Axillary Lymph Node Metastasis in Gallbladder Carcinoma with Incidentally Detected Coexistence of Aberrant Right Subclavian Artery with Left-Sided Superior Vena Cava

Abstract

The sequential development of port site recurrence, followed by recurrence in the axillary lymph node in gallbladder carcinoma is very infrequently reported in the literature. The representing 18F-fluorodeoxyglucose positron emission tomography-computed tomography image shows a metastatic right axillary lymph node in a case of gallbladder cancer developed following surgical removal of port site recurrence and six cycles of chemotherapy. The image also shows coexistence of two incidentally detected vascular anomalies, i.e., aberrant right subclavian artery and left-sided superior vena cava. Coexistence of both the vascular anomalies is rare among the general population and have their own clinical implications as described.

Keywords: *Aberrant right subclavian artery, axillary lymph node metastasis, gallbladder carcinoma, left-sided superior vena cava, port site recurrence*

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About the Case

A 56-year-old female was incidentally diagnosed with gallbladder carcinoma following laparoscopic cholecystectomy. She underwent radical cholecystectomy as the previous biopsy report suggested T2 tumor. After a short disease-free interval, she developed a port site recurrence. The disease was excised, and systemic chemotherapy was administered. After six cycles of capecitabine-based chemotherapy, a palpable right axillary node was detected and cytopathological evaluation confirmed metastatic adenocarcinoma. The patient was advised 18F-fluorodeoxyglucose positron emission tomography-computed tomography (PET-CT) scan of the whole body for restaging.

The PET-CT scan showed metabolically active solitary enlarged metastastic right axillary node. No other evidence of recurrence was seen. However, the PET-CT scan showed the absence of brachiocephalic trunk, well-formed aortic arch on the left side, origin of aberrant right subclavian artery (ARSA) as the last branch of the aortic arch, and its retroesophageal course to cross the midline. The scan also showed the absence of innominate vein and a vertical course of left-sided superior vena cava (LSVC) anterior, and to the left of the aortic arch and main pulmonary artery. It runs adjacent to the left atrium (LA) before turning medially and draining into coronary sinus (CS). The right-sided SVC is seen in its usual position [Figure 1].

Discussion

Gallbladder carcinoma usually spreads through lymphatic or transcelomic and hematogenous spread. The common sites of distant metastasis are the liver, abdominal lymph nodes, and lungs.[1] Port site recurrence of gallbladder carcinoma after laparoscopic cholecystectomy is well described in the literature. However, axillary lymph node is an unusual site for metastatic gallbladder carcinoma.[2] In the present case, axillary lymph node metastasis developed after excision of abdominal port site recurrence. The interval development of axillary lymph node metastasis after port site recurrence has been very infrequently reported in the previous literature.[3] In that context, our case enriches the literature to this unique sequelae of gallbladder

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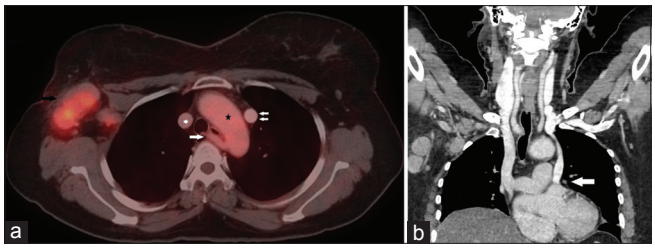

Figure 1: (a) Axial positron emission tomography-computed tomography image shows metabolically active solitary enlarged metastatic right axillary node (black single arrow), well-formed aortic arch on the left side (black asterisk), origin of aberrant right subclavian artery as the last branch of aortic arch and its retroesophageal course (white single arrow). It also shows the left-sided superior vena cava anterior and to the left of the aortic arch (white double arrow). The right-sided superior vena cava is seen in its usual position (white asterisk). (b) Left superior vena cava runs adjacent to the left atrium before turning medially and draining into coronary sinus (white arrow)

metastases. The etiology and consequences of this type of metastatic recurrence are unclear.

This case also shows incidental coexistence of two thoracic vascular anomalies of different embryological origin – ARSA and left-sided SVC. To the best of our knowledge, report of coexistence of ARSA and left-sided SVC is nonexisting in the literature.

