

LETTERS TO THE EDITOR

WHEN BEAUTY HIDES A BEAST

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Case report

We present a 43-year old female patient, admitted to the intensive care unit, recovering from a Bentall procedure because of a supra-coronary aneurysm and unicuspid aortic valve. Few hours following surgery, a marked lactic acidosis, hypoxemia and increased central venous pressure developed. Pulmonary angio-CT was performed to exclude pulmonary embolism. Because of severe peripheral vasoconstriction, iodine contrast could only be administered through a narrow lumen central venous catheter, which limited the maximum flow rate to 1.5 ml/s. Images were performed with triggering in the pulmonary trunk. Review of the images showed no evidence for pulmonary embolism. Despite the low flow rate, a clear enhancement of the pulmonary artery was observed (up to 460 HU) (Fig. 1). Such an enhancement of the pulmonary artery is normally only achieved when injecting contrast at a flow rate of 4-5 ml/s. These perfect images, obtained at a low contrast flow rate in fact indicate severely impaired right ventricular function.

Discussion

The degree of CT contrast enhancement is directly related to the amount of iodine within the vessel and the level of x-ray energy (ie, tube voltage) (1). Contrast enhancement increases proportionally with iodine concentration. The level of enhancement is determined by the number of iodine molecules given to the patient in a second, indicated by the flow rate rather than the iodine concentration of contrast material (1). When the total amount of contrast medium is fixed, a faster injection increases the delivery rate but shortens the in-

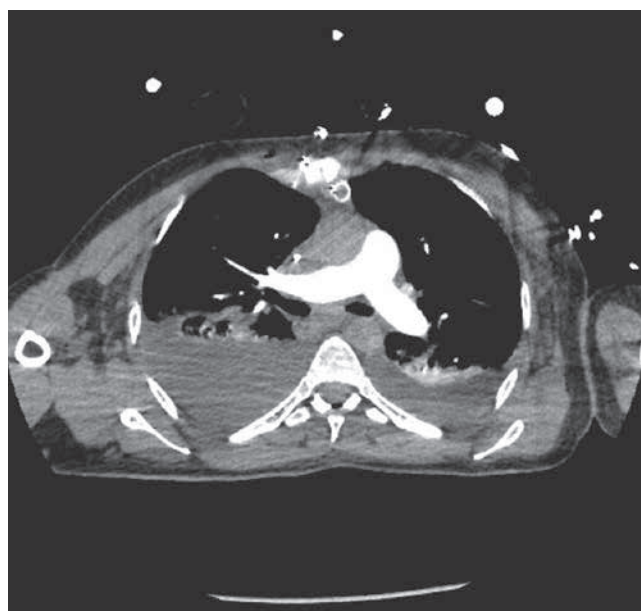


Fig. 1. — Clear enhancement of the pulmonary artery is seen up to 460 HU, despite contrast flow rate of merely 1.5 ml/s, note bilateral pleural effusions with compression atelectasis.

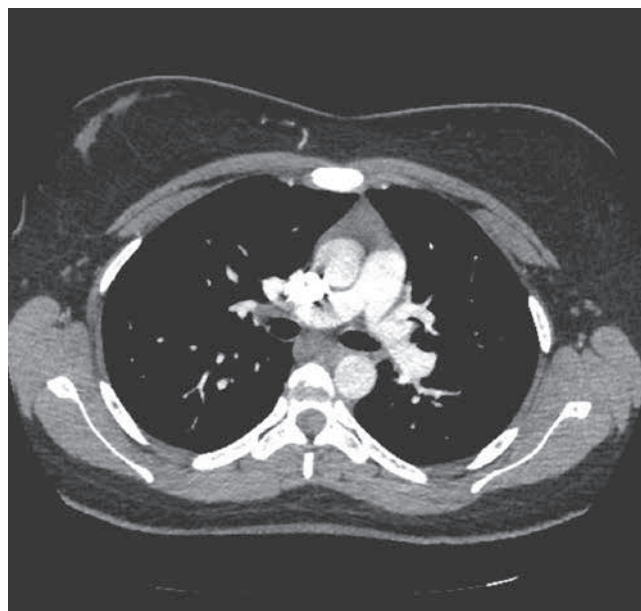


Fig. 2. — Example of a modest pulmonary artery enhancement, injection flow rate 2 ml/s due to small caliber catheter placed in the left hand.

