KCR 2012

Case of the Day

October 18(Thu) - 20(Sat), 2012
Hall B2, Convention Hall 1F, Coex

대한영상의학회
The Korean Society of Radiology

Case 1.

Neuro by CG Choi

M/61

General weakness, Visual disturbance, Weight loss (57 -> 50 kg) during the last one month

Past medical history: Whipple's operation d/t ampulla of Vater cancer, 7 years ago

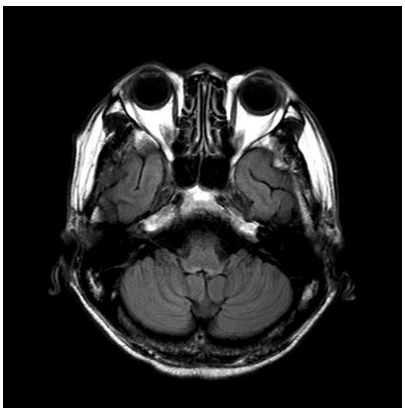
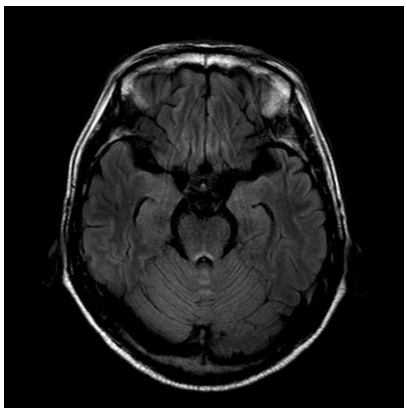


Fig. 1.



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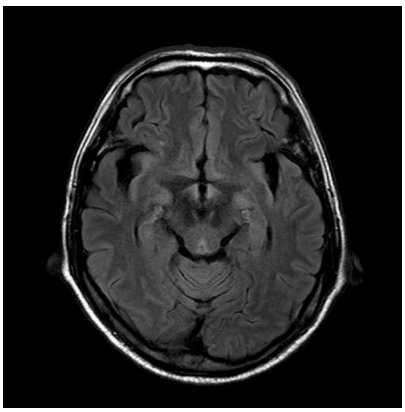

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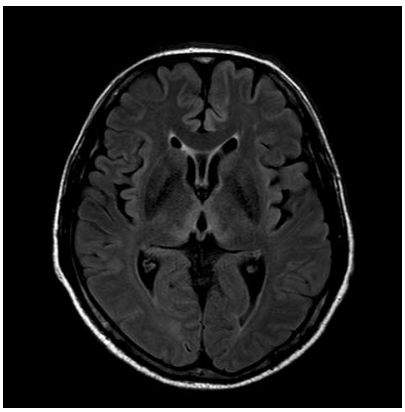

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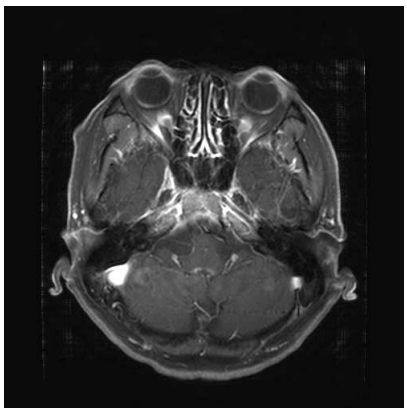

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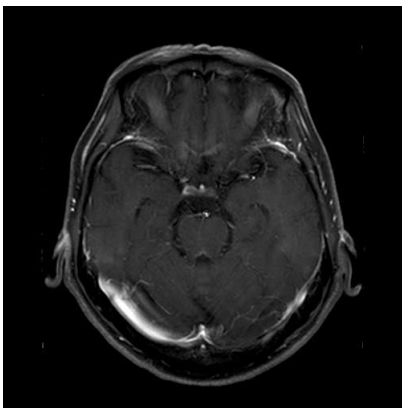

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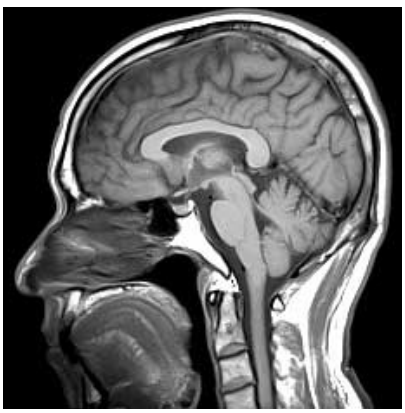


Fig. 7.

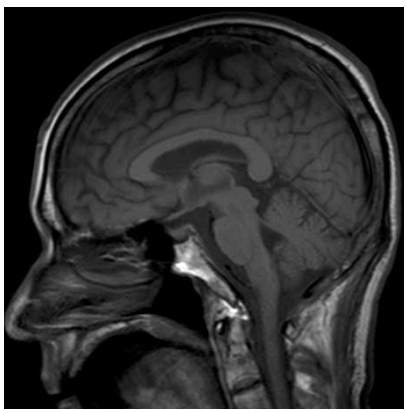


Fig. 8.

Fig. 1-4. Axial FLAIR images from the medulla oblongata to the thalamus

Fig. 5-6. Post-contrast axial T1 weighted images at the level of medulla and pons

Fig. 7. MRI obtained 2008 (Note prominent mammillary body.)

Fig. 8. MRI obtained 2012 (Note flattened atrophic mammillary body.)

Question

What is your diagnosis?

1) Hepatic encephalopathy
2) Metronidazole induced encephalopathy
3) Wernicke's encephalopathy
4) Uremic encephalopathy
5) Mitochondrial encephalopathy

Answer

3) Wernicke's encephalopathy

Imaging Features

Axial FLAIR images (Figs. 1–4) reveal bilateral symmetrical hyper-intensities at the 4th ventricle floor at the level of medulla oblongata and pons, and also at the periaqueductal gray matter and medial thalamic area. Post-contrast T1 weighted images (Figs. 5–6) show small linear enhancement of the lesion at the 4th ventricle floor. There was no significant contrast enhancement of the lesions located at the periaqueductal gray matter and medial thalamic area (not shown).

Brief Review

Wernicke's encephalopathy is a well-known metabolic encephalopathy caused by thiamine (Vitamin B1) deficiency. Thiamine is a water soluble vitamin of the B complex, named as the 'thio-vitamine' meaning sulfur-containing vitamin. Its phosphate derivatives are involved in many cellular metabolism. For example, thiamine pyrophosphate (TPP) is involved in the catabolism of glucose as a coenzyme of pyruvate dehydrogenase. Thiamine is also used in the biosynthesis of neurotransmitters such as acetylcholine and gamma-aminobutyric acid (GABA). It is only synthesized in bacteria, fungi and plants. Therefore, animal must obtain it from their diet and thus, it is an essential nutrient. Thiamine deficiency results in Wernicke-Korsakoff's syndrome, optic neurpathy and a disease called beriberi that affects the peripjeral nerve system and cardiovascular system. It has a potentially fatal outcome if remains untreated but in less severe cases, nonspecific signs include general weakness, weight loss, irritability and confusion.

Wernicke's encephalopathy is usually associated with chronic alcoholism, gastrointenstinal disorders, total parenteral nutrition with inadequate vitamin supplementation. It usually manifests acutely with gaze palsy, ataxia, apathy, confusion or delirium. It is sometimes associated with Korsakoff's psychosis, which is characterized by retrograde and anterograde amnesia and confabulation. Lesions of Wernicke's encephalopathy usually involve mammillary body, other parts of hypothalamus, medial and anterior thalamic nuclei, the periaqueductal region and nuclei in the floor of the 4th ventricle. In acute phase, the lesion can show contrast enhancement but the chronic lesions show only atrophy without contrast enhancement. In our case, we can observe significant atrophy of the mammillary body when compared recent MRI with previous MRI obtained 4 years ago in the same patient

(Fig. 7 MRI obtained 2008, Fig. 8 MRI obtained 2012).

References

1. Chapter 21 Vitamin deficiencies in Neuropathology:A reference text of CNS pathology. 2004 Mosby.
2. Chapter 10 Nutritional and metabolic disorders in Greenfield's Neuropathology. 1997 Arnold.
3. Wernicke's encephalopathy: MR findings in five patients. AJNR 1990:887-892.
4. Enhanced MR in the acute phase of Wernicke's encephalopathy. AJNR 1994:591-593.

Case 2.

