Coexistence of primary malignancies from liver and ovarian: A rare case report

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Case Report

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Abstract

A 54-year-old female presented to the outpatient with a chief complaint of abdominal distention. Abdominal contrast-enhanced CT scan demonstrated mucinous ovarian cancer (MOC) complicating liver metastases. However, the tumor was diagnosed with primary intrahepatic cholangiocarcinoma (PICC)on contrast-enhanced ultrasound (CEUS) and PET-CT. And the two ovarian masses were tended to be mucinous ovarian cystadenomas, while borderline and malignant mucinous tumors could not be excluded completely. Biopsies of the liver was performed due to the patient request. The liver mass was primary intrahepatic cholangiocarcinoma. Her lesions in liver and ovary were resected. The masses of ovarian were mucinous ovarian cystadenoma by intraoperative frozen section analysis. Unfortunately, however, postoperative pathological examinations and immunohistochemistry (IHC) diagnosed as ovarian mucinous cystadenoma malignant change. This was an unusual and rare case of the coexistence of multiple tumors in liver and ovary. The rare pluralism diseases should be noted, when facing complex patients who just a single condition cannot fully reflect clinical findings.

Case Report

A 54-year-old female presented to the outpatient with a chief complaint of abdominal distention. The physical examination: A palpable hard mass approximately 8 cm*7 cm in size located in the lower abdomen was found, with poor activity, free of tenderness and unclear boundaries without other remarkable abnormal. B-scan ultrasonography indicated huge cystic pelvic masses. (Fig. 1.a) Enhanced abdominal computed tomography (CT) suggested that tendency for pelvic lesions were primary mucinous ovarian cancer (PMOC) and the left hepatic mass was metastases from ovarian. (Fig. 1.e-j) However, the contrast-enhanced ultrasound (CEUS) showed an isoechoic mass inclining to primary intrahepatic cholangiocarcinoma (PICC). (Fig. 1.b-d) Meanwhile, positron emission tomography-computed tomography (PET-CT) imaging also identified the hepatic mass, which was radiographically suggestive of a PICC with abnormal increases in glucose metabolism. (Fig. 2.a-b) The two solid-cystic masses in the pelvic cavity tended to be were tended to be mucinous ovarian cystadenomas, while borderline and malignant mucinous tumors could not be excluded completely due to increases in glucose metabolism in a partial of solid component. (Fig. 2.c-h) Related tumor markers: CA199, CA125 and CEA were respectively 8630.47 U/ml, 255.88 U/ml and 6.46 ng/ml. Following discussion, she was diagnosed with PMOC and ICC simultaneously and surgery should be operated. But the patient required biopsies of the liver because she wanted to define the nature of the hepatic lesion. Regrettably, the liver biopsy result was PICC. (Fig. 3.a) She accepted the left hepatic external lobe resection, bilateral salpingo-oophorectomy and lesions resection on rectal surface. Some grayish yellow and stiffer tissue were found on the surface of rectal and pelvic peritoneum and intraoperative frozen section was reported as metastatic adenocarcinoma from PICC. The intraoperative pathological result from the two masses of pelvic cavity was benign entities, mucinous ovarian cystadenoma. (Fig. 3.b-c) Unfortunately, in the postoperative pathology reports, the left and right ovary masses were diagnosed with ovarian mucinous

cystadenoma malignant change, PMOC. (Fig. 3.d) In addition, a confusing problem, according to IHC results, (Table.1) the metastases in rectal and pelvic peritoneum were biased from PMOC.

