Thrombosed Aneurysm of the right Sinus of Valsalva causing peripheral thromboembolism in a patient with additional popliteal artery aneurysm

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The sinuses of Valsalva are three small dilatations of the aortic wall immediately above each cusp of the aortic valve, and are named with respect to the coronary cusps; right, left and non-coronary sinus.

Aneurysms of the sinuses of Valsalva (sV) are rare. Popliteal artery aneurysms are also a relatively rare condition. However, they are the most common form of peripheral arterial aneurysms. Popliteal artery aneurysms are predominantly seen in males, presumably owing to their predisposition for arteriosclerosis. There have been a few reports on multiple aneurysms in patients with systemic aneurysmal disease, as well as on sV thrombosis causing peripheral embolism. We report a case of thrombo-embolism caused by a thrombus in the right coronary sinus of Valsalva.

A 80-year-old male was admitted to the coronary care unit and received treatment for broad complex ventricular arrhythmias. He had a fall and a fracture neck femur which required a surgical screw insertion. Post operatively, his right leg became swollen. A duplex ultrasound scan of the leg showed an incidental finding of a 3cm popliteal artery aneurysm. There was no evidence of abdominal aortic aneurysm. An echocardiogram showed an aneurysm of the right SV (dimensions 4.3 x 4.7 cm) with an organised thrombus (area 13.7cm²). The aneurysm also caused significant narrowing of the right ventricular outflow tract, demonstrated as turbulent colour flow Doppler. While the case was discussed by the multi-disciplinary team, the patient developed a stroke and deceased.

Discussion

Aneurysm of SV is not a common finding in the elderly and the nature of which is not clearly understood. Thanks to the recently available non-invasive imaging techniques, such patients are now more frequently identified compared to 3 decades ago. However, there is no consensus about the ideal means for managing the sV aneurysms since they vary in size, involvement as well as potential related complications, mainly thrombo-embolism. We hereby present a case of aneurysmal SV with additional sizable clot formation who developed also peripheral right sided thrombo-embolic complications.

Routine peripheral arterial investigations incidentally showed moderate size uncomplicated popliteal aneurysm, but no abdominal aortic aneurysm. It was felt that the post-operative right leg swelling was not related to the popliteal artery aneurysm but more likely caused by the SV clot formation.

Simultaneous coronary, aortic and popliteal aneurysms, although rare, have been reported as pan arterial disease. Less commonly reported are aneurysms involving the two distant middle size artery aneurysms; coronary and popliteal as is the case with our patient. Screening for the combined pathology can not be justified unless on clinical ground. While the SV aneurysm can easily and confidently be detected during a transthoracic echocardiogram, routinely given to most in-hospital patients, peripheral arterial scans are requested only in patients with leg problems. This explains the potential underestimation of the association between the two conditions. Furthermore, the relevance of the clot formation in the SV was only
highlighted because of the post-operative leg complications our patient developed. Justifiably, there is no guidance as how to best manage such scenario therefore clinicians remain relying on historical ‘common sense’ management. Finally, while controversial opinion regarding the origin of the right leg thromboembolism arose, the stroke our patient developed confirmed that the two complications are likely related to a common origin.

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**Figure 2:** Parasternal long axis view showing the right coronary sinus aneurysm narrowing the right ventricular outflow tract (right), on colour Doppler (left)

**Figure 3:** Cross section in the aneurysmal right popliteal artery

**Figure 4:** Cross section in the right popliteal artery