Neuro by Lee DH

M/28

Sudden severe headache and left side numbness

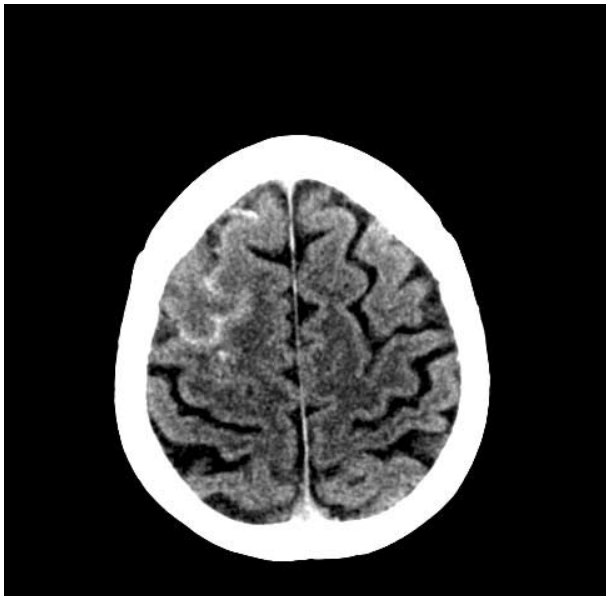


Fig. 1. Initial non-enhanced CT scan

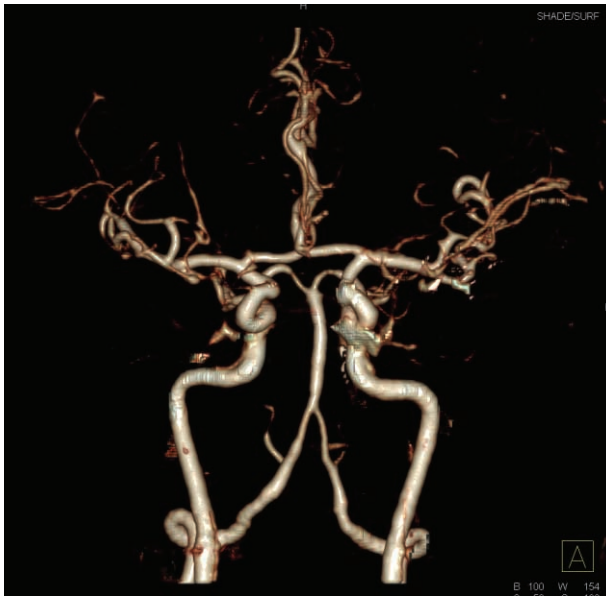


Fig. 2. Initial CTA Volume rendering image

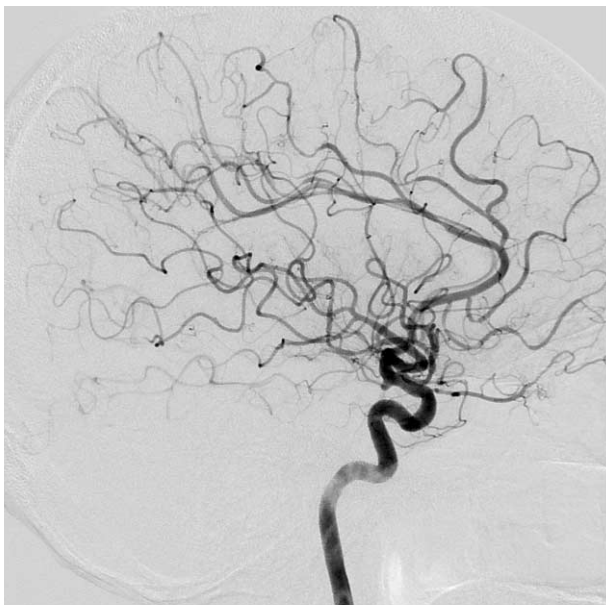


Fig. 3. DSA the following day

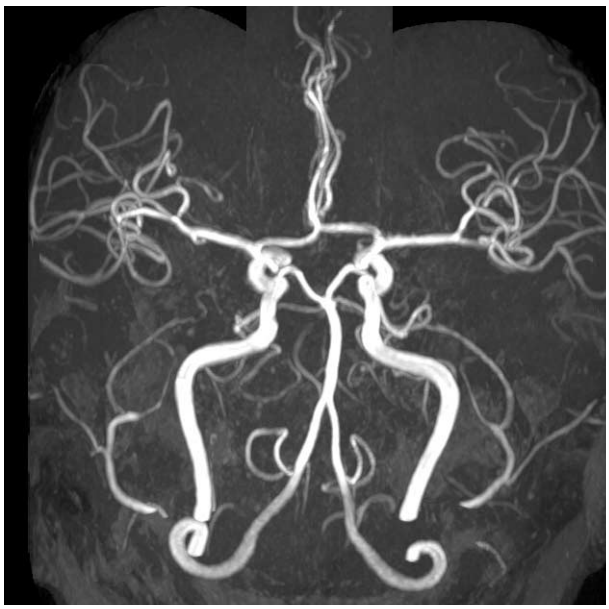


Fig. 4. TOF MRA obtained 2 months later

Question

What is your diagnosis?

1) Reversible cerebral vasoconstriction syndrome
2) Primary CNS angiitis
3) Multifocal intracranial arterial dissections
4) Pial AVM with cortical venous reflux
5) Micro AVM hemorrhage and secondary vasospasm

Answer

1) Reversible cerebral vasoconstriction syndrome

Imaging Features

Non-contrast CT scan shows regional distribution of subarachnoid hemorrhage along the right frontal convexity. CT angiogram revealed multifocal stenoses of intracranial arteries especially in both MCA M2 segments. Subsequent conventional angiography showed multifocal short or long segmental stenosis of peripheral cortical branches of MCA and ACA. On follow-up TOF MRA obtained 2 months later showed complete normalization of the arterial stenoses.

Brief Review

Reversible cerebral vasoconstriction syndrome (RCVS) is a condition of multifocal cerebral arterial vasospasm that improves within days to weeks. Typical clinical presentation is a thunderclap type of headache. In some occasion it may be associated with ischemic or hemorrhagic stroke. It can occur due to a variety of causes which sometimes is not identifiable. It has been reported during pregnancy or postpartum period, as an idiosyncratic response to certain medications or illicit drugs, and in the setting of catecholamine-secreting tumors. Diagnosis is made by characteristic symptoms and exclusion of other causes of sudden severe headache, segmental cerebral arterial vasoconstriction on angiography, and reversibility of the vasoconstriction within 12 weeks. The overall prognosis is good with rare recurrence unless it is complicated by ischemic or hemorrhagic strokes [1, 2].

References

1. Calabrese LH, Dodick DW, Schwedt TJ, Singhal AB. Narrative review: Reversible cerebral vasoconstriction syndromes. Ann Intern Med 2007;146:34-44
2. Marder CP, Donohue MM, Weinstein JR, Fink KR. Multimodal imaging of reversible cerebral vasoconstriction syndrome: A series of 6 cases AJNR Am J Neuroradiol. 2012

Case 3.

Breast by Kim HH

F/46

Painful swelling of both breasts for 6 month

Question

What is the most likely diagnosis?

1) Lymphoma
2) Diabetic mastopathy
3) Invasive lobular cancer
4) Granulomatous lobular mastistis
5) Pseudoangiomatous stromal hyperplasia (PASH)

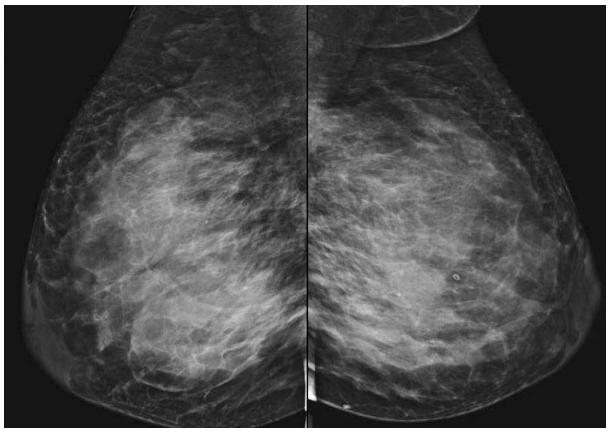


Fig. 1. Mammgraphy 1 (Initial)

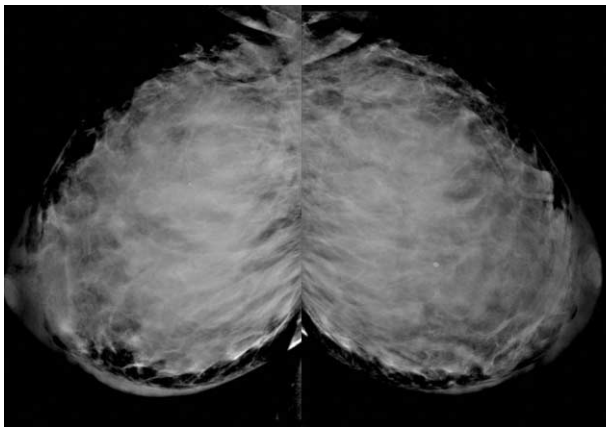


Fig. 2. Mammgraphy 2 (Six month later)

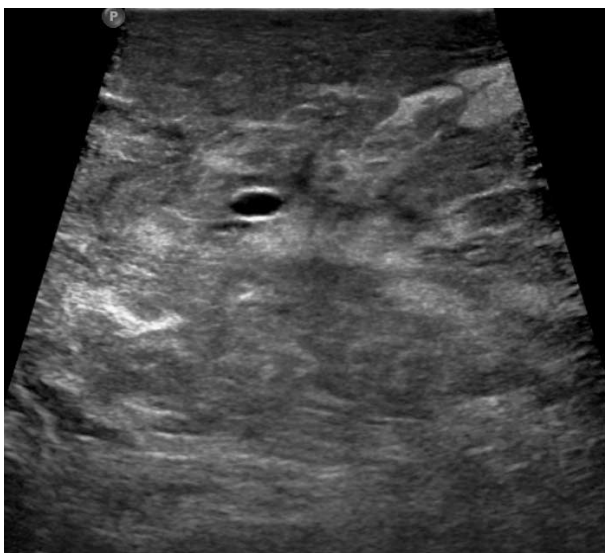


Fig. 3. Right brest ultrasonography 1 (Initial)

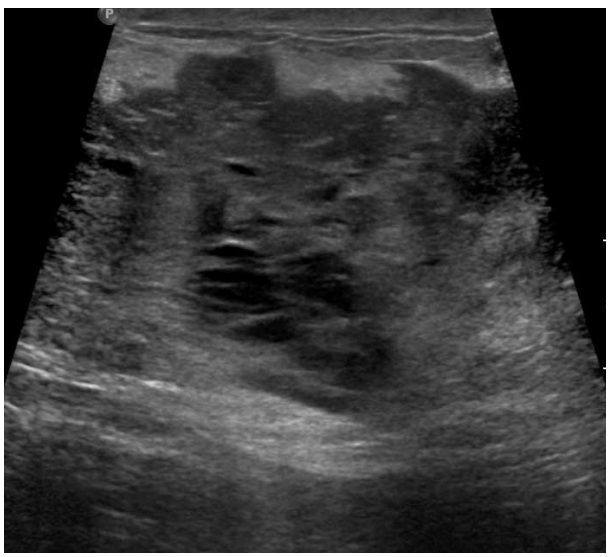


Fig. 4. Right brest ultrasonography 2 (Six month later)

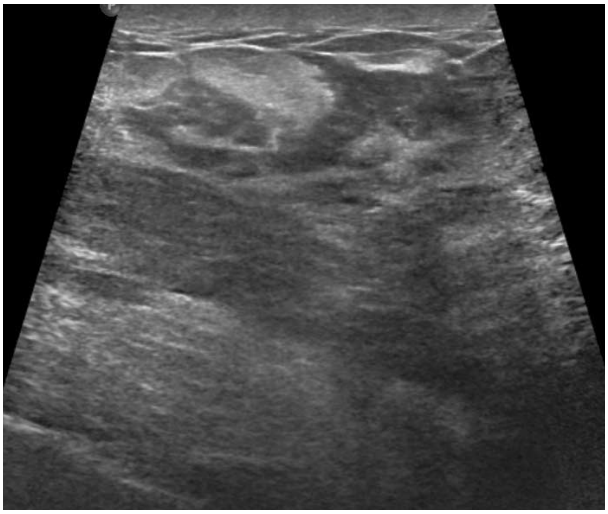


Fig. 5. Left breast ultrasonography 1 (Initial)

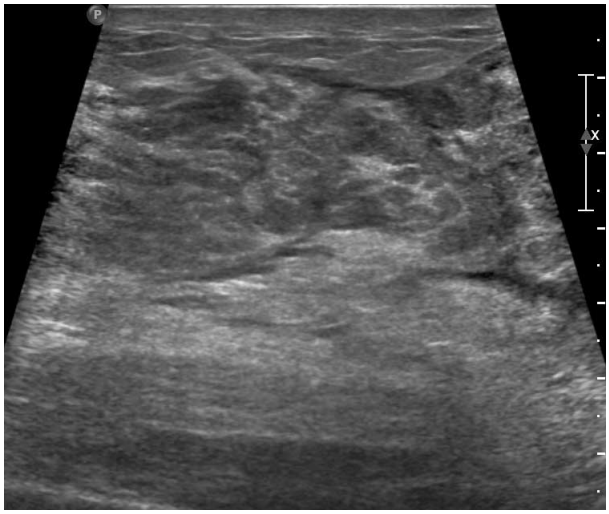


Fig. 6. Left breast ultrasonography 2 (Six month later)

