



Case Report: Hepatomesenteric Trunk

Olgu Sunumu: Truncus Hepatomesentericus

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Özen KE, Büyükmumcu M, Özbek O¹, Aydın Kabakçı AD, Şahin G

Necmettin Erbakan University, Konya, Turkey, Meram Medical Faculty,
Department of Anatomy, ¹ Department of Radiology

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ABSTRACT

The coeliac trunk and the superior mesenteric artery are the two ventral branches which are arising from abdominal aorta and supply blood to wide area at the supracolic compartment. An abdominal vascular variation of a 65 years old patient who is diagnosed with acute aortic dissection was encountered. While evaluating the anatomic structures on the angiographies, we observed that the branching pattern of the coeliac trunk was not presenting trifurcation nature and the common hepatic artery was arising from the superior mesenteric artery. This report of branching variation which was presented with its anatomic aspects may help clinician while planning and performing some invasive surgical or radiological procedures.

Key Words: Coeliac trunk; hepatomesenteric trunk; splenogastric trunk; variation

ÖZET

Truncus coeliacusve arteria mesenterica superior abdominal aortun, suprakolik kompartımanda geniş bir alanı kanlandıran, iki ventral dalıdır. Akut aort diseksiyonu teşhisi alan 65 yaşındaki bir hastada bu abdominal damarlarda varyasyona rastlandı. Anjiyografide anatomik yapıların değerlendirilmesi esnasında truncus coeliacus'un trifurkasyon yapısını sergilemediği, arteria hepatica propria'nın arteria mesentericasuperior'dan çıktığı gözlemlendi. Truncus coeliacus'un anatomik yönü açısından, bu dallanma varyasyonu, klinisyenlere bazı girişimsel cerrahi veya radyolojik prosedürlerin planlanmasında ve uygulanmasında yardımcı olabilir.

Anahtar Kelimeler: Truncus coeliacus; truncus hepatomesentericus; truncus splenogastricus; varyasyon

Introduction

Vitelline arteries which are initially a couple of vessels supplying the yolk sac, unite and locate to the dorsal mesentery of gut during the pregnancy. In adults, these odd visceral vessels which are named as the coeliac trunk (CT), the superior mesenteric artery (SMA) and the inferior mesenteric artery (IMA), supply the foregut, midgut and hindgut, respectively(1). The CT and the SMA are the first two

anterior visceral branches of abdominal aorta (AA) and provide main arterial supply to the supracolic area. Forming a trifurcation structure is the most common branching pattern of the splenic artery, the common hepatic artery (CHA) and the left gastric artery (LGA)(2). This pattern was first described by Haller and known as "TripusHallerii"(3). The CT arises from AA at the level of T12 and the SMA originates

about 1 cm below the CT at the level of vertebral disc between T12 and L1(4). A considerable amount of literature has been published on variations of visceral branches of AA(2, 5-9). One of these variations was the root structure formed by the CHA and the SMA together (2). The branching design of CT and SMA has been classified by Adachi, et al. and Michels(10, 11). Basic principles of these classifications were defined a variety of arising combinations of three main branches of the CT and the SMA. According to the most of the studies in the literature presenting information about percentages, the classical branching pattern was seen by %86.5, the extraordinary bifurcation structures were observed by %13.3 and the cases without CT were detected by %0.2(12). The aim of this study was demonstrating one kind of CT variation.

Case Report

In April 2013, 65 years old male patient admitted to the emergency room of Necmettin Erbakan University Meram

Faculty of Medicine with the complaints of weakness at the right limbs. With the guidance of physical examination, spiral CT and CT angiography were preferred to evaluate abdominal and thoracic anatomic structures. Patient's surgical and medical treatment was planned by Department of Cardiovascular Surgery after diagnosed with DeBakey Type I acute aortic dissection. While evaluating the CT angiography, a rare vascular variation of branches of AA was encountered.