Discussion

PICC represents a relative uncommon form of primary liver cancer accounting for about 7% of hepatic malignancy[1]. Due to the absence of specific diagnostic features and diversity of clinical manifestations, and the poor sensitivity and specificity with CA199 and CEA (assist in the diagnosis of PICC frequently), PICC diagnosis may mostly rely on imaging examination, such as contrast-enhanced CT. The CT images in PICC may be largely non-specific. There were some possible CT findings. (1) bile duct dilatation is a significant sign due to bile duct destruction of tumors or the highly infiltrative growth of tumors along the bile duct wall; (2) the local depressed tumor area was also a performance in Soyer, et al[2]. (3) small, numerous, irregular-shaped and high-density focal calcifications within the tumors; (4) delayed enhancement and patchy no enhancement areas with contrast-enhanced CT manifestations. However, PICC could be neglected by someone, especially young physicians, because of its lower incidence and atypically images. At the same time, the risk of misdiagnosis tended to increase if the patient was suffering multiple tumors. The accuracy for PICC with contrast-enhanced CT was approximately 67.5%, while the contrast-enhanced ultrasound (CEUS) was up to 80%, so CEUS might be used as a characterization tool for PICC[3]. In our case, typical heterogeneous patchy enhancement images were presented during delayed phase, (Fig. 2.e-g) and PICC needed to be considered. PICC was not indicated. Conversely, they described it as a metastatic from ovary and we postulated that the huge cystic pelvic masses were a confounding main factor. As a result, to provide a more accurate diagnosis, combination contrast-enhanced CT and CEUS can be incorporated into routine clinical practice with liver masses diagnosis. If they have conflicting results, PET-CT or biopsies of the liver will be requested. PET-CT can realize whether metastases have already been taken place all over the body.

The primary mucinous ovarian cancer (PMOC) is a rare cancer and its diagnosis is also difficult. Though the incidence of mucinous ovarian cancer is approximately 10% of all epithelial ovarian cancer, approximately 80% mucinous tumors are actually a metastatic mucinous cancer (MMC)[4, 5]. The most frequent primary site is the gastrointestinal and preoperative gastrointestinal endoscopy is necessary[4, 6]. On the one hand, imaging can help to discriminate between benign and malignant pelvic tumors to some extent. Transvaginal ultrasonography is the imaging modality of choice for diagnosing pelvic mass[7]. But the US examination may be inadequate to diagnose the giant masses. Magnetic resonance imaging (MRI), as a non-invasive medical imaging to visualize detailed internal structures, is able to characterize different components, such as mucin[8, 9]. CT imaging, without the primary choice imaging exam, mainly used to evaluate tumor burden and exclude metastases from a primary appendix tumor[7]. The giant PMOC may undergo malignant change which benign or malignant nature was hardly distinguished on CT or MRI. PET/CT functional imaging can demonstrate the most active part of tumor metabolism where the mass tends to be malignant change. It is helpful intraoperative biopsy samples selection and abnormal high uptake regions should be main elected to frozen section diagnosis. The intraoperative exploration must be careful and thorough, especially some minimal lesions without

detection in PET-CT like her metastases on the surface of rectal and pelvic peritoneum. Strangely, the metastases were biased from PMOC based on IHC results, which was inconsistent with the rapid intraoperative pathological diagnosis. On the other hand, primary mucinous cystadenoma is one source of PMOC. They, benign cystadenomas, borderline tumors and invasive mucinous carcinomas, can coexist in close proximity. The development of PMOC was considered as a continuous pathological change, from benign to borderline and then to malignant change[8, 10]. Obviously, this might reduce the reliability of frozen section diagnosis with evaluating only a limited number of slices and missing a significant portion of malignant tissues. Moreover, CA125/CEA > 25 or positive CK7 combining with negative CK20 can aid in the diagnosis of PMOC. So, the patient suffered rare PMOC.

Finally, according to our textbooks, as making just a disease interpret all of abnormal symptoms, signs and ancillary tests as possible is recommended in clinical practice. However, we could generate a wrong view all abnormalities must be interpreted by a disease in each patient. We will also force us to do, through these manifestations may be from numerous diseases apparently. Adverse consequences due to misdiagnosis will arise. Therefore, the monism model may apply to most cases, while the pluralism model cannot be abandoned when some findings and results are difficult to interpret. In our case, there were lesions both ovary and left hepatic external lobe and our initial diagnosis was PMOC with liver metastasis but some doubts remained about liver mass nature. To rule out it, the patient was given CEUS and PET-CT. Sure enough, some opposing views emerged, metastasis or PICC and PMOC or benign cystadenoma? When masses were present in multiple body parts, our diagnosis may be misguided by presentations of tumors at other sites using large range of examinations, like CT and MRI. Small-range examination types such as the CEUS focus just on local lesions without other tumors interference. So, some rare and complex masses should combine multiple methods to more accurate inferences, even the histopathological investigations.

