CASE REPORT

INTRA ARTERIAL THROMBOLYSIS WITH IV LINE CAN SAVE AN ACUTELY ISCHEMIC LIMB

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Acute limb ischemia is a limb threatening emergency condition which requires immediate diagnosis, treatment plan and action.

In low income countries still the options of catheter directed thrombolysis under imaging is still not a practical option at many centers. We report a case of 60 years old asthmatic female on inhalers with no history of HF, heart disease, IHD, Afib, hypercholesterolemia, stroke, DM, or HTN who presented at 8 pm at our hospital with 2 hours history of sudden onset severe left hand pain with discoloration. Examination showed absent radial and ulnar artery pulsation. Brachial artery pulse was palpable. Blue discoloration of fingers and hand upto mid palm was noted. Muscular power of hand was intact. Mild sensory loss was present on the tips of all digits. The condition was diagnosed as "Immediately threatened acute limb ischemia". At night the facility of Doppler or CT angiography was not available so a decision was made to proceed with local thrombolysis with Antegrade A line through brachial artery.

Arterial access was gained by usual IV line of 20 gauge (used for intravenous access) and then thrombolysis was started with streptokinase at a dose of 75000 I.U / hour continuous infusion without any bolus. Infusion was planned to continue for 24 hours.

After 12 hours the radial and ulnar artery pulsations were palpable (3+), hand was warm,

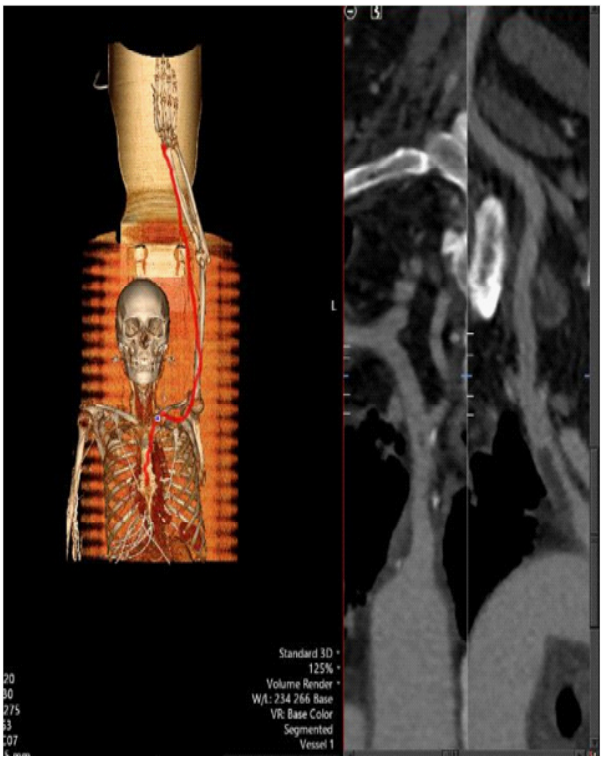

Figure 1a. MPR of Subclavian artery upto radial artery: Figure shows a linear non occlusive thrombus at the origin of subclavian artery.

Figure 1 b. Magnified view of MPR of subclavian artery showing a filling defect consistent with thrombus.

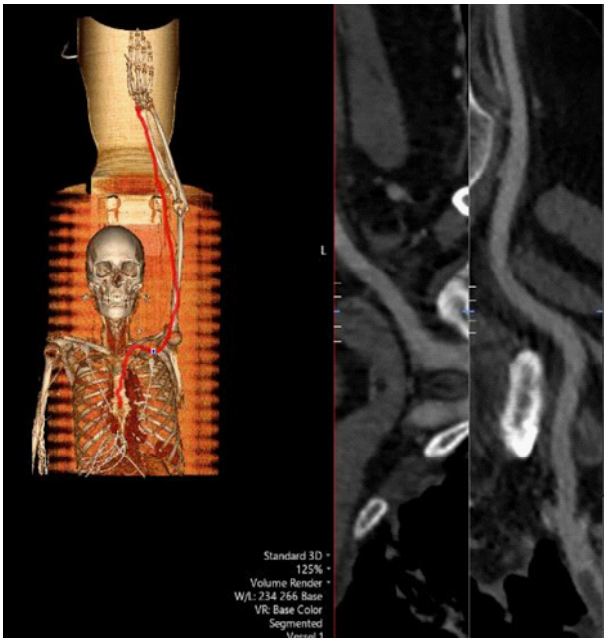

Figure 2.

