Case Report

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Un-diagnosed coarctation of the aorta in a 27-year-old adult with a rare presentation: a rare case report

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Introduction and importance: Coarctation of the aorta (COA) is a rare form of congenital heart disease that is typically diagnosed in children. COA is known to present with hypertension, weak or absent femoral pulses, heart failure in older patients, but the presentation of COA as calf atrophy is extremely rare. This article reports the successful surgical repair of a 27-year-old adult with undiagnosed COA.

Case presentation: A 27-year-old-male has presented with calf atrophy, which was diagnosed as COA transthoracic echocardiography and computed tomography angiography indicate COA, which is treated with successful surgical repair.

Clinical discussion: COA is typically diagnosed in children with a rare incidence in adults. Calf atrophy is an extremely rare presentation and uncommon. He has calf atrophy, which led to the diagnosis of COA in 27 years. The presentation in this medium-aged population with this rare manifestation gives our case significance to be one of the unique reported cases.

Conclusion: COA is uncommon to be found in adults and the presentation with calf atrophy is even rare. The authors revealed that COA can be found in adults and with an unexpected manifestation and highlights the significance of early detection, and timely referral to a specialist can enable proper management, which includes surgical correction.

Keywords: adults, calf atrophy, case report, coarctation of the aorta, congenital heart disease

Introduction

Coarctation of aorta (COA) is a rare congenital heart disease, with an incidence of 1 per 2500 live births, and accounts for 5–8% of cases of congenital heart disease[1,2]. COA is usually diagnosed in infancy and childhood age, but some patients may remain asymptomatic until adulthood[1,3,4]. The most common presentation of COA in adults is hypertension weak or absent femoral pulses, and heart failure. Unless significant hypertension exists, adult patients are usually asymptomatic. Without correction, 90% of the patients die before the age of 50 of vascular complications[2,5]. Aortic coarctation presenting during adult life most presents because of missed cases of congenital coarctation or re-coarctation, following previous trans-catheter or surgical therapy[2]. Surgical correction is one of the best therapeutic methods that provide better control of hypertension, associated with medications postintervention[3,6].

HIGHLIGHTS

- Coarctation of the aorta (COA) is a rare form of congenital heart disease.
- COA that is typically diagnosed in the children, and not common to be found in adults.
- COA is known to present with hypertension, weak or absent femoral pulses and heart failure in older patients, but the presentation as calves atrophy is extremely rare.
- COA is diagnosed through the use of echocardiography, although in some cases, computed tomography or MRI may be necessary.
- Detailed physical examination for all patients suspected of having COA to early detection, and management, which include surgical correction.

Herein, we present a rare case of undiagnosed COA in a 27-year-old patient, specifically this rare presentation, who underwent successful surgical repair upon diagnosis. This work has been reported in line with the SCARE 2020 criteria[7].

Case presentation

A 27-year-old man who has been doing bodybuilding for 5 years has been referred to our hospital after he was diagnosed with an aortic dissection. The patient's story began a month before the diagnosis when he reviewed several nutritionists and body-building specialists for his complaint, which is the growth of his entire body muscles, except those in the legs, which remain atrophied despite focused exercises and good nutrition (Fig. 1). The patient does not have any medication history, similar family history, or hereditary or genetic diseases.

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Figure 1. A and B are showing the growth of the body muscles, except the muscles of the legs (calf atrophy).

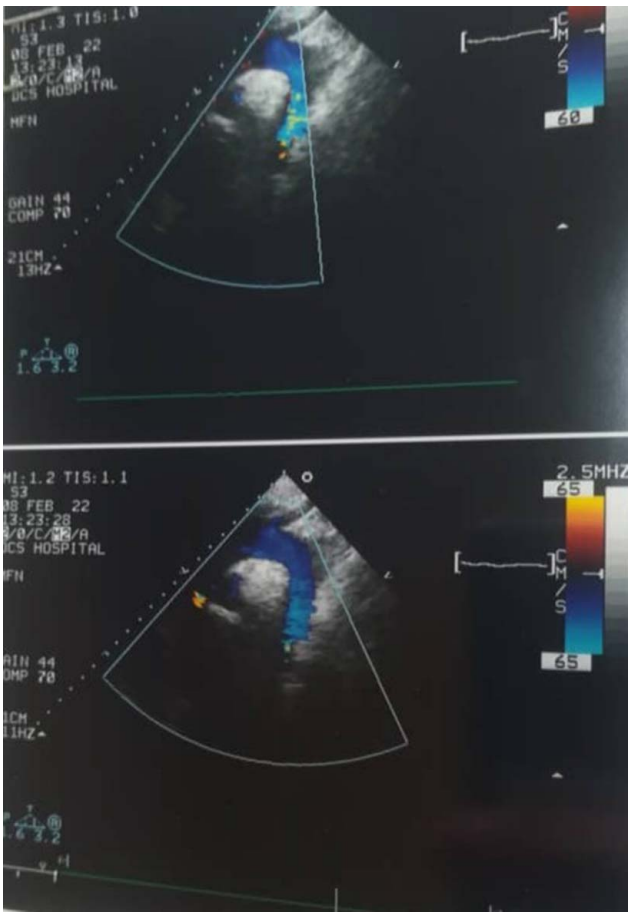

Figure 2. Showing transthoracic electrocardiography.

