
Subclavian artery stenosis: A reason for possible medication error

Hemodynamically unstable patients receiving vasopressors require intra-arterial blood pressure (IBP) monitoring for close dose titration. Dependence of this titration on IBP, can at times lead to medication error if the patient has some underlying, undetermined abnormal vascular anatomy. We report a patient who received increasing dose of vasopressors for refractory hypotension based on misleading intra-arterial

BP values. Consent was obtained from patient's next of kin for publication.

A 48-years-old, male patient suffered acute ischemic stroke (AIS) of right middle cerebral artery territory. Post-thrombolysis, he was admitted to intensive care unit with complaint of respiratory distress. Patient's Glasgow

coma scale was E4V5M6, heart rate of 68/min, RR: >35/min, BP: 210/117 mmHg in right arm, oxygen saturation of 80% with bilateral coarse crepitations in chest. Chest X-ray was suggestive of frank pulmonary oedema. Patient's trachea was intubated and mechanical ventilation was started. The standard treatment for pulmonary edema was instituted, after which patient developed hypotension. Noradrenaline infusion was started at the rate of 0.05 mcg/kg/hr and left radial artery was cannulated for IBP monitoring. Simultaneously, non-invasive BP was being measured in other arm at an interval of 15 minutes. A discrepancy of about 40 mmHg was consistently found between systolic invasive (78 mmHg) and non-invasive (124 mmHg) BP. Both IBP and non-invasive BP cuff and cables were rechecked several times. Meanwhile, we tried maintaining BP based on arterial values by increasing noradrenaline infusion but it was refractory to treatment. All other possibilities of refractory hypotension were ruled out. Considering the disparity in BP measurements, we again measured non-invasive BP in left arm which correlated well with invasive BP. Suspecting some left sided vascular pathology, CT angiography was reviewed which revealed stenosis in left subclavian artery [Figure 1]. Arterial catheter was removed and another one was inserted in the right radial artery. Timely diagnosis of this vascular anomaly saved the patient from receiving escalating doses of vasopressors and possible cardiovascular mishap. Requirement of vasopressors remained low after that and on 3rd post-thrombolysis day, patient's trachea was extubated. Patient was shifted to ward with stable hemodynamics and good neurological recovery.

Subclavian artery stenosis becomes symptomatic once there is more than 50% luminal narrowing. About 27% cases of subclavian stenosis have associated carotid obstructive lesions.^[1] The risk factors for developing subclavian artery stenosis are smoking and deranged lipid profile, both of which were present in our patient.^[2] Patient gave no relevant history of pain in arm at rest, claudication, syncope, etc. Inter-arm difference in systolic BP of more than 15 mm Hg is the classical finding in patient with more than 50% of stenosis and in our case it was around 40 mm Hg.^[3] Angiogram is the gold standard to identify vascular stenosis and it was clearly evident on patient's CT angiogram. However, during urgent airway and circulation management, this important finding was missed, which resulted in inadvertent increased infusion rate of noradrenaline. Left subclavian artery is four-fold more commonly involved compared to right side.^[4] The critical care physicians should evaluate high-risk cases before proceeding for invasive blood pressure monitoring, especially those patients who suffer stroke.

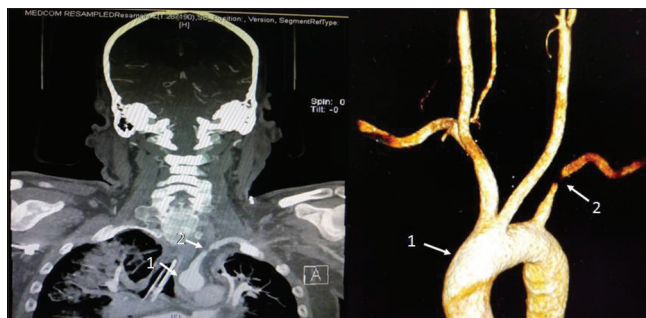


Figure 1: CT angiography and its 3D reconstruction showing arch of aorta (1) and left subclavian artery stenosis (2)

To conclude, patients with ischemic stroke should be thoroughly evaluated for extracranial major arterial stenosis especially left subclavian artery as this is a common site preferred for IBP monitoring, being a non-dominant hand in majority.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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References

- Ochoa VM, Yeghiazarians Y. Subclavian artery stenosis: A review for the vascular medicine practitioner. *Vasc Med* 2011;16:29-34.

2. Shadman R, Criqui MH, Bundens WP, Fronck A, Denenberg JO, Gamst AC, *et al.* Subclavian artery stenosis: Prevalence, risk factors, and association with cardiovascular diseases. *J Am Coll Cardiol* 2004;44:618-23.
3. Mubarik A, Iqbal AM. Subclavian Artery Thrombosis. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2019 Mar 14.
4. Amini R, Gornik HL, Gilbert L, Whitelaw S, Shishehbor M. Bilateral subclavian steal syndrome. *Case Rep Cardiol* 2011;2011:146267.

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