The AA's course was completely normal but first anterior visceral branch of AA did not present classic trifurcation structure of the CT (TripusHallerii). While the LGA and splenic artery – splenogastric trunk (SGT) – were arising from anterior surface of the AA as a root, the CHA and SMA – hepatomesenteric trunk (HMT) – were also originating from the anterior surface of the AA as the second visceral branch (Figure 1,2,3). This variation was classified in Adachi's Type V.

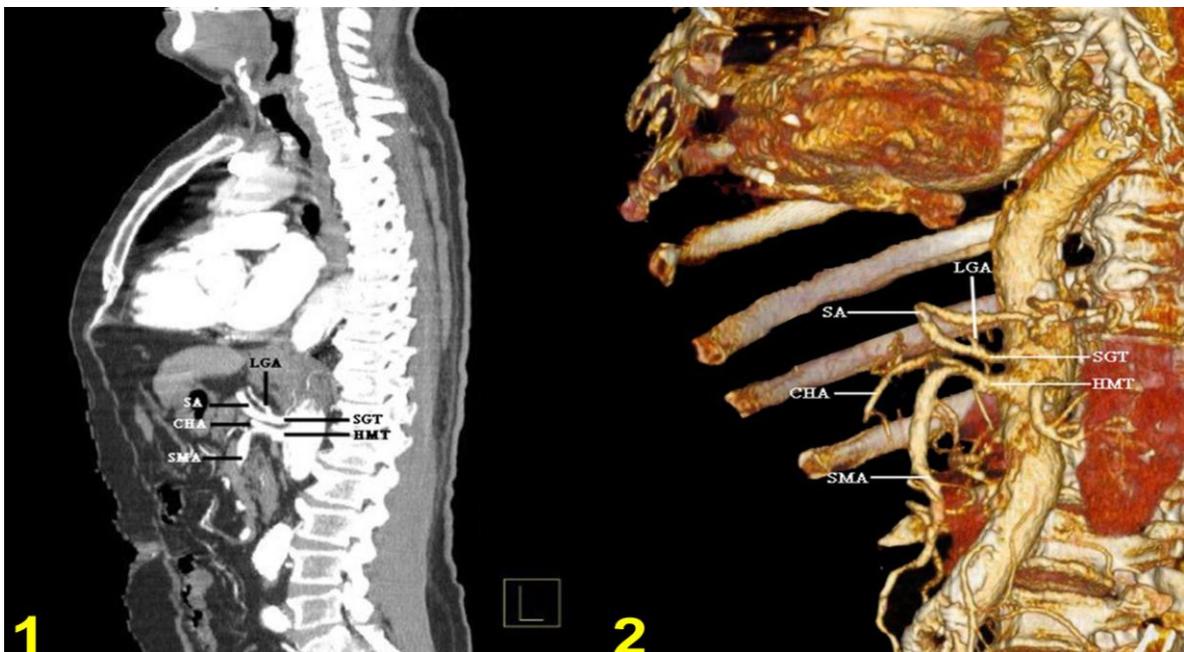


Figure 1: On multi-planar reconstructed image, the left gastric artery and the splenic artery, originated from the splenogastric trunk - the common hepatic artery and superior mesenteric artery, arising from the hepatomesenteric trunk (LGA: Left gastric artery, SA: Splenic artery, CHA: Common hepatic artery, SMA: Superior mesenteric artery, SGT: Splenogastric trunk, HMT: Hepatomesenteric trunk). **Figure 2:** On 3D volume-rendered image, the left gastric artery and the splenic artery, originated from the splenogastric trunk - the common hepatic artery and superior mesenteric artery, arising from the hepatomesenteric trunk (LGA: Left gastric artery, SA: Splenic artery, CHA: Common hepatic artery, SMA: Superior mesenteric artery, SGT: Splenogastric trunk, HMT: Hepatomesenteric trunk).

