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Case Report

Testicular artery originating from the inferior mesenteric artery: an alert for interventionalists – A case report

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ABSTRACT

Testicular arteries usually arise from the abdominal aorta. During an elective embolization of superior rectal arteries for hemorrhoidal disease performed in a 52-year-old male patient, a previously unreported vascular variant was identified. On selective angiography, the inferior mesenteric artery split into left colic artery and left testicular artery, without any evidence of vascular supply to the hemorrhoidal cushions. Superior rectal arteries were embolized after catheterization of the median sacral artery. A thorough knowledge of vascular variations is essential for interventional radiologists in order to recognize them and avoid potential complications.

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Introduction

Embolization of hemorrhoidal arteries is an emerging indication for the selective angiographic study of the inferior mesenteric artery (IMA) [1]. It is performed by occluding the terminal branches of superior rectal arteries using coils as embolizing agents [2]. Herein, we report a case of a singular variation of the left testicular artery originating directly from IMA, observed angiographically during an elective embolization of hemorrhoidal arteries. Superior rectal arteries were

embolized after catheterization of the median sacral artery (MSA).

Case report

A 52-year-old male, in good health with unremarkable past medical history, suffered from stage II hemorrhoidal disease, mainly complaining of chronic hematochezia and anal discomfort. Being a medical doctor, he

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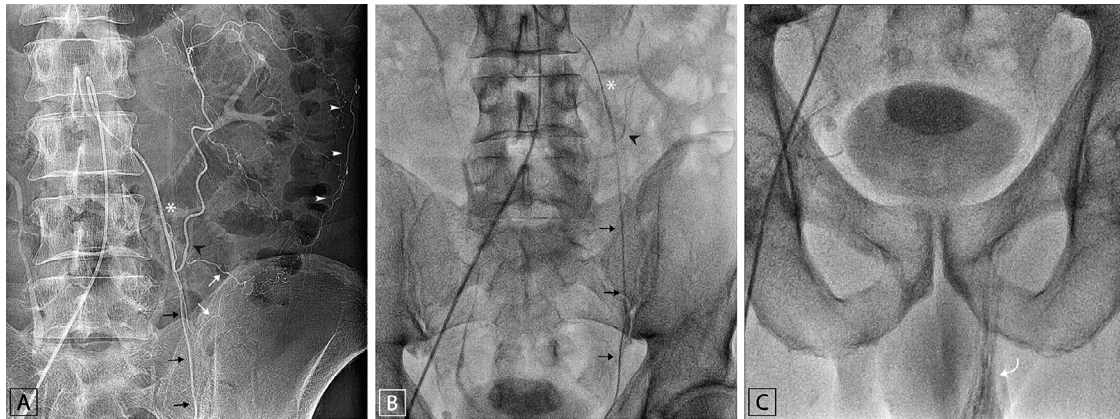


Fig. 1 – Selective catheterization of the IMA. (a.) Angiogram from IMA shows left colic artery (black arrowhead); sigmoid arteries (white arrows); the marginal artery of Drummond (white arrowheads); and the left testicular artery (black arrows), which arises directly from the IMA. The white asterisk indicates the microcatheter's distal marker. (b.) The left testicular artery (black arrows) descends toward the pelvis until entering in the inguinal canal. (c.) Venous return from the left pampiniform plexus (white curved arrow) on fluoroscopy.

voluntarily self-referred to our Interventional Radiology Unit to be scheduled for embolization of hemorrhoidal arteries in an outpatient setting. Under local anesthesia, a right transfemoral access was obtained with a 6 French sheath (Radiofocus, Terumo, Tokyo, Japan). The IMA was catheterized using a 5 French Simmons catheter (Glidecath, Terumo, Tokyo, Japan) and, on selective arteriography, distal to the origin of the left colic artery, opacification of a straight artery descending toward the groin was noted (Fig. 1a-1b). This was identified as the left testicular artery after fluoroscopic visualization of the arterial supply to the left testis and its venous drainage from pampiniform plexus (Fig. 1c). Concomitantly, the patient experienced a transient warm feeling at the level of the left testis, which lasted several minutes. Sequential selective catheterizations of lumbar arteries, renal arteries and superior mesenteric artery were performed without visualizing the hemorrhoidal cushions. Only the selective arteriography of the MSA showed finally superior rectal arteries. The predominant supply came from the left superior rectal artery (Fig. 2a), which was catheterized with a 2.6 Fr. microcatheter (Lantern, Penumbra, Alameda, CA) over a 0.014" microguidewire (Pilot 50, Abbott Medical, Santa Clara, CA) and embolized with a total of 45 cm soft platinum detachable coils (Ruby Penumbra, Alameda, CA). Postprocedural proximal arteriography demonstrated a stagnant flow within the MSA (Fig. 2b). Hemostasis at the access site was achieved with a closure device (Femoseal, Terumo, Tokyo, Japan). The procedure was well-tolerated and the patient was discharged eight hours later.