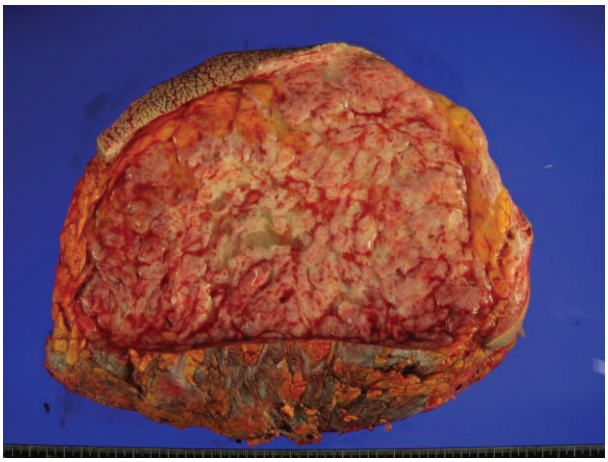


Fig. 7. Gross pathology photo

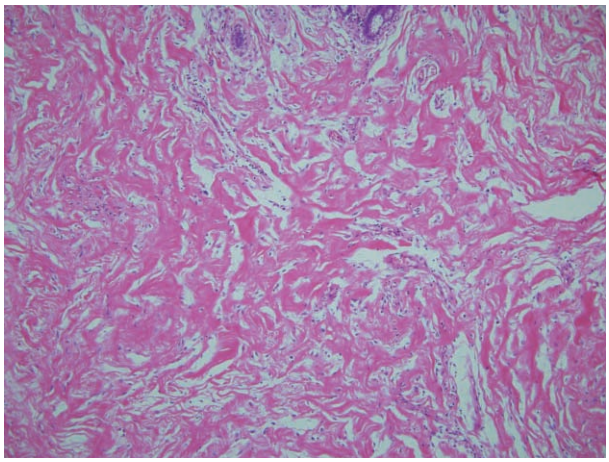


Fig. 8. Micro pathology photo

Answer

5) Pseudoangiomatous stromal hyperplasia (PASH)

Imaging Features

Initial mammography shows extremely dense parenchymal pattern. Both breasts are enlarged, and there are reticular densities surrounding the dense parenchyma and skin thickening. Six month later, the patient complained the aggravation of symptom. Follow-up mammography shows the progression of enlargement of breast and increase in parenchymal density. Skin thickening is also progressed. Sonography of both breasts shows low echoes and conglomerations of tiny cystic spaces in the thick glandular layer. After ultrasound guided biopsy, bilateral partial mastectomy with mammoplasty was performed. The pathologic specimen shows pseudoangiomatous stromal hyperplasia

Brief Reviews

Pseudoangiomatous stromal hyperplasia (PASH) is a benign disease of the breast characterized by

a complex network of slit-like spaces lined by slender spindle cells within a background of stromal hyperplasia (Figs. 7, 8). The etiology is thought to be associated with a proliferative response of myofbroblasts, probably to hormonal stimuli. PASH shows a wide spectrum from relatively frequently seen incidental microfoci among other pathology findings, to rarely occurring, mass-forming tumors.

The clinical manifestations and imaging findings are nonspecific. The mammographic findings vary from no identifiable abnormality to a circumscribed mass, and the sonographic findings are a nonspecific, focal, mass-like lesion. Most often, PASH is stable over time, but it may increase rapidly in size or may recur.

Although rapidly growing huge tumoral PASH is very rare, there area a few reports that the mammographic presentation of markedly enlarged and extremely dense breasts and the sonography finding of conglomerations of cysts in compact stromal hyperplasia which is very similar to this case.

References

1. Ryu EM, Whang IY, Chang ED. Rapidly growing bilateral pseudoangiomatous stromal hyperplasia of the breast. Korean J Radiol 2010;11:355-8
2. Jones KN, Glazebrook KN, Reynolds C. Pseudoangiomatous stromal hyperplasia: imaging findings with pathologic and clinical correlation. AJR Am J Roentgenol 2010;195:1036-42

Case 4.

Chest by Kim MY

67/M

Chief complaint: Abnormal chest radiograph

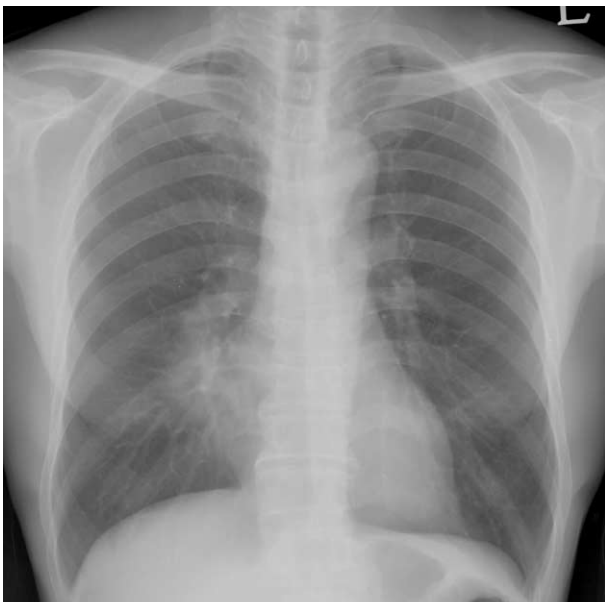


Fig. 1. Initial chest radiograph (2005-09-25)

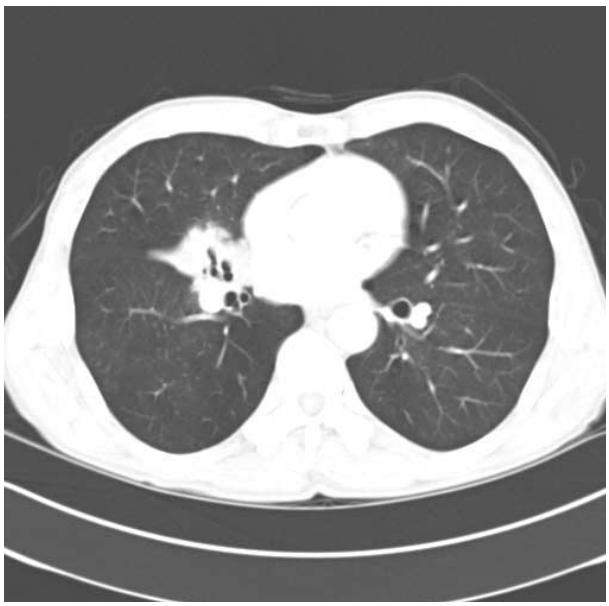


Fig. 2. Initial chest CT (2005-09-26)

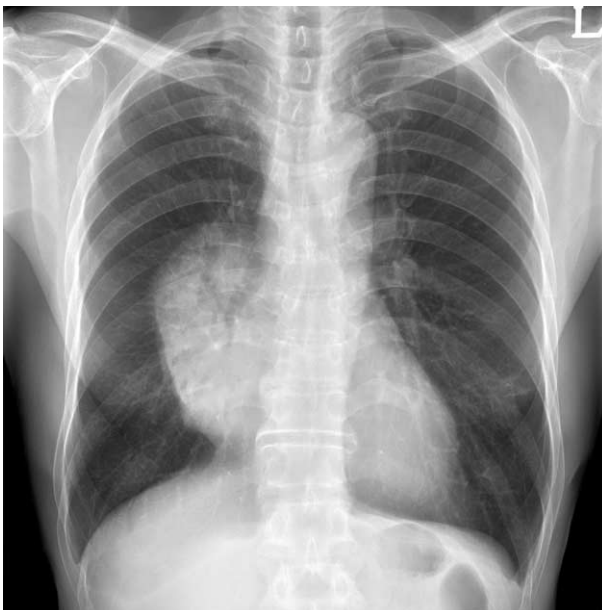


Fig 3. Follow-up chest radiograph (2012-03-20)

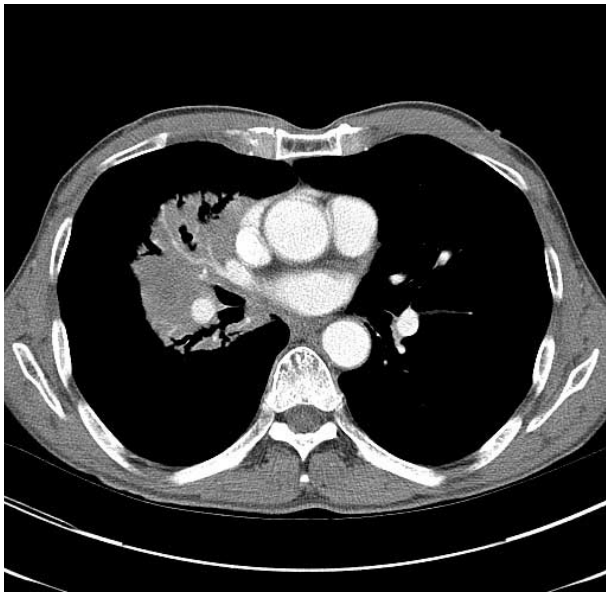


Fig. 4.

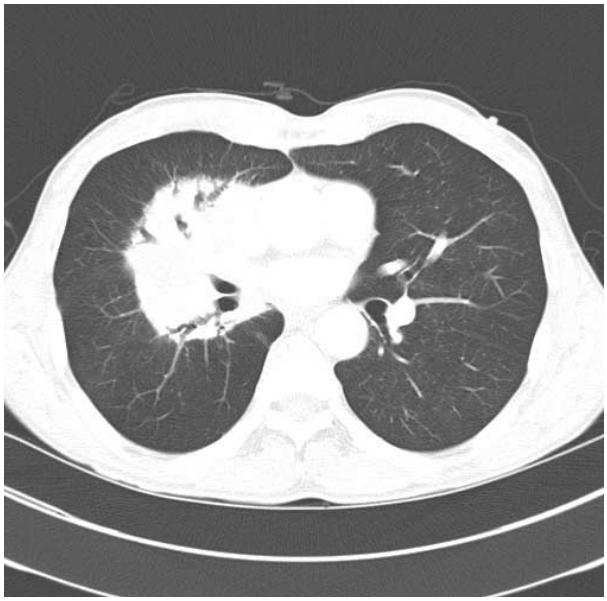


Fig. 5.

Fig. 4-6. Follow-up chest CT (2012-03-21)

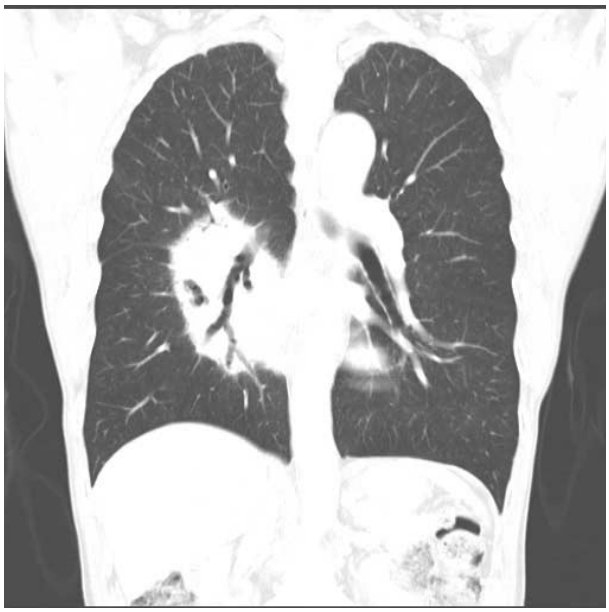


Fig. 6.

