Case Report

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Carotid pseudoaneurysm: injection of fibrin adhesive, a simple treatment in Ecodoppler-guided hands

Summary

Carotid pseudoaneurysm is a statistically low probability pathology, but when it occurs it can even cause the patient's death, especially due to its complications (rupture, thrombosis and/or embolization).

The main cause is iatrogenic, due to percutaneous catheterization for placement of a central line in the neck vessels.

We present through a clinical case the importance of percutaneous treatment guided by echo-Doppler.

Keywords: carotid artery pseudoaneurysm, thrombin injection, echo-Doppler

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Introduction

Common carotid artery pseudoaneurysm is unlikely to occur except in locations that have not yet protocolized the use of echo-Doppler for guidance of central line placement. Generally, those who place these venous accesses are the first physicians to begin their healthcare tasks in hospitals, where their learning curve is in its infancy, added to the lack of experience and not being able to access a portable echo-Doppler to be able to perform the placement guided by it. This iatrogenic pathology has a low incidence rate but when it occurs it should be treated as soon as possible.[1] The treatment alternatives are generally surgical (open surgery)[2,3] or endovascular.[4,5] The injection of fibrin adhesive in arterial accesses has proven to be effective and safe.[6] We present a case of carotid pseudoaneurysm that underwent fibrin injection guided by echo-Doppler, control with transcranial Doppler[7] and without cerebral protection[8], with good evolution.

Development

A 57-year-old female patient was hospitalized in another hospital for uterine cancer and metastasis under treatment. During this hospitalization in a closed unit, a central venous access was placed without ultrasound control. After a few weeks, she developed a palpable tumor in the neck and a soft tissue ultrasound was performed, where a pseudoaneurysm of the common carotid artery was found. She was referred to the Argerich Hospital on an outpatient basis, where an echo-Doppler of the neck vessels was performed and a pseudoaneurysm of the left common carotid artery was found (Figure 1).

Therefore, treatment was performed with fibrin adhesive injection in carotid pseudoaneurysm, with a size of 20mm X 15mm, neck of 2.5 mm. Fibrin adhesive solution of 3 ml-1500 IU was used, using 1.5ml-750 IU, with 21 G needle (according to technique), under local anesthesia,[9] noting the complete closure through echo-Doppler control (Figure 2) and good tolerance of the procedure.

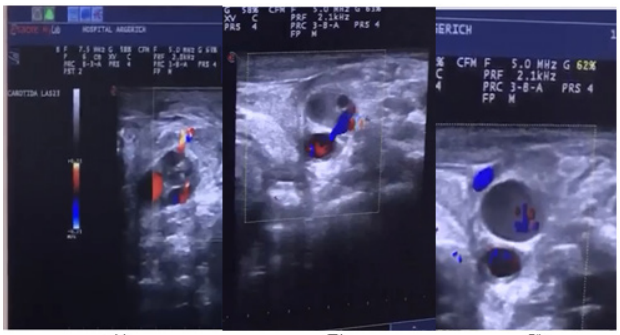

Figure 1 Carotid pseudoaneurysm.

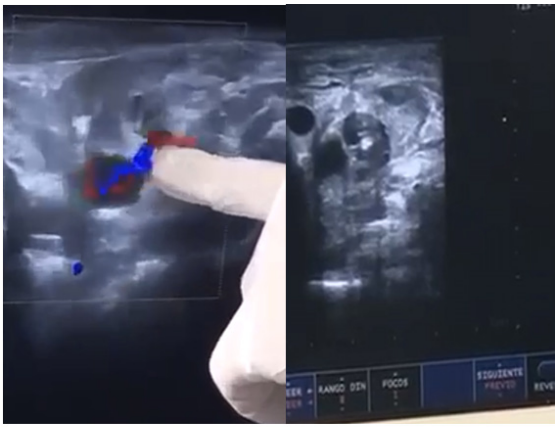

Figure 2 Occluded pseudoaneurysm.

Simultaneously, a transcranial echocardiography control was performed, which did not show any change. After 3 days, a control with Doppler ultrasound was performed, which showed no flow, and clinically no neurological signs.

Discussion

We were very interested in presenting this case because it provides several aspects when it comes to defining a course of action. On the one hand, there is very little evidence on the use of fibrin in iatrogenic peripheral pseudoaneurysms, especially carotid ones,[1] its reported incidence is 3.2%.[8]

Generally, this type of complication was addressed surgically or currently endovascularly. However, we know that fibrin injection, despite the scarce literature, is an effective option, especially in patients with contraindications due to comorbidities or hemodynamic instability where a more invasive procedure may further increase the risks. Therefore, this type of treatment, being less invasive and using fewer resources, is still an option in good hands.

In our case being a small pseudoaneurysm is reported less likelihood of embolic events, so we did not use neuroprotection where the risk is still unknown,[8] but we used transcranial echo-Doppler, effective tool, operator dependent, lower cost, non-invasive, repetitive, easily available at the patient's bedside, without irradiation, and is a tool for early detection of posterior cerebral vasospasm, ischemic stroke.[7] Another important fact that emerges is that central line placement should be performed under ultrasound guidance because it is known to lower the complication rate and increase the success rate.[10]

Conclusion

Since 1997 Liau et al popularized the use of thrombin as it is more convenient and has shorter execution times.[6] Our group uses it because it is easily accessible within the public hospital setting, because it is a technique that we use often since we are trained in the area of Doppler ultrasound. Therefore, we know that hemodynamically this treatment is effective and with low complications because although it does not reach the end of thrombosing the sac and neck, we know that hemodynamically the necks close because it can continue with flow but then when presenting high resistance and low velocity we know that hemodynamically it will occlude with the hours.[11] The importance lies in the fact that it is not necessary to close the neck of the pseudoaneurysm, but it is injected through the pseudoaneurysm sac, and when it is seen to be filled, it is stopped and the occlusion of the pseudoaneurysm is seen.[11]

Acknowledgments

None.

Conflicts of interest

The author declares that there are no conflicts of interest.

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