Visible bigeminal pulses with tortuous common carotid artery

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DESCRIPTION

An 84-year-old woman with a history of hypertension, diabetes mellitus, dyslipidaemia and aortic stenosis (AS) was referred to our hospital for transcatheter aortic valve implantation (TAVI). She occasionally recognised dyspnoea on exertion for the last 2 years, but she had no symptoms of chest pain or faintness. Physical examination revealed a pulsatile mass, bigeminal pulses with pulsatile vessels at the base of the right neck, prominent pulsations at the middle, and ejection systolic murmur on auscultation (video 1). Transthoracic echocardiography showed global left ventricular hypertrophy and severe AS but no aortic regurgitation (AR), tricuspid regurgitation (TR), nor ventricular outflow tract obstruction. Preoperative contrast CT angiography revealed diffuse calcified vessels and a tortuous right common carotid artery (CCA) (figure 1). The patient underwent TAVI, and AS improved after the procedure; however, the bigeminal pulses remained postoperatively. We finally diagnosed the bigeminal pulses caused not by AS but by the tortuous carotid artery. She was relieved of dyspnoea after the operation.

Possible differential diagnoses of pulsatile neck vessels include pulsus bisferiens of hypertrophic obstructive cardiomyopathy, pulsus parvus and tardus of AS, dancing carotid of AR, c-v waves of TR (Lancisi sign), cannon a wave of third-degree heart block, and bigeminal pulses of tortuous carotid artery or aortic aneurysms.¹ Tortuosity of the common carotid artery is seen especially in women of advanced age, associated with hypertension, atherosclerosis, and cardiac hypertrophy, and mostly affects the right side.^{2,3} Tortuous carotid artery can be a problem during catheter insertion. In

Video 1 Physical examination showing a pulsatile mass and bigeminal pulses with pulsatile vessels at the base of the right neck and prominent pulsations at the middle.

Figure 1 Preoperative contrast CT angiography showing a tortuous right common carotid artery (arrow). (A) Frontal view. (B) Posterolateral view. BCA, brachiocephalic artery; L CCA, left common carotid artery; L SCA, left subclavian artery; R CCA, right common carotid artery; R SCA, right subclavian artery.

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Learning points

- ▶ Tortuosity of the common carotid artery is seen especially in women of advanced age, associated with hypertension, atherosclerosis, and cardiac hypertrophy, and mostly affects the right side.
- ▶ Visible bigeminal pulses can be caused by tortuosity of the carotid artery.

endovascular embolisation of intracranial aneurysms, attempting to advance the guiding catheter through the tortuous artery may induce vasospasm or dissection of the tortuous vessel.^{4 5}

In this case, we suspected that the common carotid artery had been looped due to the acceleration flow from severe AS straight to the CCA and left ventricular hypertrophy causing the aorta to be lifted up at right angles toward the head, resulting in visible bigeminal pulses with blood flow back and forth at the loop.

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Contributors RO contributed to patient management, conception and design of case report; acquisition, analysis and interpretation of data, and drafting the article. KS and YK contributed to interpretation of data and revising the article critically. All

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