A simple case of hypertension?

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Introduction

HYPERTENSION is frequently an asymptomatic condition that is most commonly diagnosed incidentally by general practitioners (GPs), or when complications occur. In the majority of cases the cause is unknown ('essential hypertension'), but it can be secondary to renal, endocrine, and other (rare) conditions. This case report relates an unusual case of hypertension that was discovered in a young patient at a routine appointment with her GP.

Case history

A nineteen-year-old female performing arts and dance student attended her local general practice surgery for a repeat prescription for the oral contraceptive pill. She was a smoker and had originally been started on the oral contraceptive pill in the previous year by her college GP. Her local GP carried out a routine examination and found her blood pressure to be raised at 150/100 mmHg. He repeated the blood pressure measurements on three consecutive visits and found it to be: 150/95 mmHg, 150/100 mmHg, and 160/105 mmHg, respectively. The patient was advised to stop smoking and referred for a specialist cardiological review.

At the cardiology consultation she gave no history of any significant symptoms and was otherwise fit and well. On examination, she was found to be in sinus rhythm, and the blood pressure measured 160/110 mmHg. There was a clearly audible ejection systolic murmur, which was graded 3/6 and was loudest over the right second intercostal space, with a mid-systolic ejection click. There was an audible bruit heard at the back overlying the left scapula. Both the femoral pulses were felt to be weak, and there was a radio-femoral delay.

The twelve-lead electrocardiograph (ECG) showed normal sinus rhythm and a normal axis. A chest radiograph showed a small aortic knuckle and inferior notching of the fourth, fifth, and sixth ribs (Figure 1). Twenty-four-hour ambulatory blood pressure monitoring, performed prior to the appointment, confirmed pressures greater than 147/85 mmHg throughout the 24 hours of the monitoring. Echocardiography showed a bicuspid aortic valve. There was no evidence of left ventricular hypertrophy.

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Magnetic resonance imaging (MRI) of the thoracic aorta confirmed a tight localised coarctation of the descending thoracic aorta distal to the origin of the left subclavian artery, with mild post-stenotic dilatation and a normal ascending aorta (Figure 2).

The patient was referred to a specialist tertiary centre for primary dilatation and stenting of the coarctation, and underwent a successful procedure with an excellent end result. She remains well, and her blood pressure has become normal, at 120/68 mmHg.

Discussion

Although predominantly an asymptomatic condition, the early diagnosis and effective management of hypertension is important, as it is a major risk factor in the development of cerebrovascular accidents, blindness, myocardial infarction, and cardiac and renal failure.

In general practice, the use of oral contraception is a relatively frequent reason for measuring blood pressure, but it may cloud one's judgment regarding the aetiology of hypertension if this is detected. Coarctation of the aorta is rare and constitutes less than one per cent of the secondary causes of adult hypertension.[1] Interestingly, no data could be found in the literature regarding the prevalence of coarctation of the aorta in young adults such as the patient in this case report. This in itself is significant when considering the likelihood of making the diagnosis based on clinical findings.

The 'rare' causes of secondary hypertension are, by defi-

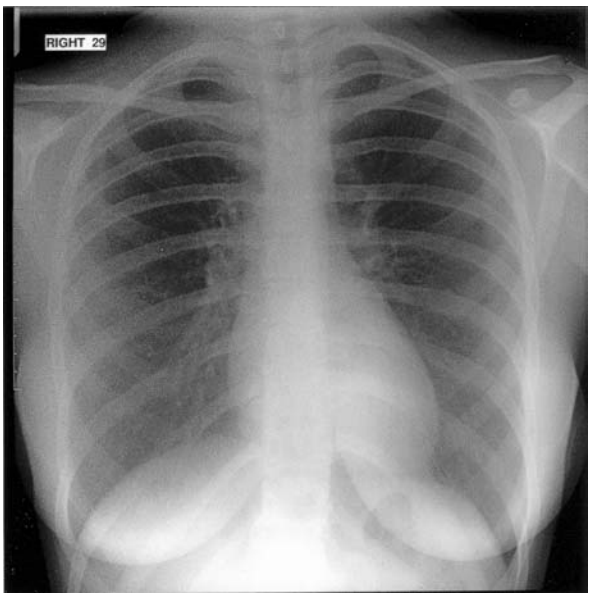

Figure 1. Chest radiograph in the antero-posterior projection, demonstrating a small aortic knuckle and inferior rib notching (fourth, fifth and sixth ribs).