Conclusion

The present study is the first to report a patient of three-tumor coexistence with ovarian mucinous cystadenoma, PMOC and PICC. The multiply tumors' diagnosis is a complex process. Various of examinations should be required for this condition. Intraoperative biopsy samples selection should base on the combination of radiographic appearance before surgery, dissecting tissues with high malignant risk. When we tried to interpret abnormal findings in patients with a disease, the rare cases suffering multi-tumor diseases simultaneously could not be missed. The pluralism tumors require clinical concern, which should require different types of auxiliary examinations.

Abbreviations

IHC
immunohistochemistry
AFP
alpha-fetoprotein

CEA
carcinoembryonic antigen
CA125
cancer antigen 125
CA199
cancer antigen 199
CA724
cancer antigen 724
β-HCG
β-human chorionic gonadotropin
SCCA
squamous cell carcinoma antigen
CK7
cytokeratin 7
CK20
cytokeratin 20
CDX2
caudal type homeobox transcription factor 2
CD10
cluster of differentiation 10
ER
estrogen receptor
PR
progesterone receptor
PAX8
paired box gene 8
SATB2
sequence-binding protein 2
GPC-3
glypican-3
CK-19
cytokeratin 19
CD34
cluster of differentiation 34
WT1
Wilms tumor 1
P16
multiple tumor suppressor 1
MUC5A
mucin 5AC

MUC6
mucin 6.

Declarations

ETHICS STATEMENT

Written informed consent was obtained from the participant for release of this case report and any potentially identifiable clinical information.

AUTHOR CONTRIBUTIONS

ST, JC and JF were involved in the drafting and editing of the manuscript. YP, GZ and XL: data collection. BL and XY was involved in the identification, selection, and management of patient cases and reviewed and edited the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of Interest:

The authors declare that there is no conflict of interest in this research.

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Tables

Table 1. IHC analysis results of tumor tissues.

Marker	ICC	metastases	PMOC
AFP	N	-	N
CK7	+	+	+
CK20	+	-	-
Villin	+	-	N
CEA	+	+	+
CDX2	+	-	-
CD10	-	-	N
P53	(+, 20%)	(+,10%)	-
Ki-67	(+, 10%)	(+,50%)	(+,10%)
ER	-	N	-
PR	-	N	-
PAX8	-	N	N
SATB2	-	N	Weakly +
HepPar1	N	-	N
GPC-3	N	-	N
CK-19	N	+	+
CD34	N	-	N
WT1	N	-	N
CA125	N	+	+
P16	N	N	-
MUC5AC	N	N	+
MUC6	N	N	-

(+, positive; -, negative; N, not done)