Aberrant right subclavian artery

Incidence

ARSA is one of the most common intrathoracic major arterial anomalies. A systematic literature review showed the incidence of ARSA ranged from 0.4% to 2.0%. ARSA was first described by Hunauld in 1735. It is also known as arteria lusoria. The majority of ARSA passes posterior to the esophagus, and rarely, in front of the esophagus interposing between the trachea and esophagus or anterior to the trachea.[4]

Embryology

Aortic development begins during the 3rd week of gestation. The proximal part of the right subclavian artery originates from the remnant of a mostly regressed fourth aortic arch. The distal portion of the right subclavian artery originates from the seventh intersegmental artery, branch of dorsal aorta. ARSA results from regression of the right arch (between the right common carotid and right subclavian arteries) including the right ductus arteriosus. The distal right dorsal aorta (rather than the right fourth arch) becomes the proximal right subclavian artery, forming its retroesophageal portion.[5]

Clinical implication

Left aortic arch with ARSA is usually asymptomatic. Around 10% of patients with ARSA may complain dysphagia due to esophageal compression by the retroesophageal ARSA. The condition termed as dysphagia lusoria. This anomaly is usually isolated. Coarctation of the aorta, patent ductus arteriosus, and ventricular septal defect (VSD) may be associated infrequently. ARSA is seen more commonly in patients with chromosomal anomalies, particularly in trisomy 21, incidence varying between 19% and 36%.[6-8]

Left superior vena cava

Incidence

A persistent left-sided LSVC is the most common variant of systemic venous drainage. Incidence varies between 0.1% and 0.5% in the general population, but increases among those with established congenital heart disease.[9]

Embryology

Embryological right and left superior cardinal veins anastomosis with each other during the 8th week of gestation by the innominate (or brachiocephalic) vein. The left superior cardinal veins caudal to the innominate vein normally regress to form "ligament of Marshall." Failure of regression results persistent left SVC draining into CS.[10]

Anatomical consideration

Left-sided SVC most commonly coexists with normal right-sided SVC, as in our case. This may or may not be associated with absence of bridging innominate vein. Isolated left SVC may be encountered with dextrocardia or complete situs inversus. About 90% of cases left SVC drains into the CS; alternative sites include the inferior vena cava, hepatic vein, and LA. Left atrial drainage is almost always associated with other congenital abnormalities.

Clinical relevance

Left-sided SVC draining into the CS has no adverse hemodynamic effects. Increased risk of complication including arrhythmia and cardiac perforation have been reported in the literature with central venous cannulation or transvenous pacing through the left SVC.[11] Associations of the left SVC with ASD and VSDs, endocardial cushion defects, tetralogy of Fallot, CS ostial atresia, and cor atriatum have been reported. Left-sided SVC may cause paradoxical thromboembolism if drains into the LA.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Kumaran D, Anamalai M, Velu U, Nambirajan A, Julka PK. Carcinoma of gall bladder with distant metastasis to breast parenchyma. Report of a case and review of literature. J Egypt Natl Canc Inst 2016;28:263-6.
2. Johnson RC, Fligelstone LJ, Wheeler MH, Horgan K, Maughan TS. Laparoscopic cholecystectomy: Incidental carcinoma of the gallbladder with abdominal wall and axillary node metastasis. HPB Surg 1997;10:169-71.
3. Povoski SP, Ouellette JR, Chang WW, Jarnagin WR. Axillary lymph node metastasis following resection of abdominal wall laparoscopic port site recurrence of gallbladder cancer. J Hepatobiliary Pancreat Surg 2004;11:197-202.
4. Still GG, Li S, Wilson M, Wong L, Sammut P. Retrotracheal aberrant right subclavian artery: Congenital anomaly or postsurgical complication? Glob Pediatr Health 2018;5:1-5.
5. Hanneman K, Newman B, Chan F. Congenital variants and anomalies of the aortic arch. Radiographics 2017;37:32-51.
6. Wong L, Sammut P, Chaoui R, Heling KS, Sarioglu N, Schwabe M, *et al*. Aberrant right subclavian artery as a new cardiac sign in second-and third-trimester fetuses with down syndrome. Am J Obstet Gynecol 2005;192:257-63.
7. Borenstein M, Cavoretto P, Allan L, Huggon I, Nicolaides KH. Aberrant right subclavian artery at 11+0 to 13+6 weeks of gestation in chromosomally normal and abnormal fetuses. Ultrasound Obstet Gynecol 2008;31:20-4.
8. Greco E, Vigneswaran TV, Akolekar R, Zidere V, Simpson JM, Nicolaides KH. P14 Significance and associations of aberrant right subclavian artery in the fetal cardiology setting. Heart 2016;102:A7-8.
9. Edwards J, DuShane J. Thoracic venous anomalies. Arch Pathol 1950;49:514-37.
10. Goyal SK, Punnam SR, Verma G, Ruberg FL. Persistent left superior vena cava: A case report and review of literature. Cardiovasc Ultrasound 2008;6:50.
11. Irwin RB, Greaves M, Schmitt M. Left superior vena cava: Revisited. Eur Heart J Cardiovasc Imaging 2012;13:284-91.