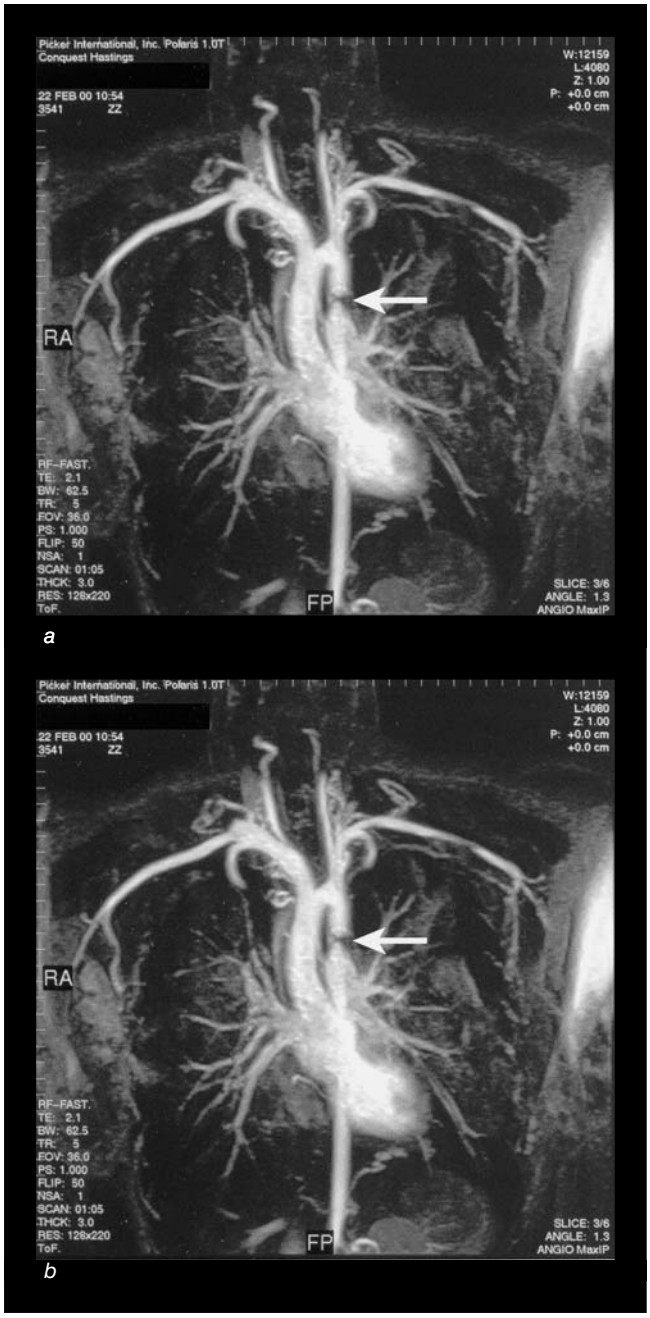

Figure 2. MRI of the thoracic aorta, demonstrating coarctation of the descending thoracic aorta (see arrow). [a]Antero-posterior projection. [b]Lateral projection.

nition, rare. Thus, further investigations of secondary hypertension can only be guided by history taking and physical examination. Despite its rarity, aortic coarctation should probably at least be considered when first diagnosing hypertension in young patients of less than 40 years of age, particularly in the presence of a systolic murmur.

The clinical sign of radio-femoral delay, although frequently recounted in all medical textbooks, may be more elusive than the presence of an audible murmur. However, the finding of a combination of both signs in a young hypertensive patient reportedly correlates well with the presence of aortic coarctation, although there are no definitive statistical figures for this relationship in the literature.[2,3] The patient in this case study did indeed have a systolic murmur, radio-femoral delay, and the other classic features of rib notching and a small aortic knuckle on the chest radiograph (Figure 1).

The definitive treatment for hypertension secondary to coarctation of the aorta is surgical correction, and early detection and repair considerably improves the prognosis and reduces the risk of subsequent complications.[4,5] However, surgically repaired coarctation is far from being a benign condition, with a 30% risk of recurrence, and a substantially higher risk of hypertension later in life.[6]

This case study looks at a patient in whom coarctation of the aorta, a rare secondary cause of hypertension, was detected on routine clinical examination. Although there are no data as to the specificity and sensitivity (and hence the 'yield') of these signs, the presence of a combination of systolic murmur and absent, diminished or delayed femoral pulses, should alert one to the possibility of this diagnosis in younger patients.

This case highlights an important and frequent dilemma in 'real life' clinical practice. When considering rare causes of common conditions, it can be difficult to achieve the right balance in targeting resources appropriately, in order not to miss or to overdiagnose such rare conditions in the community.

References

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