Figures

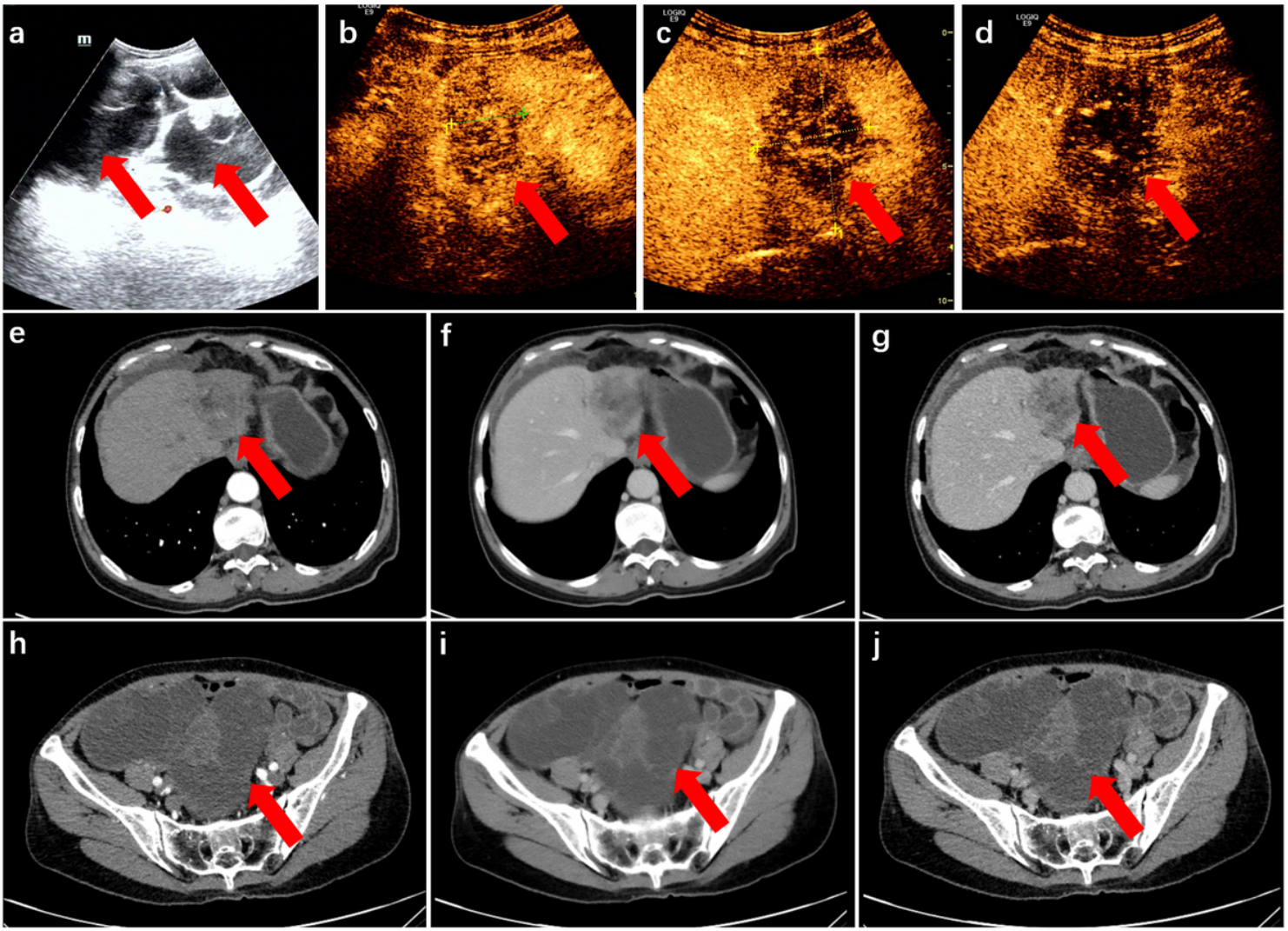

Figure 1

a: B-scan ultrasonography indicated huge cystic pelvic masses. b-d: The contrast-enhanced ultrasound of liver (arterial phase, portal venous phase, delayed phase). e-g: Enhanced upper abdominal computed tomography (CT). h-j: Enhanced cystic pelvic computed tomography (CT).