Question

What is the diagnosis?

1) Lung cancer, adenocarcinoma
2) Pulmonary tuberculosis
3) Bronchus-associated lymphoid tissue (BALT) lymphoma
4) IgG4-related sclerosing disease
5) Organizing pneumonia (Bronchiolitis obliterans organizing pneumonia)

Answer

3) BALT lymphoma of the lung

Imaging features

Initial chest radiograph (2005–09–25) shows ill defined mass like consolidation in right middle lung zone and obliteration of right cardiac border (Fig. 1). Initial chest CT transverse image with lung window (5-mm reconstruction) shows collapse and consolidation of the right middle lobe with internal air-bronchogram and bronchiectasis (Fig. 2). Follow-up chest radiograph over 6 years (2012–03–20) shows increased size of the mass like consolidation and internal air bronchograms (Fig. 3). Follow-up chest CT transverse (Figs. 4, 5) and coronal (Fig. 6) images with lung and mediastinal window (5-mm

reconstruction) show increased extent of the collapse and consolidation of the right middle lobe and internal bronchiectasis. There was no evidence of mediastinal lymphadenopahty or other organ involvement. Several bronchoscopic and percuteneous biopsy were not revealed pathologic diagnosis. Video assisted thoracoscopic biopsy was performed for tissue confirm.

Brief Reviews

Extranodal marginal zone lymphoma of MALT, previously known as MALT lymphoma, is a low grade B-cell Non-Hodgkin's lymphoma (NHL). Bronchus-associated lymphoid tissue (BALT) is a lymphoid aggregate located in the submucosal area of bronchioles and plays a central role in airway mucosal immunity by inducing the accumulation of secretory IgA producing cells. Long-lasting antigen stimuli promote the hyperplasia of BALT, which may develop into pulmonary mucosa-associated lymphoma [1]. Marginal zone B-cell lymphomas of BALT are often incidentally identified on chest radiographs, show indolent growth, remain localized for a long time, and respond well to local therapy [2]. The most common CT scan findings of marginal zone B-cell lymphoma of BALT were reported initially as parenchymal consolidation with air bronchograms caused by a cellular lymphocytic infiltrate expanding the interstitium and compressing the adjacent alveoli [2]. In a report reviewing 21 cases of BALT, a single nodular or consolidative pattern was observed in 7 of 21 (33%) patients, multiple nodular or areas of consolidation were observed in 9 patients (43%), bronchiectasis and bronchiolitis were observed in 3 patients (14%), and DILD was observed in 2 patients (10%). Associated findings were air bronchograms, airway dilatation, a positive angiogram sign and a halo of ground-glass shadowing at lesion margins. Peribronchovascular thickening was also observed, as were hilar or mediastinal lymph node enlargement and pleural effusions or thickening [3]. Although rare, the diagnosis of pulmonary BALT lymphoma should be considered in patients with the imaging features described, particularly when in association with an indolent clinical course.

References

1. Tirouvanziam R, Khazaal I, N'Sondé V, et al. Ex vivo development of functional human lymph node and bronchus-associated lymphoid tissue. Blood 2002;99:2483-2489
2. Knisely BL, Mastey LA, Mergo PJ, et al. Pulmonary mucosa-associated lymphoid tissue lymphoma: CT and pathologic findings. AJR Am J Roentgenol 1999; 172:1321-1326
3. Young A Bae, Kung Soo Lee, Joungho Han, et al. Marginal Zone B-Cell Lymphoma of Bronchus-Associated Lymphoid Tissue Imaging Findings in 21 Patients. Chest 2008;133:433-440

Case 5.

Cardiovascular by Kang JW

M/72

Chief complaint: chest pain for 1 month

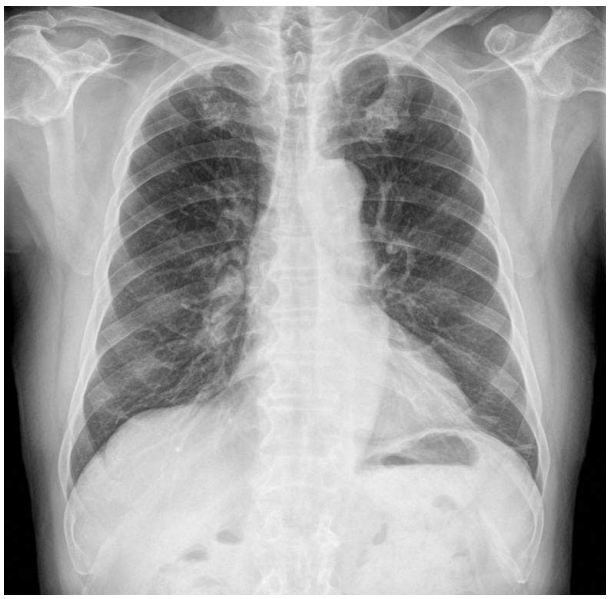
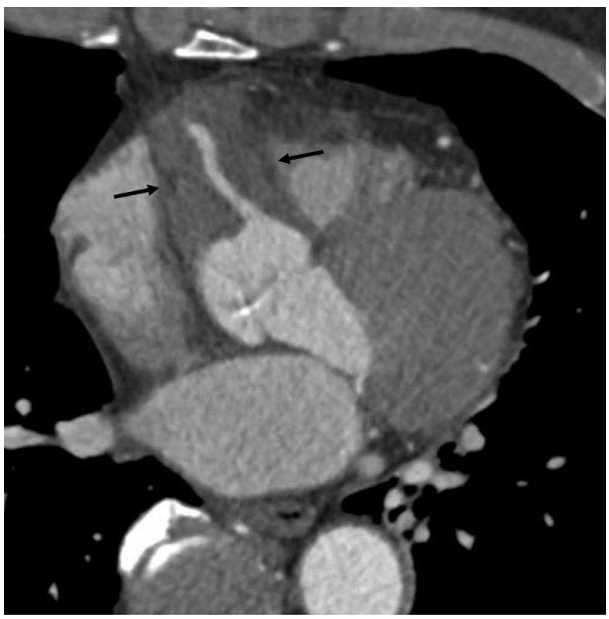


Fig . 1. Chest radiograph acquired 1 month ago



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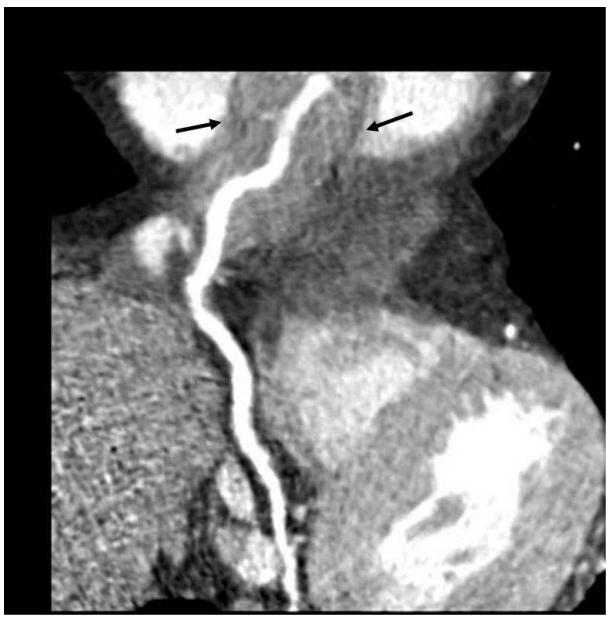

Fig. 3.

Fig. 2-3. Cardiac CT images acquired 1 month ago

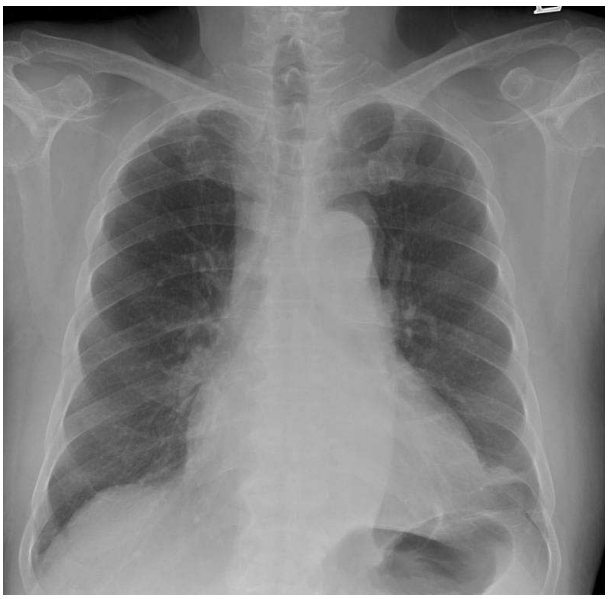

Fig. 4. Chest radiograph acquired recently

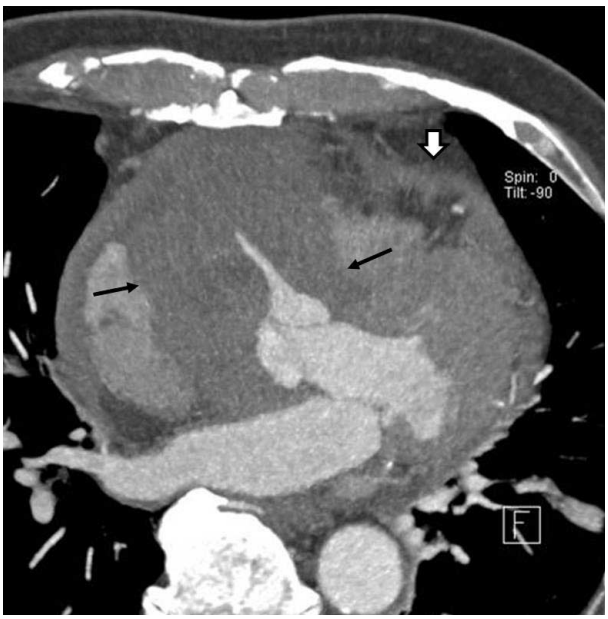

Fig. 5.

