A rare cause of secondary hypertension: median arcuate ligament compression of the renal artery diagnosed by CT angiography

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DESCRIPTION

A 44-year-old woman with a recent onset of hypertension was referred for renal Doppler ultrasonographic evaluation for secondary hypertension. There were no diseases in the medical history excluding hypertension. On physical examination, arterial blood pressure was 145/90 mm Hg. Other physical examination and laboratory findings were not significant. Doppler ultrasonographic examination showed increased peak systolic velocity (240 cm/s) and luminal narrowing in the proximal

portion of the right renal artery. After that, contrast-enhanced multi-slice CT was performed. The arteries were evaluated with postprocessed images obtained by multiplanar reformation, maximum intensity projection and volume rendering techniques. CT showed bilateral single renal arteries. On the right side, moderate-high stenosis of the proximal portion of the renal artery (50–75%) owing to compression by the median arcuate ligament was present (figure 1). In addition, stenosis of the proximal portions of the coeliac trunk

Figure 1 Coronal oblique CT angiograms show high stenosis of the proximal portions of the coeliac trunk (75–80%) (A, short arrow) and moderate stenosis of the proximal portion of the renal artery (50–75%) (long arrow) (A, B).

Figure 2 (A) Sagittal CT angiogram shows stenosis of the proximal portions of the coeliac trunk (long arrow). (B) Axial CT angiogram shows the median arcuate ligament crossing arteries.

To cite: Sari S, Verim S, Sivrioglu AK, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009937

Figure 3 Three-dimensional volume-rendered images show moderate stenosis of the proximal portion of the renal artery (50–75%) (A and B, long arrow) and high stenosis of the proximal portions of the coeliac trunk (75–80%) (B, short arrow).

(75%) was also observed (figures 2 and 3). The left renal artery was normal. These findings were compatible with median arcuate ligament syndrome.

The median arcuate ligament is a fibrous arch that unites the diaphragmatic crura on either side of the aortic hiatus.¹ It corresponds to the anterior margin of the aortic hiatus. Low insertion of the median arcuate ligament or high origin of the coeliac or renal artery may cause extrinsic compression of coeliac or renal arteries. It is important to realise that up to 13–50% of healthy patients may exhibit the angiographic feature of compression to a variable degree, especially during expiration.² However, the vast majority of these patients have no symptoms. Median arcuate ligament compressions should be considered in the differential diagnosis of secondary hypertension and CT seems to be a prompt imaging technique in this regard.

Contributors Conception and design: SS, AKS. Acquisition of data: all authors. Analysis and interpretation of data: SS, AKS. Drafting the manuscript: AKS, SS, SV. Final approval of the manuscript: all authors.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Learning points

- ▶ The median arcuate ligament is a fibrous arch that unites the diaphragmatic crura on either side of the aortic hiatus.
- ▶ It corresponds to the anterior margin of the aortic hiatus.
- ▶ Low insertion of median arcuate ligament or high origin of the coeliac or renal artery may cause extrinsic compression of the coeliac or renal arteries.
- ▶ Median arcuate ligament compressions should be considered in the differential diagnosis of secondary hypertension.

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