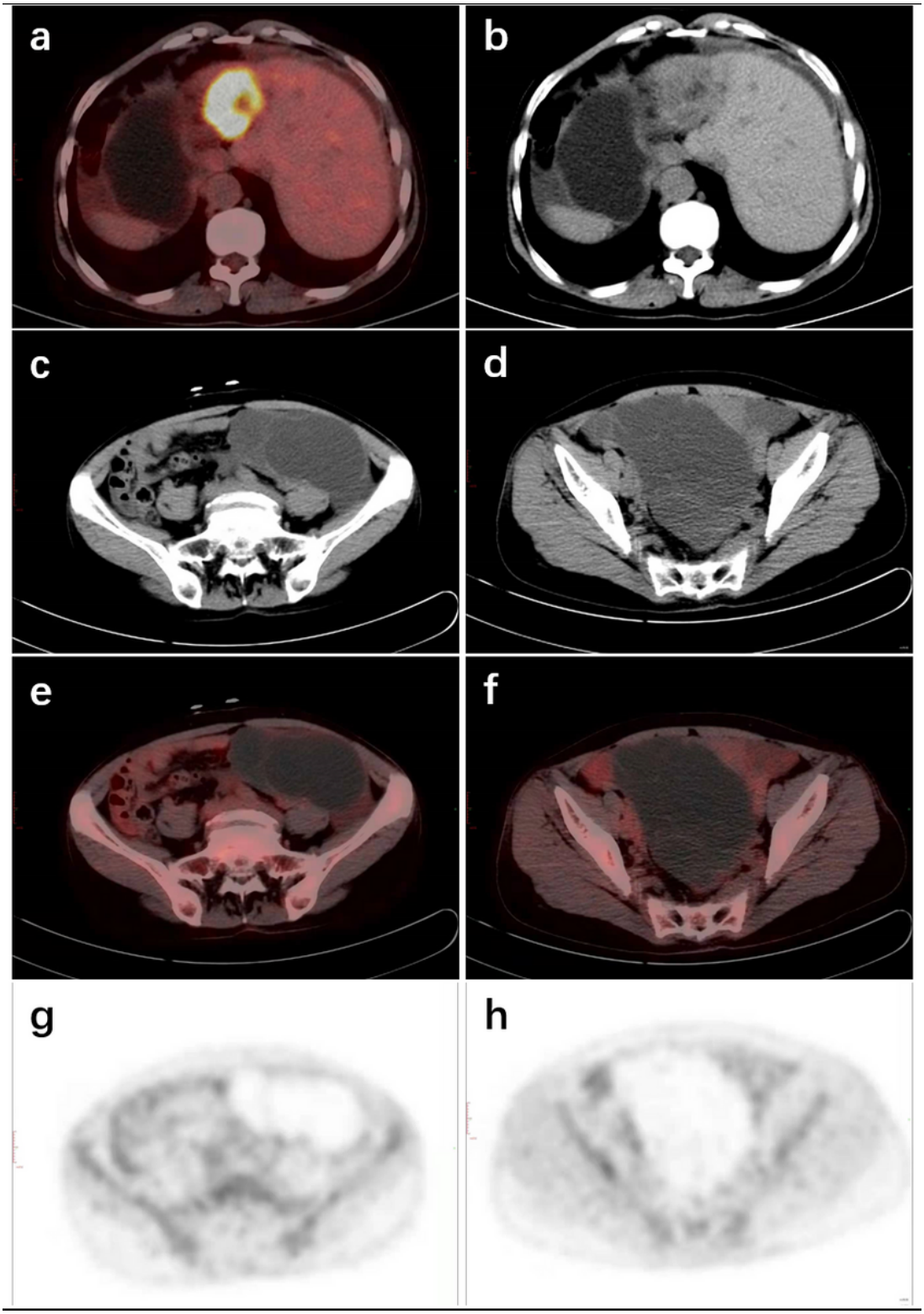

Figure 2

a-b: PET-CT from liver mass increases in glucose metabolism. c-h: PET-CT from two solid-cystic masses in the pelvic cavity with increases in glucose metabolism in a partial of solid component.