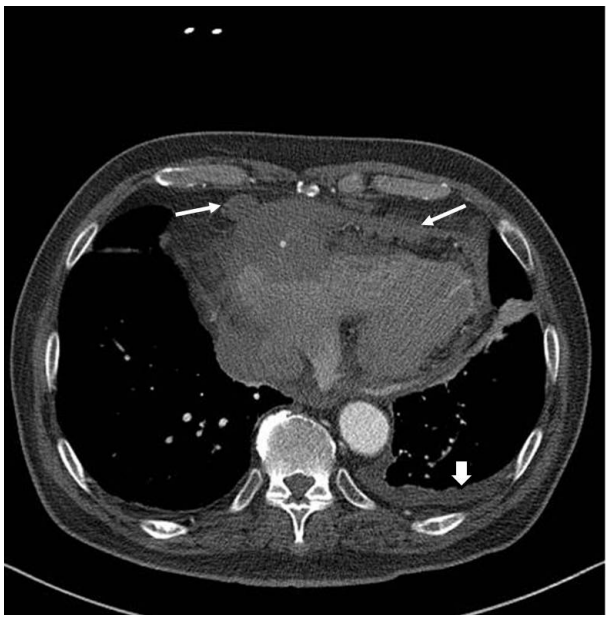

Fig. 6.

Fig. 5-6. Cardiac CT acquired recently

Question

What is the most probable diagnosis?

1) Angiosarcoma
2) Lymphoma
3) Hemangioma
4) Metastasis
5) Mesothelioma

Answer

2) Lymphoma (diffuse large B-cell lymphoma, cardiac involvement)

Imaging findings

Chest radiograph acquired 1 month ago (Fig. 1) shows hypertensive heart configuration, but neither cardiomegaly nor increased pulmonary vascularity is seen. CT coronary angiographies acquired 1 month ago show homogeneously enhancing soft tissue lesion surrounding the right coronary artery. But the right coronary artery is widely patent and there is no infiltration by the mass on the axial multiplanar reformatted (MPR) image (Fig. 2) and the curved planar reformatted (CPR) image (Fig. 3).

After a month, chest radiograph (Fig. 3) shows moderate cardiomegaly and left pleural effusion. CT coronary angiographies also show markedly growing of the mass, compressing the right atrium and extending to the interatrial and interventriular septum on the axial MPR image (Fig. 5). Pericardial thickening, pericardial effusion, right pericardiophrenic lymph node enlargement, and left pleural effusion are developed on the axial MPR image at chest CT exam (Fig. 6). However, the patency of the right coronary artery remains good. At that time, cervical lymph adenopathy was developed, and the biopsy from the cervical lymph node revealed diffuse large B-cell lymphoma.

Brief Review

Cardiac Lymphoma is defined as an extranodal non-Hodgkin lymphoma, which is exclusively located in the heart or pericardium. Almost all primary lymphomas are B-cell lymphomas. Primary cardiac lymphoma most often occurs in immunocompromised patients, in whom it is highly aggressive. Although primary cardiac lymphoma is rare, it is mandatory to suspect this entity in the differential diagnosis because early chemotherapy seems to be effective. The tumor arises most often on the right side of the heart, especially in the right atrium, but has also found in other chambers. A large pericardial effusion is frequently associated and this may be the only sign of the lymphoma. Variable morphology from circumscribed polypoid to ill-defined infiltrative lesions has been reported.

References

1. Dorsay TA, Ho VB, Rovira MJ, Armstrong MA, Brissette MD. Primary cardiac lymphoma: CT and MR findings. J Comput Assist Tomogr. 1993 Nov-Dec;17(6):978-81.
2. Tada H, Asazuma K, Ohya E, Hayashi T, Nakai T, Nakayama T, Ueda T. Images in cardiovascular medicine. Primary cardiac B-cell lymphoma. Circulation. 1998 Jan 20;97(2):220-1.
3. Ryu SJ, Choi BW, Choe KO. CT and MR findings of primary cardiac lymphoma: report upon 2 cases and review. Yonsei Med J. 2001 Aug;42(4):451-6.

Case 6.

Abdomen by Dr. Byun JH.

64/M

Mass at the pancreas tail at follow-up CT

Past history: S/P radiofrequency ablation for hepatocellular carcinoma

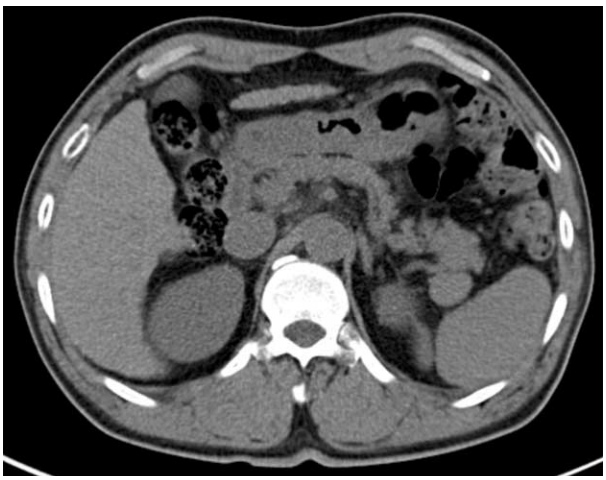

Fig. 1. CT_pre

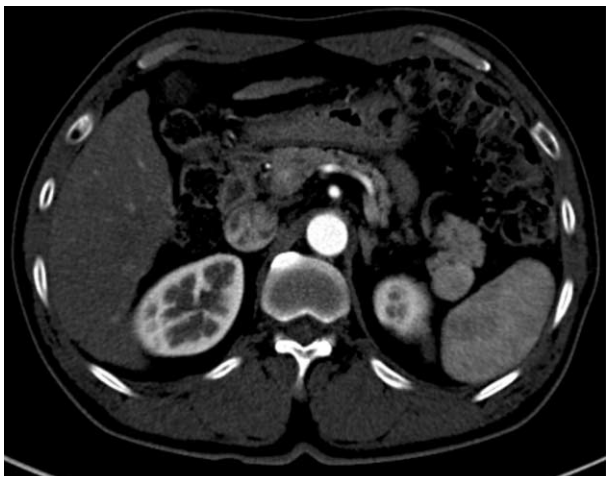

Fig. 2. CT_arterial

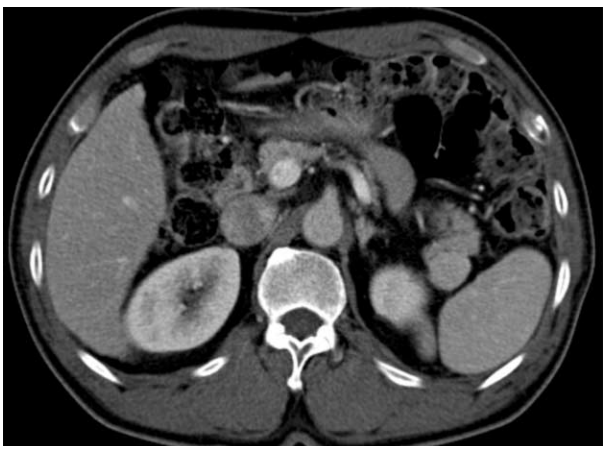

Fig. 3. CT_portal

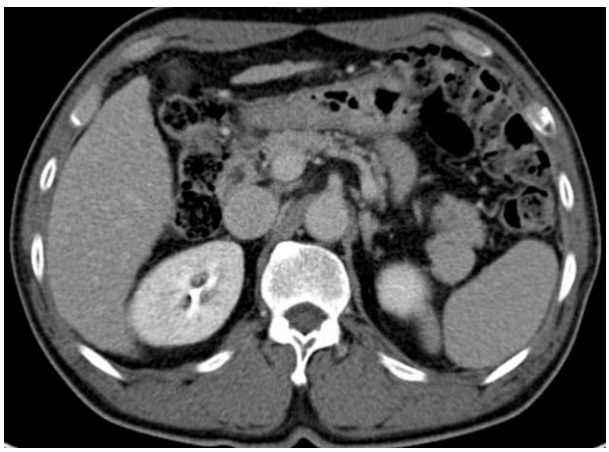

Fig. 4. CT_equ

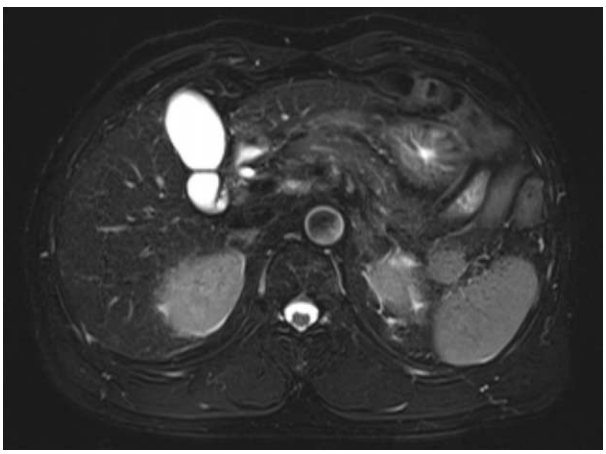

Fig. 5. MR_T2

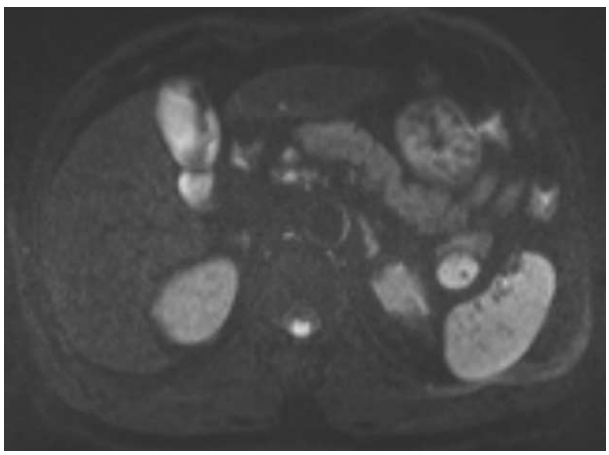

Fig. 6. MR_DWI

Question

What is the diagnosis?

1) Metastasis of hepatocellular carcinoma
2) Islet cell tumor
3) Solid pseudopapillary tumor
4) Pancreatic adenocarcinoma
5) Intrapancreatic accessory spleen

Answer

5) Intrapancreatic accessory spleen

Imaging features

A pre-enhanced axial CT image (Fig. 1) shows a 2.3-cm well-defined homogenous mass at the pancreas tail. The mass has iso-attenuation compared to the pancreas and spleen. An arterial phase axial CT image (Fig. 2) shows a heterogeneous hypervascular mass including hypoattenuating portions, which is identical to Zebra-striped enhancement of the spleen. Two CT images obtained during the portal and equilibrium phases (Figs. 3–4), respectively, show homogeneous enhancement of the tumor with iso-attenuation compared to the spleen. That is, the tumor is isoattenuating to the spleen during all dynamic phases.

On an axial turbo-spin echo T2-weighted MR image (Fig. 5) and a diffusion-weighted MR image (Fig. 6, b = 500), respectively, the tumor is isointense to the spleen but hyperintense to the pancreas.