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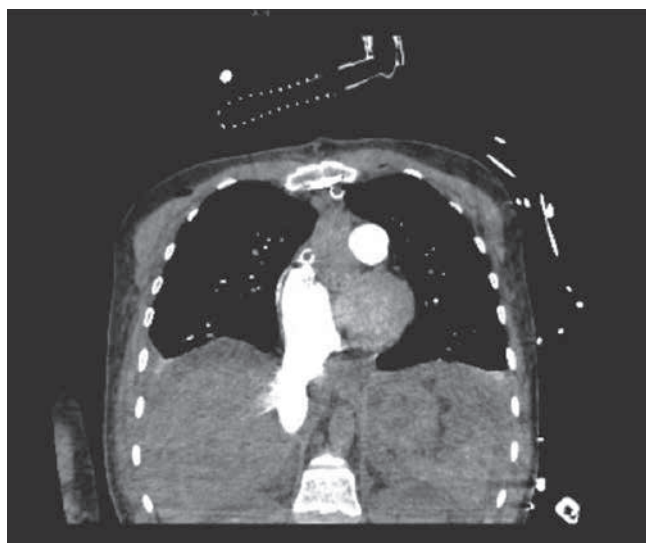


Fig. 3. — Para-coronal reformat image demonstrating clear reflux of contrast in the inferior vena cava and hepatic veins.

jection duration and the time to peak enhancement.

Low injection rates of 1.5–2.0 mL/sec are typically used with central venous catheters, peripherally inserted central catheters, and small-caliber catheters placed in forearm or hand veins because of safety concerns (2). These low injection rates, however, lead to only a modest enhancement of the pulmonary arteries (Fig. 2).

When the pulmonary circulation is impaired, contrast medium is better visualized on CT pulmonary angiography, since decreased cardiac

output delays and increases peak arterial enhancement magnitude as a result of decreased mixing and dilution of the contrast medium (3).

Other signs of severe right ventricular failure include contrast reflux into the inferior vena cava or hepatic veins (Fig. 3) and dilated right ventricle, atrium and systemic veins (4).

Because of the unusual enhancement of the pulmonary artery, in association with reflux of contrast in the IVC and dilated right atrium, diagnosis of right heart failure was suggested and confirmed by emer-

gency trans-esophageal cardiac ultrasound. Patient was re-operated on: extra-corporal membrane oxygenation was implanted, and a venous bypass graft was placed over the right coronary artery.

Conclusion

Unusually good enhancement of the pulmonary artery can be seen in cases of severe right ventricular failure. Knowledge of the contrast injection flow rates is essential for correct interpretation of CT pulmonary angiography.

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EPIDIDYMAL ADRENAL REST TISSUE IN A PATIENT WITH CONGENITAL ADRENAL HYPERPLASIA

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11-beta-hydroxylase (CYP11B1) deficiency is the second most common cause of congenital adrenal hyperplasia (CAH). This rare autosomal recessive enzymatic deficiency results in a decreased adrenal cor-

tisol/corticosterone secretion and hence an increase in corticotropin (ACTH) release from the pituitary and overstimulation of adrenal tissue. Symptoms may become clinically apparent in neonates or during

early adulthood. Male patients with CAH often present with (hyperplastic) testicular adrenal rest tissue (TART) – typically located nearby the mediastinum testis - which may ultimately lead to obstructive infertility in case of poor disease control (1). Treatment of CAH consists of glucocorticoid replacement therapy. It is important to recognize these benign testicular lesions on ultrasound in order to avoid unnecessary diagnostic surgery. We present a case of bilateral epididymal adrenal rest tissue

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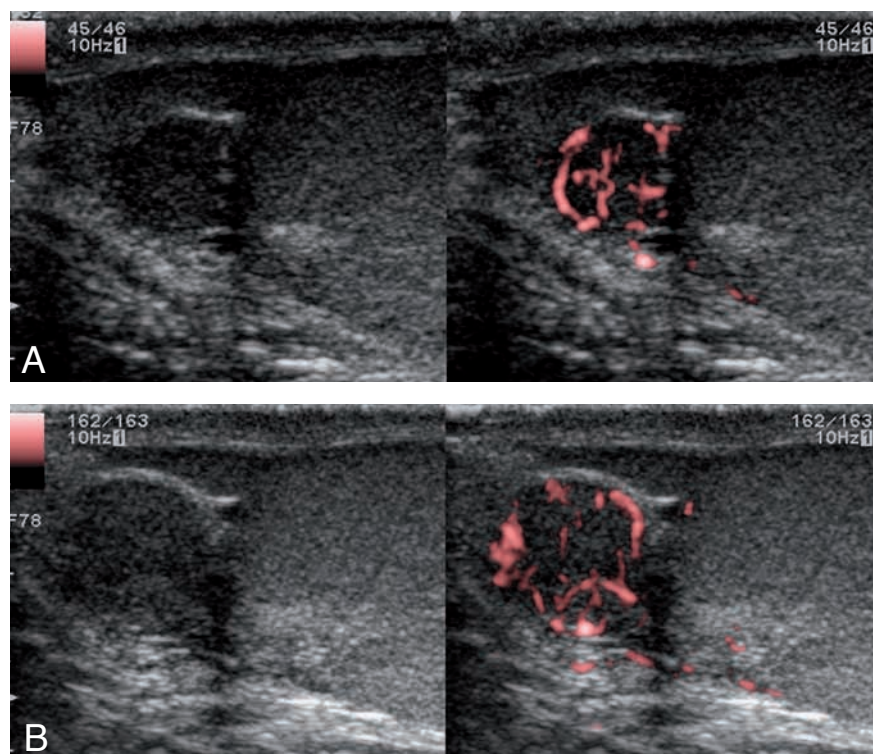


Fig. 1. — Sonographic gray-scale and corresponding color Doppler images of the upper pole of the left testis and epididymal head, showing a well vascularized nodular lesion in the epididymis (A: initial presentation in 2010, B: follow-up exam in 2013).