Two days before the diagnosis, the patient visited a doctor, and during a careful examination of the lower extremities, the femoral pulse was present but very weak, and the systemic pressure was 220/100, so that he was referred directly to the hospital.

After admission to the hospital, his vital signs revealed a temperature of 36.7°C, blood pressure of 160/90, pulse of 96 beats per minute, respiratory rate of 20 breaths per minute, and pulse oximetry of 96% on room air. A vascular exam revealed the femoral pulse was very weak and slightly weaker than the radial pulse. There was a grade 2/6 systolic murmur over the left sternal border without radiation. There was no significant lower limb edema. The remainder of the examination was within normal limits.

Transthoracic echocardiography (TTE), was performed and revealed cardiomegaly, moderate pulmonary pension, decreased left ventricular systolic function, and an ejection fraction (EF) of 64%, no vegetation, intraluminal masses, thrombi, or pericardial fluid were noted (Fig. 2).

An ECG displayed normal sinus rhythm with left ventricular hypertrophy. Laboratory testing showed unremarkable complete blood cell count and comprehensive metabolic panel.

A chest radiograph revealed vascular redistribution in keeping without pulmonary edema, and an ECG showed signs of left ventricle hypertrophy (Fig. 3). A computed tomography angiography was performed and confirmed the diagnosis of COA (Fig. 4).

Then, the patient underwent the surgery. After the incision of the chest wall, opening of the parietal pleura, and isolation of several collateral arteries, the area of stenosis has been expanded with a patch of Dacron (Fig. 5). This operation was performed by a cardiac surgeon with 10 years of experience in this specialty At the University Cardiac Surgery Center in Damascus. The patient

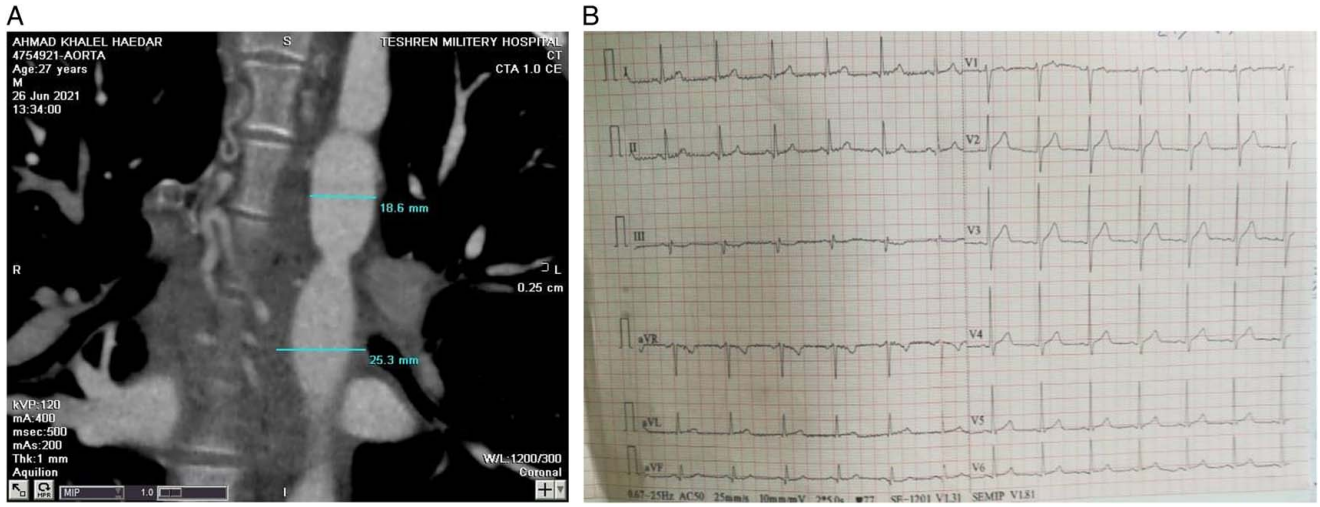

Figure 3. A: Computed tomography angiography showing the coarctation of aorta; B: Electrocardiogram showed sign of left ventricle hypertrophy.

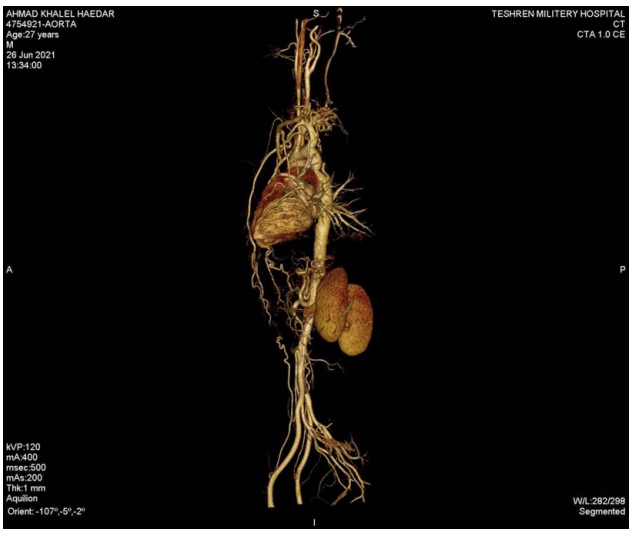

Figure 4. Computed tomography angiography showing the coarctation of aorta.