Brief Reviews

Ectopic splenic tissue can be categorized as two entities: splenosis that is due to autotransplantation of splenic tissue, and this usually happens after splenectomy [1]; and accessory spleens that are congenital foci of healthy splenic tissue that are separate from the main body of the spleen [1]. Accessory spleens are structurally identical to the spleen and they arise from the failure of fusion of the splenic analoge located in the dorsal mesogastrium during the fifth week of the fetus. The presence of an accessory spleen has been reported in 10% to 30% of cases in postmortem studies and in 45% to 65% of patients after splenectomy [2]. The locations of accessory spleens vary, i.e., the splenic hilum, the tail of the pancreas, the greater omentum, the splenic ligament, the small and large intestinal mesentery, the wall of the small intestine, the female adnexa and the scrotum in descending order of prevalence. Although intrapancreatic accessory spleen has rarely been noted radiologically, it is not uncommon. Indeed, in an autopsy study of 3,000 patients, 16.8% of accessory spleens were found in the pancreas tail [2]. It is important to characterize accessory spleens as noninvasively as possible because they usually pose no clinical problems and no treatment is necessary. Therefore, radiological differential diagnosis from other pancreatic tumors including hypervascular metastasis is very important.

The typical radiologic findings and typical location of the intrapancreatic accessory spleen are help-

ful in accurate diagnosis [3]. On both the pre-enhanced and contrast-enhanced images of all imaging modalities, an intrapancreatic accessory spleen has similar or identical characteristics to those of the spleen. In particular, heterogeneous enhancement of an intrapancreatic accessory spleen during the arterial or early phase, which is well known characteristic enhancement pattern of the spleen, may be a diagnostic clue. A previous study [4] reported that SPIO-enhanced MRI and Levovist-enhanced US can be used as an alternative tool to confirm the diagnosis of intrapancreatic accessory spleen in addition to Tc-99m HDRBC scintigraphy. Those mechanisms are theoretically similar to that of Tc-99m scintigraphy.

References

1. Movitz D. accessory spleens and experimental splenosis. Principles of growth. Chic Med Sch Q 1967;26:183-187
2. Eraklis AJ, Filler RM. Splenectomy in childhood: a review of 1413 cases. J Pediatr Sury 1972;7:382-388
3. Ota T, Ono S. Intrapancreatic accessory spleen: diagnosis using contrast enhanced ultrasound. Br J Radiol 2004;77:148-149
4. Kim SY, Lee JM, Han JK, et al. Intrapancratic accessory spleen: findings on MR imaging, CT, US and scintigraphy, and the pathologic analysis. Korean J Radiol 2008;9:162-174

Case 7.

Abdomen by Park SH

M/72

Chief complaint: Vague upper abdominal discomfort

Past history: Unremarkable

Question

What is the diagnosis?

1) Linitis plastica (Bormann type IV gastric cancer)

2) Gastric lymphoma

3) Gastritis cystica profunda

4) Menetrier's disease

5) Eosinophilic gastritis

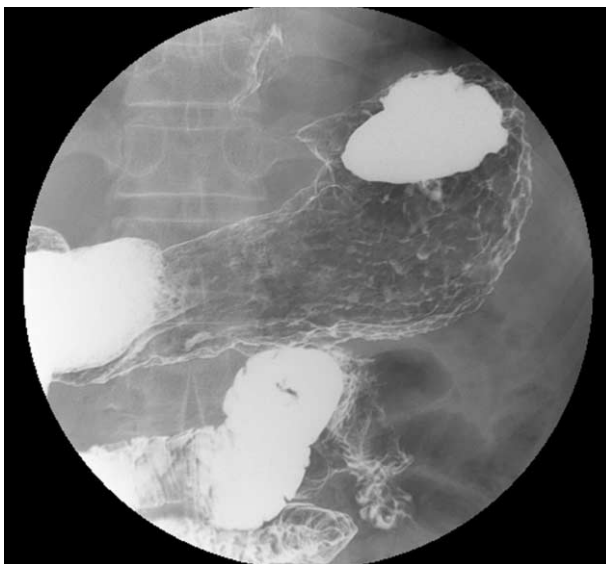

Fig. 1. UGIS1

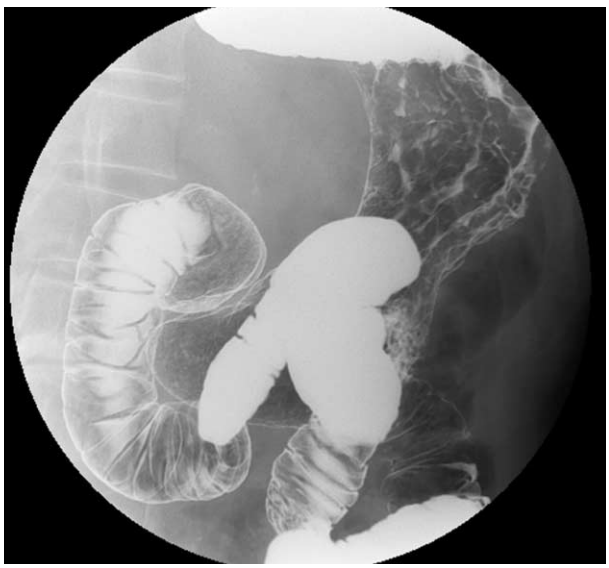

Fig. 2. UGIS2

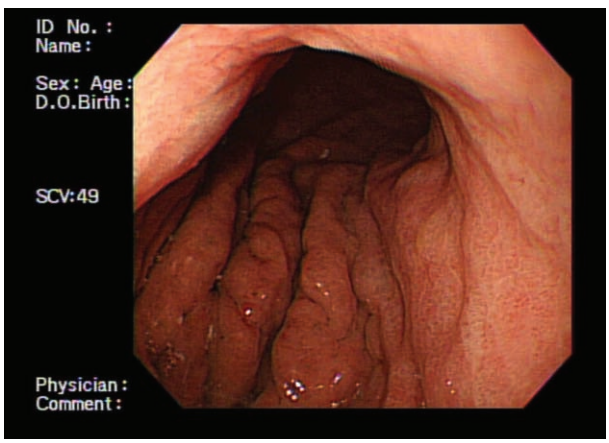

Fig. 3. Endoscopy

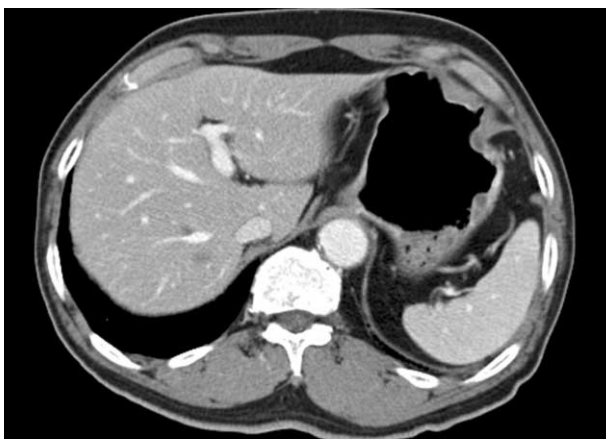

Fig. 4. CT1

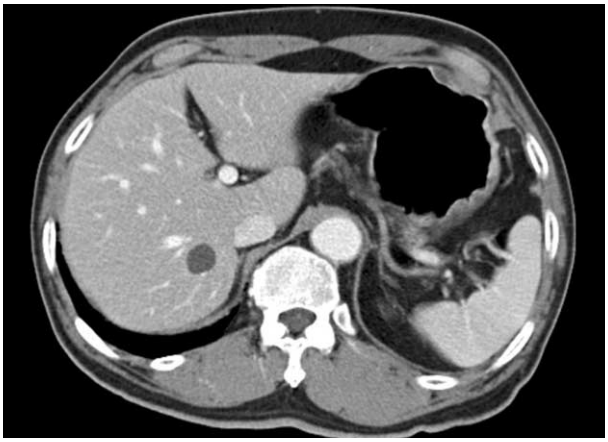

Fig. 5. CT2

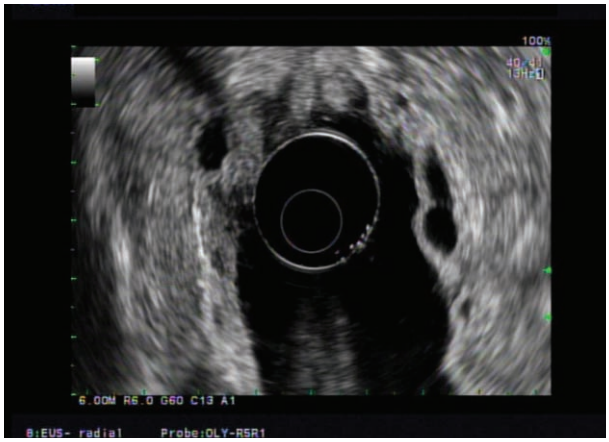

Fig. 6. EUS

Answer

3) Gastritis cystica profunda

Imaging features

UGIS study shows diffuse thickening of gastric folds in the gastric body and the finding is confirmed on the upper endoscopic image. Most probable diagnoses on UGI (as well as on the upper endoscopy) would include linitis plastica, lymphoma, and Menetrier's disease. However, the mural abnormality is barely noted on CT obtained after gaseous distention of the stomach. The CT finding argues against linitis plastica or lymphoma which would have shown more apparent thickening of the gastric wall on CT and also increased mural enhancement in the case of linitis plastica. A careful look at of the left-sided wall of the scanned gastric body reveals small polypoid structures protruding into the lumen, which correspond to the thickened gastric folds seen on the cross-sectional view perpendicular to the folds. Fluid-like low attenuation is noted inside each of the thickened folds. EUS reveals ovoid cysts within the thickened gastric wall, characteristic of gastritis cystic profunda.

Brief Reviews

1. Histology: gastritis cystica profunda is a rare gastric disease characterized by proliferation of pyloric gland-like cystic gastric glands within the submucosa, similar to colitis cystica profunda.
2. Epidemiological features (from Kim et al)
   - Prevalence: 1.7% (38/2238) of gastrectomy or endoscopic resection specimens
   - M:F ratio: 3:1
   - Mean age (range): 60 years (18–83)
   - Predisposing conditions, etiology, and pathogenesis: unknown. The disease was once thought to be related to prior gastric surgery but it is now clearly known that gastritis cystica profunda frequently occurs without the prior surgical history. It may represent a manifestation of a spectrum of hyperplastic and metaplastic responses to mucosal injury.
3. Symptoms: generally absent or presented with nonspecific upper abdominal symptoms such as

indigestion or pain

4. Lesion location in the stomach: anywhere
5. Lesion morphology: more frequently polypoid than thickened folds (as shown in this case) or SMT-like
6. Possible association with gastric cancer (gastritis cystica profunda as a pre- or peri-cancerous lesion) has been proposed but the association is still uncertain.

References

1. Franzin G, Novelli P. Gastritis cystica profunda. Histopathology 1981;5(5):535-47
2. Fonde EC, Rodning CB. Gastritis cystica profunda. Am J Gastroenterol 1986;81(6):459-64
3. Kim YS, Heo WS, Chae KH, et al. Our Experience of Gastritis Cystica Profunda Cases and Its Clinical Study. Korean J Gastrointest Endosc 2006;33(3):135-139
4. Lee HJ, Lee TH, Lee JU, et al. Clinical features of gastritis cystica profunda in patients without history of gastric surgery (Gastric Cancer Patients vs. Non-cancerous Patients). Korean J Med 2006;71(5):511-517

Case 8.

