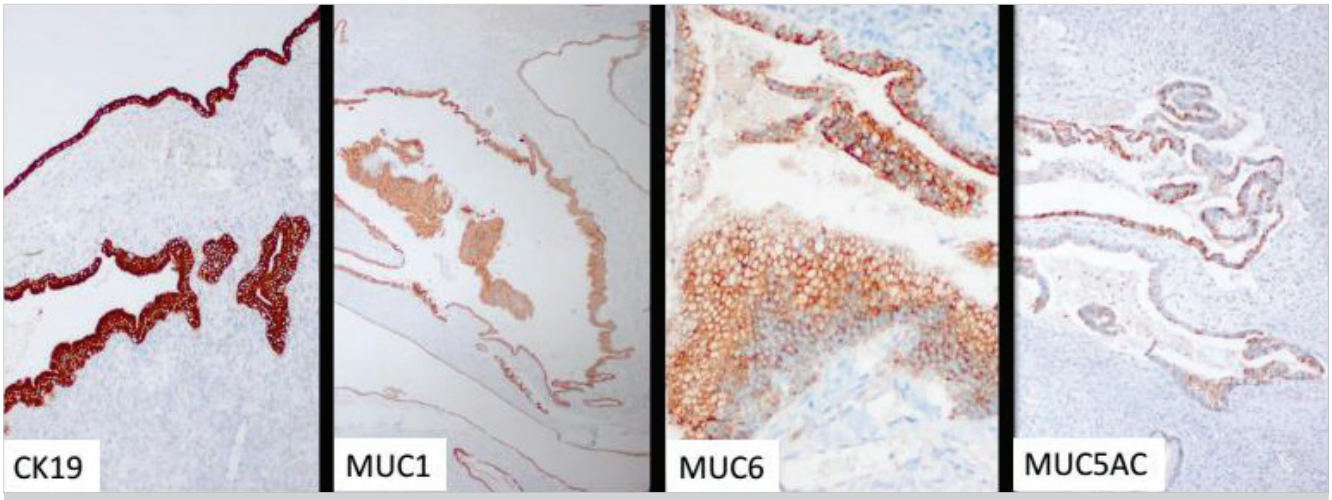

Figure 3. Cytokeratin 19, MUC 1, MUC 5AC and MUC 6 expression in epithelial cells lining the cyst, case 1.

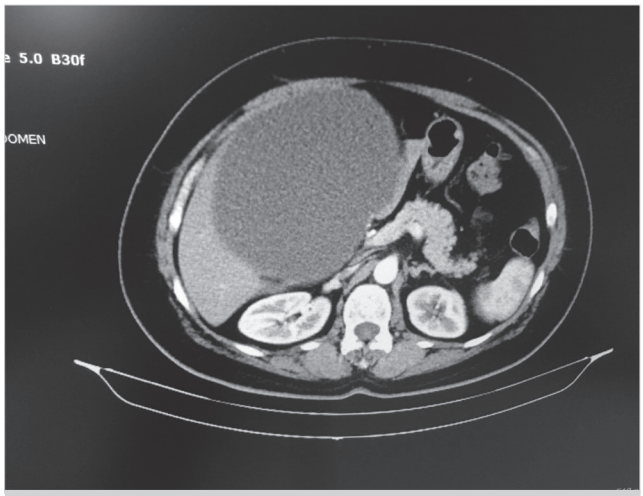

Figure 4. A nodular lesion, 204x140 mm in size, purely cystic density with a contrast-free septa and completely filled the left lobe starting from segment 4A, Computed tomography.

epithelium in the evaluable areas. The ovarian stroma could not be clearly observed though, due to the presence of significant hemorrhage and edema of the stroma. Immunohistochemically, cytokeratin 7, cytokeratin 19, CDX2 and MUC 1 expression was observed in cyst epithelial cells. Ovarian-type stroma was revealed by Progesterone receptor immunohistochemistry. Surgical margins could not be interpreted due to the disruption of tumor integrity.