Discussion

The existence of the HMT, affecting the CT and the SMA, may be caused by some anomalies of the vitelline arteries during migration to the dorsal mesentery of the gut(12). This kind of variations may prepare ground for some pathologic situations or may be at the focus of these problems. The alterations during the tissue perfusion may occur or the vessels may be affected by the adjacent anatomic structures. Similar clinical presentations takes variations demonstrated here, from a theoretical anatomic background to a frame where the

variations become important during the clinician's diagnosis and treatment decisions. Carrying out abdominal surgery or interventional radiological processes, a %13,5 incidence of bifurcation structure shouldn't be underestimated against a %86.5 incidence of classical trifurcation of the CT(12). The diagnosis of the case, DeBakey Type I acute aortic dissection, is a vital medical situation which is characterized with the intimal tear at the ascending aorta and defined with a fake lumen coursing downwards along with aorta. For alike

conditions surgery is almost always mandatory and is based on a tough procedure that requiring the replacement of the aorta with stent after resection of the intimal tear(13). The cases of HMT does not usually present specific symptoms.

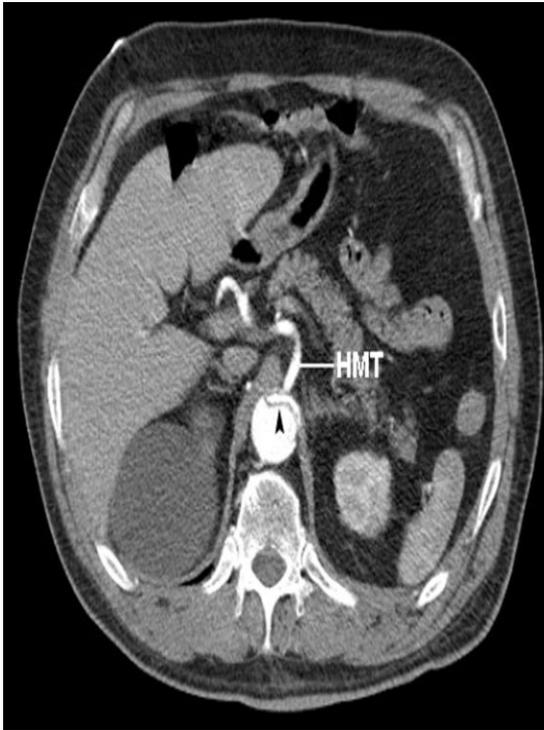


Figure 3: On multi-planar reconstructed image, the common hepatic artery and superior mesenteric artery, arising from the hepatomesenteric trunk – the intimal tear located in the descending aorta (black arrow) (HMT: Hepatomesenteric trunk).

These conditions are usually detected while performing surgery, autopsy or assessing some radiodiagnostic procedures. Some combinations of visceral branches of AA can accompany to the HMT. Separated branching of both LGA and splenic artery like HMT which is an independent root, may be an example of these combinations(14). Adachi's classification of variation for CT and SMA was shown at Table 1(2, 10).

Although the variations of HMT are known that they are not frequently the reason of medical problems for the most, it shouldn't be disregarded as a cofactor for some acute mesenteric ischemia cases owing to its effect on unbalanced or insufficient perfusion of some areas of the gut. In addition for the cases especially diagnosed with DeBakey Type I and Type III acute aortic dissections, these kind of variations should be taken into consideration for the some important decision making processes(15). Probability of HMT existence should be kept in mind like other CT and SMA variations, while performing invasive radiologic procedures or evaluating a variety of radiographic images.

Table 1: Classification of Adachi.

Type	Description
I	Classical branching of CT
	(LGA, CHA and SA arise together, SMA arises as a separate root)
II	Hepatosplenic trunk
	(CHA and SA arise together, LGA arises as a separate root)
III	Hepatosplenomesenteric trunk
	(CHA, SA, SMA arise together, LGA arises as a separate root)
IV	Coeliacomesenteric trunk
	(CHA, SA, SMA, LGA arise together)
V	SGT trunk and HMT
	(LGA and SA arise together, CHA and SMA arise together)
VI	SGT trunk
	(LGA and SA arise together, CHA arises from SMA and gives the Gastroduodenal artery (GDA))

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Corresponding:

Dr. Kemal Emre Özen

Department of Anatomy, Meram Medical Faculty, Necmettin Erbakan University, Konya, Turkey

email:

kemalemre9870@yahoo.com

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Conflict of interest

The authors declare no conflict of interest.