Discussion

Testicular arteries typically arise bilaterally from the abdominal aorta, inferior to the renal veins. Plenty of studies have been focused on their anatomic variants, which have been re-

cently summarized in a meta-analysis by Nallikuzhy et al [3]. However, to our knowledge, there are no angiographic reports regarding the origin of testicular arteries directly from IMA. Variations in their origin have been explained by an abnormal regression of the lateral mesonephric arteries in the fetus [4] and included: a high origin from the abdominal aorta, origin from other arteries (such as renal, suprarenal, lumbar or internal iliac artery) and multiple testicular arteries [5]. Kotian et al classified testicular arteries into four groups based on origin: type IV was referred to as testicular artery arising from the abdominal aorta at the same level of IMA [5]. Naito et al. in 2011, during an anatomic dissection, observed a rare case of left testicular artery arising from a middle mesenteric artery [6], while Chakravarthi, in a cadaveric study, identified a common trunk originating 2.5 cm above the aortic bifurcation which split into IMA, accessory renal artery and left testicular artery [7].

Nowadays, selective catheterization and subsequent embolization of IMA or its branches can be applied in a wide range of radiological and clinical indications, such as: intestinal colonic hemorrhage [8]; pelvic bleeding [9,10]; prior to or following endovascular aortic repair (EVAR) to prevent or treat type II endoleak [11] and in superior rectal arteries embolization, which is an emerging treatment for grade II-III hemorrhoidal disease [1]. In our patient, selective angiography from IMA surprisingly opacified the left testicular artery distal to the origin of the left colic artery. Clinically, the patient did not present any symptoms related to this vascular abnormality. Nevertheless, proximal embolization of IMA would have led to testicular ischemia and atrophy. On literature review, two cases of testicular infarction after a procedure of angioembolization have been reported: the first occurred during an embolization of a malignant left renal tumor with ethanol despite stop-flow infusion, due to an anomalous origin of the left testicular artery from the renal artery [12], the second, similarly, followed an embolization of renal angiomyolipoma with microparticles [13].

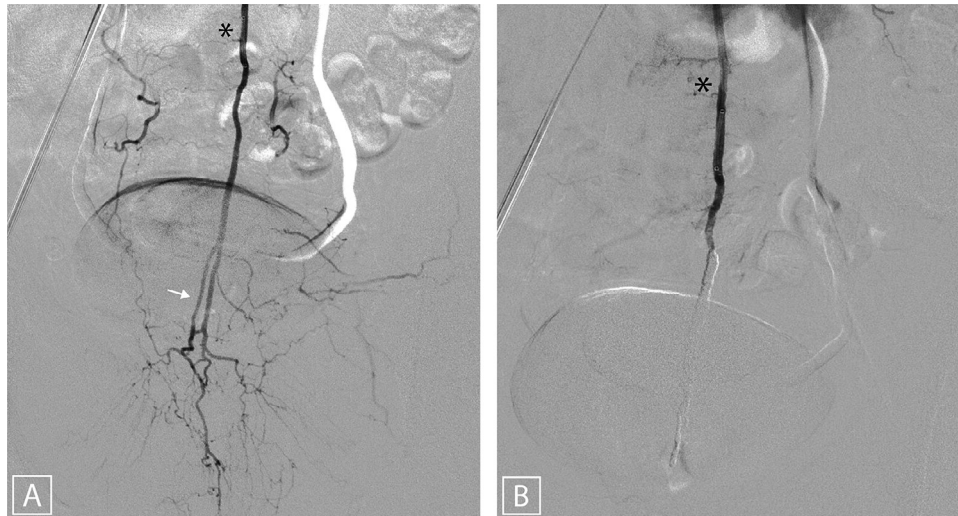


Fig. 2 – Digital subtraction angiography (DSA), in posteroanterior projection, of the MSA. (a.) Right and left superior rectal arteries (white arrow) originate from the MSA (black asterisk) and provide blood supply to the proximal rectum. (b.) Final angiographic control of the MSA (black asterisk) shows a proximal stagnant blood flow with a complete occlusion of the superior rectal arteries.

Of note, we embolized superior rectal arteries after selective arteriography of the MSA. The contribution of the MSA to the vascularization of the rectum, already described in the human anatomy treatise by Testut and Latarjet in 1877[14], has been documented in up to 15% of cases [15-17].

Knowledge of vascular anatomy and its variations is essential to prevent possible complications. The present case is a warning for interventionalists to be aware of this uncommon variant of the testicular artery.

Conclusions

Difficult anatomy could be among the worst enemies for interventional radiologists. We reported an extremely rare case of left testicular artery originating from the IMA.

Patient consent statement

For this type of study, formal consent is not required.

Informed consent was obtained from all individual participants included in the study. Consent for publication was obtained for every individual person's data included in the study.

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