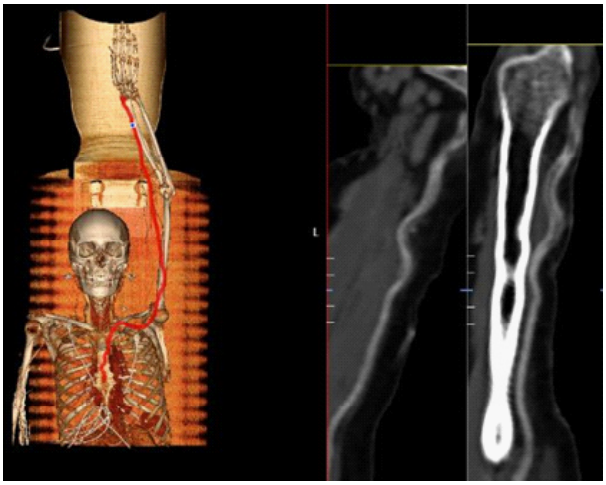

Figure 3. MPR of radial artery showing linear non occlusive thrombus in distal radial artery.

pain had settled and colour of hand normalized so the infusion was discontinued and further imaging was planned.

Patient developed weakness of right side of the body and altered sensorium 2 hours after stopping the infusion. Immediate CT brain was done along with the upper limb with contrast. Brain CT turned out to be normal without any intracranial bleed (Figure A). No other significant finding was observed on CT brain. CT angiogram of upper limb showed a large thrombus at 1st part of left subclavian artery. (Figure.1a and b). 2nd and 3rd part of subclavian artery were normal and so was brachial artery and proximal half of radial artery. Only distal half of radial artery showed linear non occlusive thrombus upto bifurcation of distal radial artery in superficial and deep branches (Figure 3).

Weakness resolved in next 12 hours but slow mentation continued for next 3 days and then completely recovered.

Subsequent management was continued with statin, aspirin and anticoagulation with enoxaparin.

After removal of the intra-arterial line a hematoma formed due to poor compression at that time extending from cubital fossa to mid forearm. The hematoma settled in next 30 days. Despite the complications the limb was salvaged.

DISCUSSION:

Currently catheter directed thrombolysis holds class 1 indication in ACC guidelines (2016) for salvageable acute limb ischemia.[1] Various types of hardware are available for catheter directed thrombolysis but in low income populations the cost is a limitation to the access of such equipment. Once access is gained, various regimes are available for thrombolysis. a bolus dose of the thrombolytic agent is given by the catheter followed by continuous infusion of the same agent. Most commonly used and tested agent is tPa. Recommended dose is a bolus of 4 to 10

mg of recombinant tissue plasminogen activator (tPA) at the time of catheter placement.[2] The Society of Interventional Radiology recommends weight-based doses of tPA, 0.02 to 0.1 mg/kg/hr[3]; however, most clinicians use standard doses of 0.5 to 1 mg/hr for low-dose infusions, with the overall maximum dose limit of 40 mg[3]. High-dose infusions of >1 mg/hr have been used and typically lead to a slightly higher bleeding risk with comparable outcomes and the benefit of shorter infusion times (21.9 hours for high-dose versus 32.7 hours for low-dose infusions).[4]

However data on the use of streptokinase is scarce. We considered the continuous infusion dose of streptokinase without any bolus dose. A relatively low dose as compared to recommended doses for pulmonary embolism and prosthetic valve thrombosis was considered. Thus 75000 units per hour were given. The initial results are favorable and appear cost effective.

The risk of hemorrhagic stroke with streptokinase infusion is considered to be upto 0.7 %[5]. Systemic embolization after streptokinase is also a known complication.[6]

The hemiparesis and slow mentation was attributed to retrograde embolic showering that occurred due to streptokinase since a large thrombus was seen at the subclavian artery. Fortunately there was no residual deficit after 3 days. Although the subsequent imaging revealed that a large thrombus was present at the origin of subclavian artery, since it was not flow limiting, it was not of much concern as an emergency. Subsequent long term anticoagulation and percutaneous intervention was be planned as an elective procedure after hematoma settles down.

One limitation of study is that we don't have much literature available on streptokinase for catheter directed thrombolysis for comparison. Further trials are required for validation of the dosage of streptokinase for catheter directed thrombolysis especially where prior imaging is not available due to odd time or limited resources.

CONCLUSION:

We conclude that in the absence of advanced imaging and therapeutic facilities a limb threatening ischemia can be treated by simple thrombolysis with streptokinase via antegrade intra-arterial access using regular IV catheter. It is better to act timely than to wait for imaging or catheter directed thrombolysis or thrombo-embolectomy even if thrombus extends beyond the expected confines as in this case a large thrombus was also present at Subclavian artery.

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