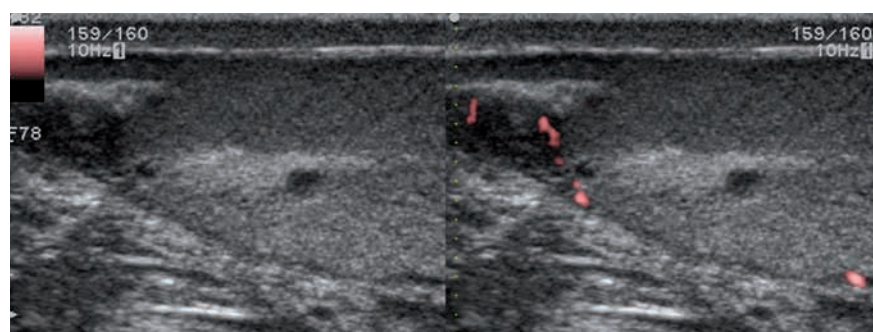


Fig. 2. — Sonographic gray-scale and corresponding color Doppler images of the upper pole of the right testis and epididymal head, showing a well vascularized nodular lesion in the epididymis and two small nodules nearby the mediastinum testis (follow-up exam in 2013).

in a CAH patient. To our knowledge, this location of adrenal rest tissue has not been previously reported in CAH patients.

Case report

A 20-year old patient with known CYP11B1 deficiency and normal physical findings was referred to our medical imaging department for a screening ultrasound examination of the scrotum. Ultrasound revealed a

bilateral, hypoechoic and well-vascularized mass in the epididymal head, measuring 12 and 8 mm (Fig. 1A). The tentative diagnosis of ectopic adrenal rest tissue was made, based on the congenital background and the similarity of the lesions with those typically seen in the testes of male CAH patients. Follow-up ultrasound three years later showed a moderate volume increase of both epididymal masses (18 mm and 13 mm, Fig. 1B) and the presence of two new small

nodular lesions (2 and 3 mm) with equal sonographic characteristics nearby the mediastinum of the right testis (Fig. 2). Hormonal tests in males with CAH include the androstenedione/testosterone ratio, which reflects the androgen excess produced by adrenal tissue. An AD/T ratio > 0.5 indicates a significant adrenal androgen excess (4). At the time of the second ultrasound, the AD/T ratio in our patient was > 1 , indicating insufficient suppression of adrenal androgen secretion and supporting the imaging diagnosis of progressive hyperplastic adrenal rest tissue.

Discussion

Ectopic adrenal tissue may occur throughout the body, but is mainly found close to the adrenal glands, around the celiac axis and in the genital regions (the broad ligaments and ovaries in females and the testicular and paratesticular region in males). Based on autopsy studies of non-CAH neonates, the estimated incidence of testicular and paratesticular microscopic adrenal tissue rests in childhood ranges between 3 and 15% (2, 3). In one study of 89 infants, adrenal rests were found in 4 children, all of them located in the epididymis (3). Therefore, in CAH patients presenting with bilateral epididymal lesions – with or without accompanying testicular lesions – ectopic adrenal rest tissue should be included in the differential diagnosis.

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OSTEOID OSTEOMA RADIOFREQUENCY ABLATION

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Dear Sir,

We read the article titled as "osteoid osteoma" with great interest (1). Osteoid osteoma is a small benign neoplasm that is most commonly seen in long bones (1, 2, 3). It is a painful lesion that responds dramatically to nonsteroidal anti-inflammatory drugs (NSAIDs). Authors mentioned the characteristic clinical symptoms, imaging findings and some other important issues related with osteoid osteoma.

An important issue for radiologists is the treatment of osteoid osteoma. The traditional treatment of this neoplasm is surgical resection

as applied to the case in the paper (1). However surgical resection may develop serious complications as reported in the literature such as fracture after tumor resection (3). Radiofrequency (RF) ablation has been suggested as an alternative method for the treatment of osteoid osteoma with low rates of complication and some additional advantages like a better cosmetic outcome. In the literature reports, this benign neoplasm is ablated with thermal energy by a probe (2, 3).

In our institute we also treat osteoid osteoma cases with RF ablation. No serious complications of this method have been reported in our

experience, so far. Additionally patient recovery time is shorter than that of the surgical treatment. High success rates and healing of pain reported by the use of RF ablation (2, 3, 4). Therefore, alternative to surgical resection, RF ablation may be used safely and successfully.

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