DISCUSSION

In the 2000 World Health Organization (WHO) classification of digestive system tumors, liver cystic tumors with mucinous epithelium or less frequently serous epithelium were identified as hepatobiliary cystadenoma/cystadenocarcinoma. Stroma was not considered as a diagnostic feature in these tumors. Since the WHO 2010 classification, there are categories of low-intermediate-high grade and invasive carcinoma-related MCN-L. The requirement of ovarian-type stroma is emphasized in WHO 2010 classification. In cases which ovarian-type stroma could not be demonstrated, these tumors should be diagnosed as intraductal papillary neoplasia with marked cystic changes (1). Studies have shown that hepatobiliary cystadenomas without ovarian stroma have significantly poor prognosis which led up to changes in classification (5).

In the majority of MCN-L, neoplastic epithelium has a cubic or columnar appearance similar to bile duct epithelium and mucin secretion is not significant (6). For example, in a series consisting of 20 cases with MCN-L, intestinal differentiation including goblet cells in the epithelium was seen only in two cases (7). Gastric, intestinal and squamous differentiation might also be observed in the epithelium (1). However, the degree of mucinous differentiation has been shown to be parallel with the incidence of K-RAS mutation and invasive carcinoma (6).

High-grade intraepithelial neoplasia is characterized by glandular crowding, marked nuclear pleomorphism and increased mitotic activity. Papillary projections or stromal crypt-like invaginations indicate structural deterioration in this entity. Invasion is the hallmark of malignancy and should be reported as 'MCN associated with invasive carcinoma' (1). Invasion in MCN-L has been reported in very variable rates (2- 15.4%) (6,8). Although it is quite rare, sarcomatous transformation can also be seen in MCN of liver and pancreas (5,9). Our cases which we examined carefully with multiple samples and serial sections in order to exclude invasion were reported as low grade MCN-L, because of absence of nuclear pleomorphism and low mitotic activity, in single-layer mucinous epithelium that covers the inner surface of the cysts.

Histopathological differential diagnosis includes serous cystadenoma, endometriosis, intraductal papillary neoplasia along with other simple and parasitic cysts. The presence of estrogen and progesterone expression in epithelial cells in addition to stroma and CD10 immunoreactivity in stroma are helpful parameters in differential diagnosis for endometriosis (10). The fact that intraductal papillary neoplasia and serous cystadenoma do not contain ovarian-type stroma is important in the differential diagnosis (11). In our cases, we excluded endometriosis since the cysts were covered with mucinous epithelium. The presence of ovarian-type stroma demonstrated by immunohistochemistry allowed us to exclude intraductal papillary neoplasia. However, the presence of multiloculated septation in both lesions caused presurgical radiological evaluation to be in favor of hydatid cyst.

In studies of small case series, MUC1, MUC2, MUC5A and MUC6 immunohistochemical stains usually have been reported to be positive for MCN-L's with high-grade dysplasia / carcinoma in situ (11,12). Although both of our cases were positive with MUC1 and one with MUC5A and MUC6, high grade dysplasia area was not observed in our multiple samples. MUC immunohistochemical staining may also be positive in intraductal papillary neoplasia, so it is not useful in differential diagnosis. Larger case series are necessary to clarify the prognostic significance of MUC staining pattern.

Liver function tests are usually normal in the absence of biliary compression. Serum CA 19-9 levels may be elevated, but CEA and AFP levels are usually within normal limits, so they are not helpful in differential diagnosis. Although liver function tests were normal in our cases, no data were obtained regarding serum CA19-9, CEA and AFP levels.