Genitourinary Case, Choi HJ

37/M

Chief complaint: Incidentally detected pelvic mass with routine ultrasonography

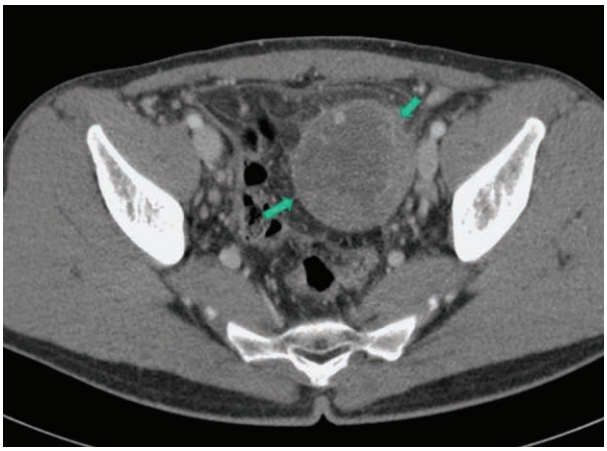

Fig. 1. axial CT1.jpg

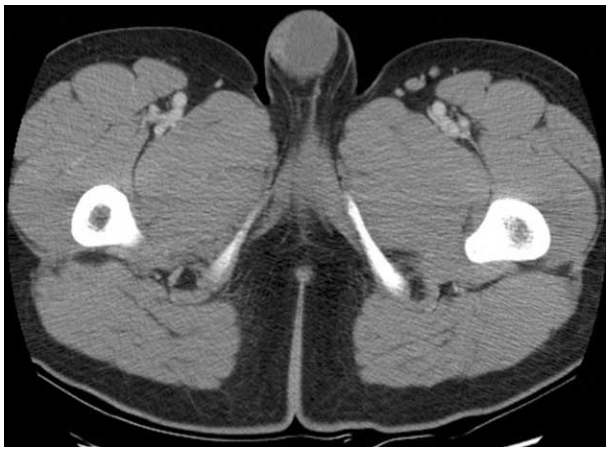

Fig. 2. axial CT2.jpg

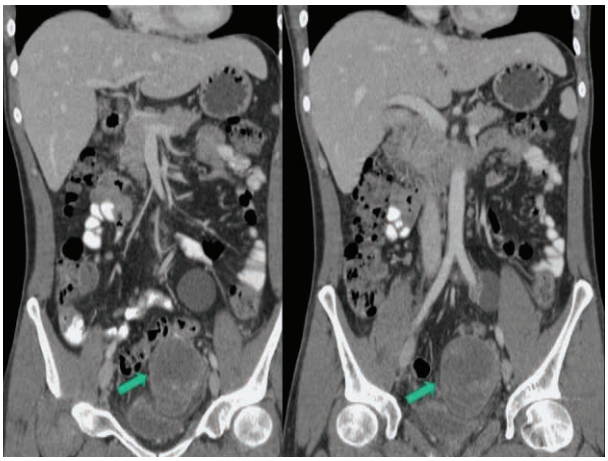

Fig. 3. coronal CT.jpg

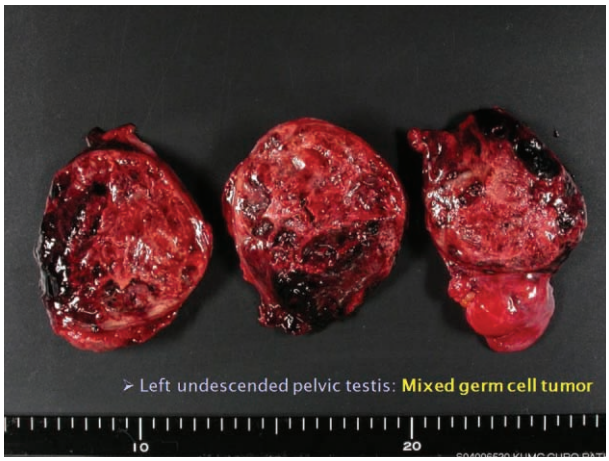

Fig. 4. gross pathology.jpg

Question

Which is the most likely diagnosis (kind of tumor-origin)?

1) Paraganglioma – retroperitoneal origin
2) GI origin stroma tumor – sigmoid colon origin
3) Schwannoma-retroperitoneal origin
4) Germ cell tumor-undescended testis origin
5) Leiomyoma-bladder origin

Answer

4) Germ cell tumor-undescended testis origin (mixed germ cell tumor; left undescended testis)

Imaging Features

Axial contrast enhanced CT image (Fig. 1) shows a 7.5×6×5 cm sized solid mass in left pelvic cavity. The mass has prominent cystic or necrotic portion. Axial contrast enhanced CT image (Fig. 2) scanned below showed absence of left testis. In coronal contrast enhanced CT images (Fig. 3), there are solid and cystic mass in left pelvic cavity. There is intact fat plane between the mass and the bladder. Gross pathologic specimen (Fig. 4) shows necrotic cut surface with multifocal hemorrhage.

Brief Review

Cryptochidism is clinically suspected when testis is not palpable in the scrotum. There are four types of cryptorchidism: retractile, canalicular, abdominal, and ectopic type. Usually undescended testis accompanies complication. They are infertility, neoplasia, torsion, and trauma. The risk of cancer is increased about 40 folds compared with normal testis. The risk of cancer is higher even in the normal contralateral testis. So surgical correction around 2 years of age is recommended.

Known risk factors of testicular cancer are cryptorchidism, maternal diethylstilbestrol use, testicular atrophy, and testicular microlithiasis. Germ cell tumor comprises about 95% of testicular cancers. Seminoma is most common one. It has no tumor marker but it is radiosensitive. Mixed germ cell tumors are the second common and among them, teratocarcinoma is the most common. Nonseminomatous germ cell tumor is known to be more aggressive than seminoma.

Nongerm cell tumors are Leydig cell tumor and sertoli cell tumor. Leydig cell tumor produces androgen and sertoli cell tumor produces estrogen. Lymhomas is more common in older men and usually bilateral. Metastatic tumors are usually from prostate and lung cancer.

References

1. Kim W, Rosen MA, Langer JE, et al. US-MR imaging correlation in pathologic conditions of the scrotum. Radiographics 2007;7:1239-1253
2. Kim BH. Scrotum. In: Kim SH, des. Radiology Illustrated: Uroradiology. Philadelphia: WB Saunders, 2003, pp.625-664
3. Woodward PJ, Sohaey R, O′ Donoghue MJ, et al. From the archives of the AFIP. Tumors and tumorlike lesionsof the testis: radiologic-pathologic correlation. Radiographics 2002;22:1889-216

Case 9.

Pediatrics by Yoon HK

A 3-year-old girl presented to the emergency room due to irritability and vomiting (1DA)

Question

What is the most likely diagnosis?

(1) Gastroenteritis

(2) Duplication cyst

(3) Hypertrophic pyloric stenosis

(4) Ileocolic intussusception

(5) Meckel diverticulum

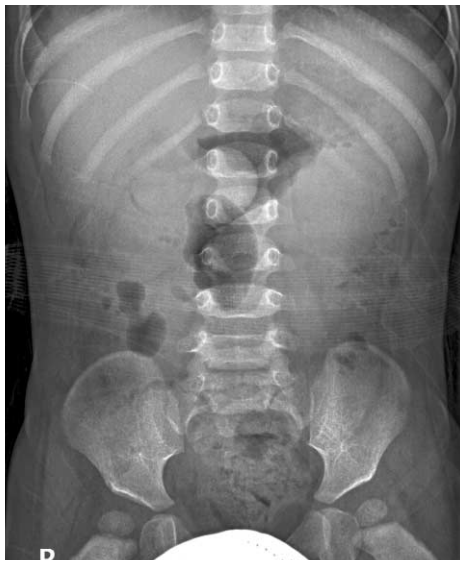

Fig. 1. Supine abdominal radiography shows soft tissue density in the right upper quadrant of the abdomen with encircling air which raises the possibility of intussusception (bowel-within-bowel). There is no evidence of small bowel obstruction.

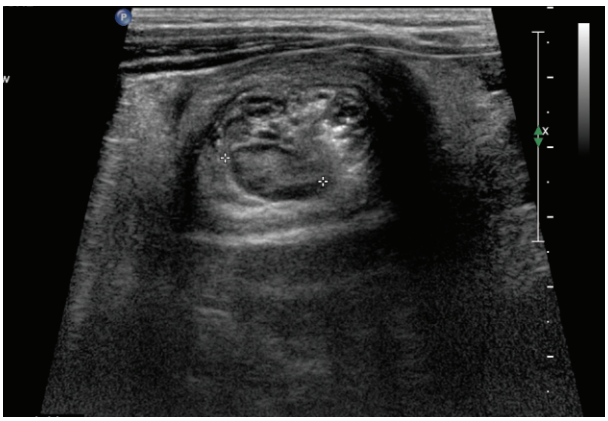

Fig. 2.

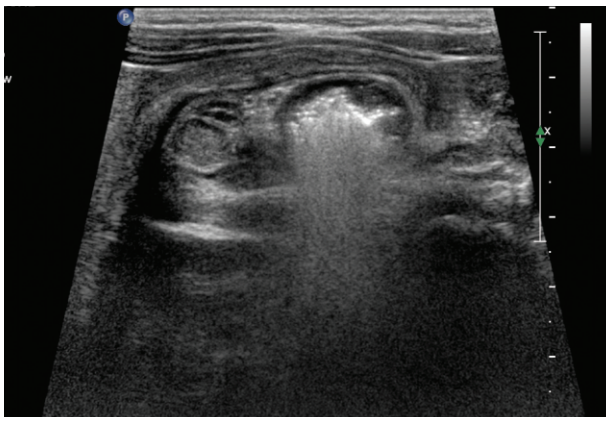

Fig. 3.

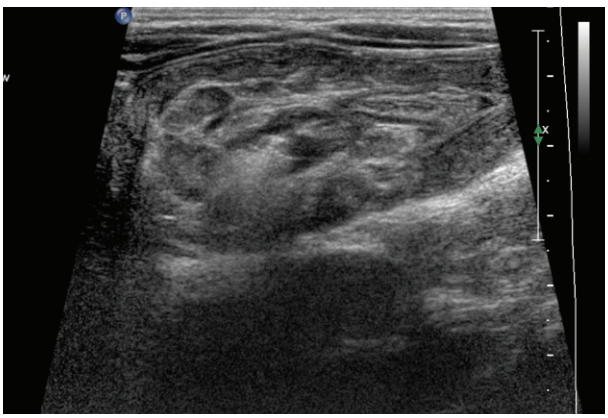

Fig. 4.

Fig. 2-4. Ultrasound images through the RUQ abdomen reveal a doughnut-shaped mass consisting of bowel wall, echogenic mesenteric fat, mesenteric lymph nodes, and a portion of the appendix. Note reverberating intraluminal air within intussusceptum (in Fig. 3).