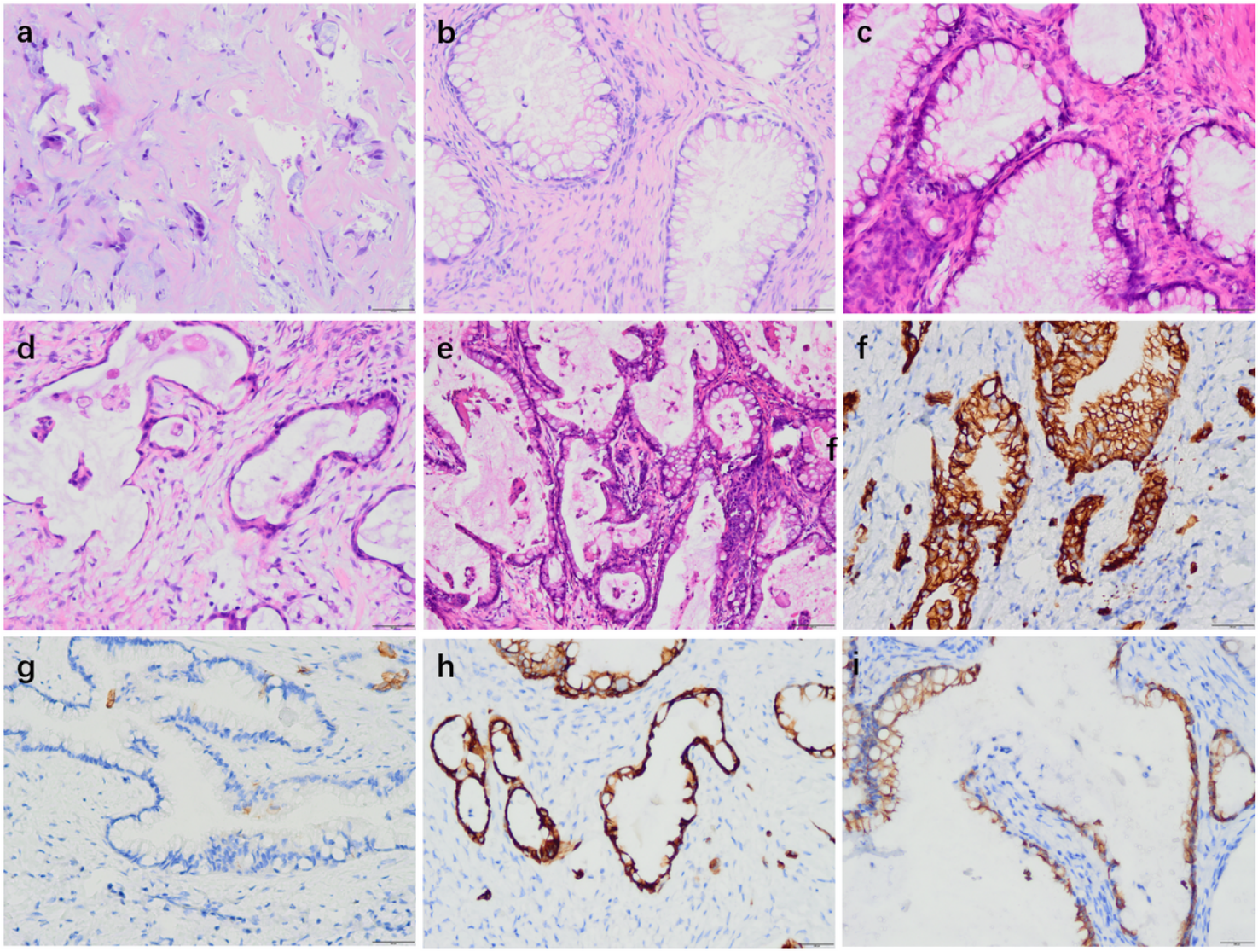

Figure 3

a: the liver biopsy result was PICC. **b-c**: The intraoperative pathological result from the left and right masses of pelvic cavity were mucinous ovarian cystadenoma. **d-e**: the postoperative pathology result from the left and right masses of pelvic cavity were PMOC. **f-g**: the metastases show positive CK7 and negative CK20 in IHC. **h-i**: the left mass showed positive CK7 and negative CK20 in IHC. (200 x)