The primary treatment is radical excision in MCN-L. Recurrence rate is high after partial excision (80%); even after total excision, in 10-20% of cases recurrence has been reported. (13). Prognosis varies depending on the presence of invasion. The prognosis of benign tumors is excellent when it's totally excised with 90% overall survival rate at 18-year follow-up (14). Invasive MCN-L has a significantly better prognosis than conventional intrahepatic

cholangiocarcinoma. 5-year survival rate was reported to be 65-70% in invasive carcinoma related MCN-L, 40% in hepatocellular carcinoma, and 22% in cholangiocarcinoma (14,15).

In conclusion, as these rare tumors have unknown etiopathogenesis, non-specific clinical presentations, wide-variety of radiological differential diagnosis, high recurrence rate and premalignant nature, it is of critical importance to give a precise pathological diagnosis for accurate treatment and follow-up. There are still controversial aspects regarding this entity, even though new diagnostic criteria have been introduced by WHO in the final classification. Increased radiological and clinical awareness of these tumors will increase the correct diagnosis rates.

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REFERENCES

1. *Tsui WMS, Adsay NV, Crawford JM, Hruban R, Kloppel G, Wee A. Mucinous cystic neoplasms of the liver. In: Bosman FT, Carneiro F, Hruban RH, Theise ND (eds). WHO Classification of Tumours of the Digestive System. 4th ed. Lyon: International Agency for Research on Cancer 2010. pp. 236-38*
2. *Wang C, Miao R, Liu H, Du X, Liu L, Lu X, et al. Intrahepatic biliary cystadenoma and cystadenocarcinoma: an experience of 30 cases. Dig Liver Dis 2012; 44: 426-31. https://doi.org/10.1016/j.dld.2011.11.007*
3. *Simo KA, Mckillop IH, Ahrens WA, Martinie JB, Ianniti DA, Sindram D. Invasive biliary mucinous cystic neoplasm: a review. HPB 2012; 14(11): 725-40. https://doi.org/10.1111/j.1477-2574.2012.00532.x*
4. *Mezale D, Strumfa I, Vanags A, Bahs G, Strumfs B, Silovs A, et al. Mucinous cystic neoplasms of the liver and extrahepatic biliary tract. 2018. http://dx.doi.org/10.5772/intechopen.77118. https://doi.org/10.5772/intechopen.77118*
5. *Manouras A, Markogiannakis H, Lagoudianakis E, Katergiannakis V. Biliary cystadenoma with mesenchymal stroma: report of a case and review of the literature. World J Gastroenterol 2006; 12(37): 6062-9. https://doi.org/10.3748/wjg.v12.i37.6062*
6. *Shibata H, Ohike N, Norose T, Isobe T, Suzuki R, Imai H, et al. Mucinous cystic neoplasms lined by abundant mucinous epithelium frequently involve KRAS mutations and malignant progression. Anticancer Research 2017; 37(12): 7063-8. https://doi.org/10.21873/anticanres.12178*
7. *Albores Saavedra J, Cordova Ramon JC, Chable Montero F, Dorantes Heredia R, Henson DE. Cystadenomas of the liver and extrahepatic bile ducts: morphologic and immunohistochemical characterization of the biliary and intestinal variants. Ann Diag Pathol 2015; 19(3): 124-9. https://doi.org/10.1016/j.anndiagpath.2015.03.001*
8. *Zen Y, Jang KT, Ahn S, Kim DH, Choi DW, Choi SH, et al. Intraductal papillary neoplasms and mucinous cystic neoplasms of the hepatobiliary system: demographic differences between Asian and Western populations, and comparison with pancreatic counterparts. Histopathology 2014; 65(2): 164-73. https://doi.org/10.1111/his.12378*
9. *Wayne M, Gur D, Ascunce G, Abodessa B, Ghali V. Pancreatic mucinous cystic neoplasm with sarcomatous stroma metastasizing to liver: a case report and review of literature. World J Surg Oncol 2013; 11: 100. https://doi.org/10.1186/1477-7819-11-100*
10. *Hsu M, Terris B, Wu TT, Zen Y, Eng HL, Huang WT, et al. Endometrial cysts within the liver: a rare entity and its differential diagnosis with mucinous cystic neoplasms of the liver. Human Pathol 2014; 45(4): 761-7. https://doi.org/10.1016/j.humpath.2013.11.005*
11. *Zen Y, Pedica F, Patcha VR, Capelli P, Zamboni G, Casaril A, et al. Mucinous cystic neoplasms of the liver: a clinicopathological study and comparison with intraductal papillary neoplasms of the bile duct. Modern Pathology 2011; 24: 1079-89. https://doi.org/10.1038/modpathol.2011.71*
12. *Lin F, Chen ZE, Wang HL. Utility of immunohistochemistry in the pancreatobiliary tract. Arch Pathol Lab Med 2015; 139(1): 24-38. https://doi.org/10.5858/arpa.2014-0072-RA*
13. *Thomas KT, Welch D, Trueblood A, Sulur P, Wise P, Gorden DL, et al. Effective teratment of biliary cystadenoma. Ann Surg 2005; 241: 769-73. https://doi.org/10.1097/01.sla.0000161982.57360.1b*
14. *Soares KC, Arnaoutakis DJ, Kamel I, Anders R, Adams RB, Bauer TW, et al. Cystic neoplasms of the liver: Biliary cystadenoma and cystadenocarcinoma. J Am Col Surg 2014; 218(1): 119-28. https://doi.org/10.1016/j.jamcollsurg.2013.08.014*
15. *Lee CW, Tsai HI, Lin YS, Wu TH, Yu MC, Chen MF. Intrahepatic biliary mucinous cystic neoplasms: clinicoradiological characteristics and surgical results. BMC Gastroenterol 2015; 15: 67. https://doi.org/10.1186/s12876-015-0293-3*