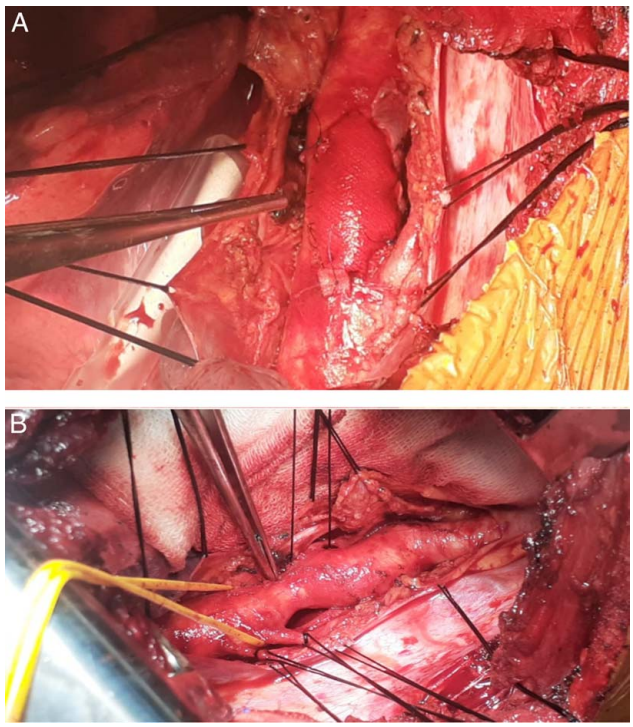

Figure 5. A: Intraoperative view of coarctation of aorta. (A) presurgical repair. (B) postsurgical repair.

was cooperative since the surgery was decided, and was informed of all procedures and complications.

After the surgery, he committed to drug treatment and followed up with his doctor until discharge from the hospital. The patient was monitored after surgery for 7 days in the hospital and was discharged after his condition stabilized and blood pressure returned to normal values on chlorothiazide. The patient returned to the hospital after a month for checkup and his blood pressure was under control.

Discussion

COA is a rare congenital disease. Although the majority of cases of congenital heart disease are typically detected in childhood period, as indicated by the literature, COA may also present in other age groups. Our case involved a diagnosis of congenital heart disease during adulthood period[1–4].

Though most cases involving COA are identified in children, undiagnosed COA adults may remain asymptomatic until the diagnosis and treatment[1,2,4].

In adults, the diagnosis of COA is based on medical history, physical examination, and imaging studies[8]. Traditionally, adults with coarctation are asymptomatic until an insidious injury occurs and will typically present with acute heart failure, spinal complications, hypertensive crisis, or aortic complications[3–5,9].

However, in our case, the patient was asymptotic, and he just complained of his calf atrophy, which is a rare manifestation of this condition. However, after a detailed examination, the clinicians found the remainder presentation of the COA.

When confirming a suspected COA, all patients should have a chest radiograph to assess for rib notching and potential cardiomegaly. Echocardiography is essential for evaluation of the structure and function of the left ventricle. CT or MRI is now used to create three-dimensional images and to define and assess collateral blood flow. Cardiac catheterization was once frequently used for the diagnosis but is now reserved for therapeutic interventions[5,8,9].

Management of previously undiagnosed COA in adults varies based primarily on the stability of the patient and the severity of the lesion. For treatment, at present, there are several surgical techniques[10,11], and balloon angioplasty is often the preferred intervention for coarctation[6,12]. On the other hand, some studies by showed that stent patients had few complications compared with surgery patients[10]. In our patient, we take some considerations of the patient such as anatomy and age and the safety of treatment, so we choose surgery procedure to relieve the coarctation[6,8,13].

In this case, we suggest a detailed physical examination for all patients with hypertension with or without any unexplained presentation. The careful blood pressure measurement should include both the upper and lower extremities. We also suggest that COA be included in the differential diagnosis of hypertension.

Conclusion

Because of the rare occurrence of COA, and that the diagnosis of COA is not common or routinely to be found in the medium-aged population, we should be suspected in all unexplained symptoms with hypertension. So better BP control, earlier repair, and transcatheter intervention may result in a good outcome in that case.

Ethical approval

Ethics approval was not required for this case report at our institution, Faculty of Medicine at Damascus University, Damascus, Syria.

Consent for publication

Written informed consent was obtained from the patient's parents for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

E.S.: wrote the manuscript; E.S., M.S., M.A.K.A., N.W.: critically revised the manuscript. All authors read and approved the final manuscript.

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The authors declare that they have no competing interests.

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