Answer

(4) Ileocolic intussusceptions

Imaging Features

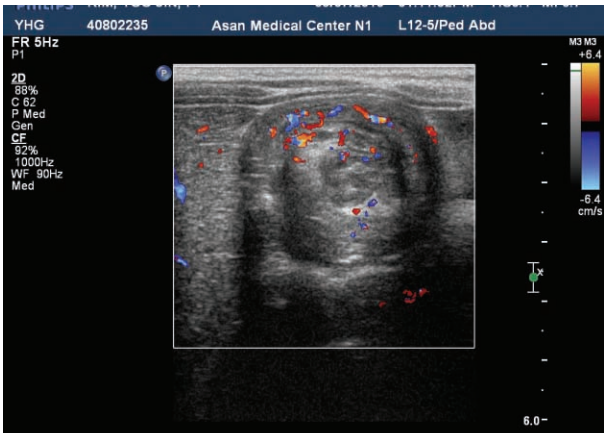

Fig. 5. Color Doppler study demonstrates increased flow along the outer bowel wall which can help to predict good reducibility of air reduction.

Reference

Applegate KE (2008) Chapter 141: Intussusception. In: Slovis TL (ed) Caffey's Pediatric Imaging, 11th edn. Mosby, Philadelphia

Case 10.

Musculoskeletal Case by Lee SH

30/M

Chief complaint: mild fever, back pain, left chest pain for 2 weeks

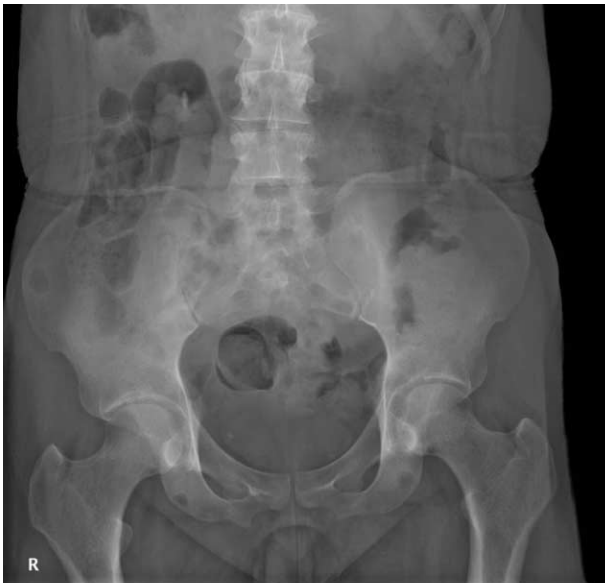

Fig. 1. Plain radiograph

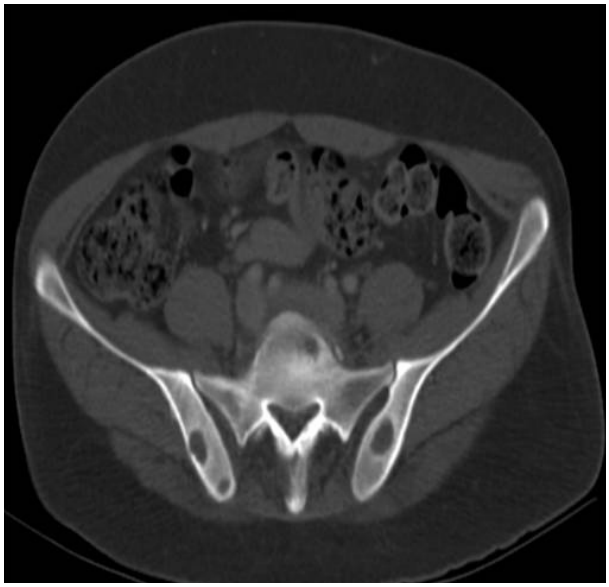

Fig. 2. CT 1

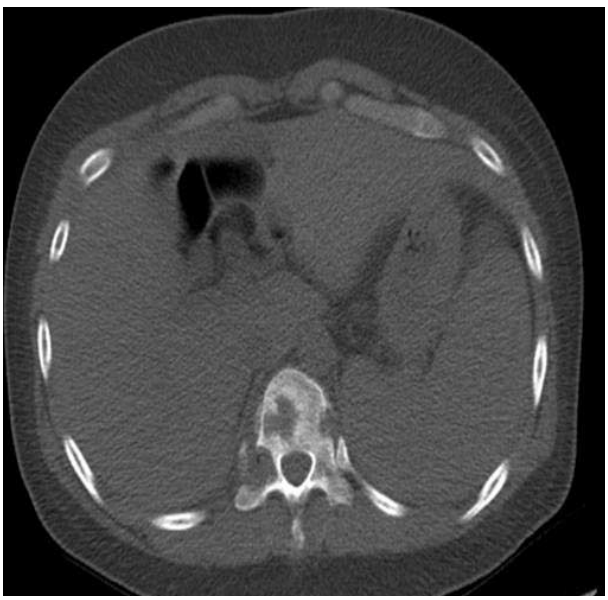

Fig. 3. CT 2

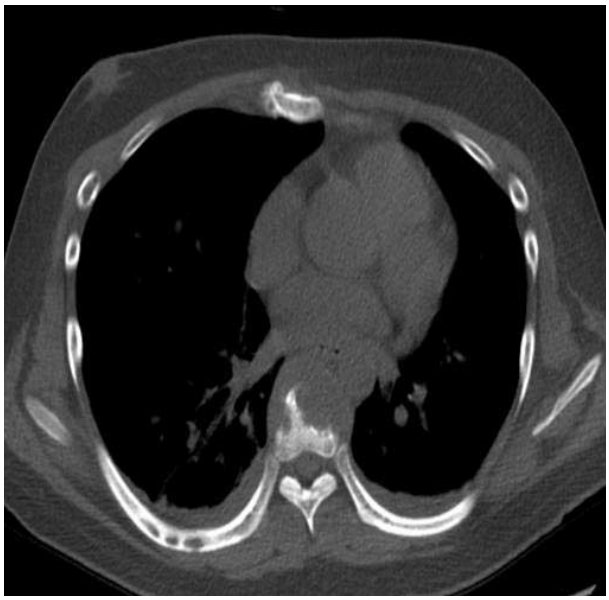

Fig. 4. CT 3

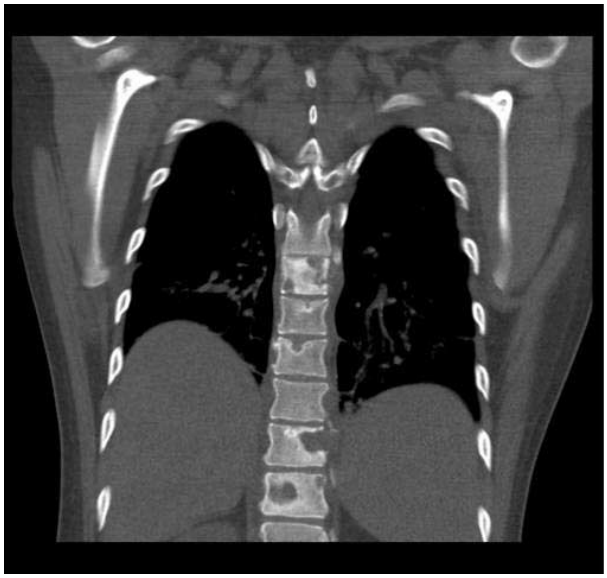

Fig. 5. Coronal reconstructed CT

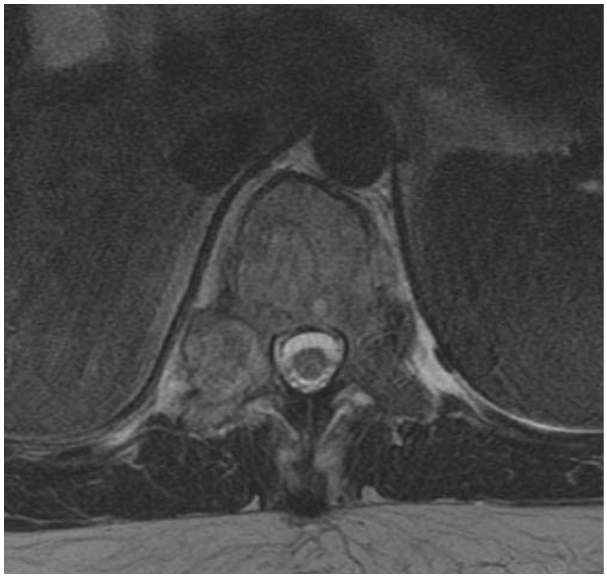

Fig. 6. MRI axial T2

Question

Which is the most likely diagnosis?

1) lymphoma
2) tuberculosis
3) multiple myeloma
4) leukemia
5) histiocytosis

Answer

2) Multifocal cystic musculoskeletal tuberculosis (Jungling Disease)

Imaging Features

Radiograph of pelvis shows multifocal osteolytic lesions in pubic bones, ilium and suspiciously sacrum. Abdomen-peivic CT shows multifocal osteolytic lesions with well defined margin. Internal density is low in osteolytic lesions. Chest CT also shows multifocal osteolytic lesions in the spine, ribs. Cortical destruction of the spinal lesions and mild sclerosis of involved thoracic spine are noted. Thoracic MRI shows multifocal osteolytic lesions with internal necrosis (not shown).

Brief Review

Multiple cystic tuberculous lesions in the skeleton used to be referred to by the term “osteitis tuberculosa multiplex cystoides”, which was coined by Jungling. Multifocal bone involvement has been reported in 5–10% of cases of skeletal tuberculosis. The lesions were extensive in that they were noted simultaneously not only in the axial skeleton, such as the cervical, thoracic, and lumbar spine, but also in the peripheral skeleton, especially in the symmetrical lesions of both arms. The prognosis

for this variety of tuberculosis is good. The lesions may resolve spontaneously, with low morbidity or mortality. Although most of the lesions in the reported case did not progress during the follow-up period, they were extensive, involving the spinal cord, and thus would have been disastrous, causing deformity and paraplegia.

Jungling disease has two types: child and adult type. In the child type, the lesions usually affect the peripheral skeleton, favoring the metaphyseal regions of tubular bones, whereas in the adult type, the disease mainly involves the axial skeleton. In the reported case, the lesions were extensive in that they were noted simultaneously not only in the axial skeleton, such as the cervical, thoracic, and lumbar spine, but also in the peripheral skeleton, especially in the symmetrical lesions of both arms.

The nonspecific features of the lesions caused the clinicians to be misled several times by the result of plain radiographies and bone scan, which often suggested the diagnosis of multiple myeloma.

References

1. Zhang H, Jin D. Multiple cystic tuberculous lesions in the skeleton (Jüngling disease): a case report. Spine (Phila Pa 1976). 2003 Apr 15;28(8):E155-7.
2. Morris BS, Varma R, Garg A, Awasthi M, Maheshwari M. Multifocal musculoskeletal tuberculosis in children: appearances on computed tomography. Skeletal Radiol. 2002 Jan;31(1):1-8.