OLGU SUNUMU-ÖZET
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Karaciğerde hidatik kisti taklit eden müsinöz kistik neoplazi: İki nadir olgu

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ÖZET

Karaciğerin müsinöz kistik neoplazisi (KMKN) bütün karaciğer kistlerinin %5'inden azını oluşturan nadir bir tümördür. Yavaş büyümeleri nedeniyle radyolojik ve klinik olarak benin kist lehine değerlendirilse de aslında premalin lezyonlardır. Biz bu nadir tümörlere olan farkındalığı arttırmak amacıyla, radyolojik olarak yanlış tanı ile opere olmuş iki olgu sunduk. Aktif şikayeti olmayan 47 yaşında kadın hastanın karaciğerinde radyolojik olarak hidatik kist düşünülen 58 x 40 mm boyutunda kistik lezyon saptandı. Patolojik incelemede multiloküle kistin duvarında düşük dereceli müsinöz epitel altında ovaryan tip stroma izlendi. Abdominal distansiyon şikayeti bulunan 50 yaşında kadın hastada yapılan radyolojik görüntülemede hidatik kist lehine değerlendirilen karaciğerin sol lobunu dolduran 204 x 140 mm boyutunda kistik lezyon saptandı. Histopatolojik olarak kist iç yüzeyi düşük dereceli müsinöz epitelle döşeli olup kist duvarındaki yaygın ödem ve kanama nedeniyle ovaryan tip stroma ancak immünhistokimya ile gösterilebildi. Her iki olgunun da tanısı düşük dereceli KMKN idi. Makroskopik inceleme sırasında kist duvarı intakt olmadığı için, total eksizyon ya da cerrahi sınırlar hakkında yorum yapılamadı. KMKN nadir görülmesi ve spesifik radyolojik özelliklerinin olmaması nedeniyle cerrahi öncesi ayırıcı tanıda zorluk yaratan tümörlerdir. Benin olanlarda total eksizyon sonrası prognoz mükemmel olması ile birlikte nüksler de bildirilmiştir.

Anahtar Kelimeler: Karaciğer, müsinöz kistik neoplazi, hidatik kist

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