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Case Report

Management of acute internal carotid artery dissection during endovascular procedures: a case report

Manejo de la disección aguda de la arteria carótida interna durante procedimientos endovasculares: reporte de un caso

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ABSTRACT

Dissection of the internal carotid artery (ICA) is a serious complication associated with invasive procedures such as angiography and cervical surgery. It occurs when injury to the ICA wall causes separation of arterial layers and interruption of blood flow, potentially leading to neurological complications such as stroke. The dissection may not be visible on immediate angiography and can occur without evident signs. Treatment options include antithrombotics or endovascular intervention. We report a 58-year-old female patient with systemic arterial hypertension and previous subarachnoid hemorrhage, admitted for cerebral arteriography. During the procedure, a dissection was identified in the cervical segment of the right ICA, absent in prior exams. Urgent mechanical thrombectomy was performed, achieving complete recanalization. Angioplasty with a 4.5 × 50 mm LEO stent restored blood flow. The patient progressed well, with no immediate neurological changes, and was transferred to the ICU for monitoring. This case emphasizes the importance of rapid recognition and treatment of ICA dissection to prevent serious sequelae. Careful clinical practice and meticulous endovascular techniques are essential to improve safety and ensure better outcomes.

Keywords: *carotid artery, internal, dissection; carotid artery injuries; neurosurgery; endovascular procedures; angioplasty; neurosurgical procedures.*

RESUMEN

La disección de la arteria carótida interna (ACI) es una complicación grave asociada a procedimientos invasivos como la angiografía y la cirugía cervical[1]*. Ocurre cuando una lesión de la pared de la ACI provoca la separación de las capas arteriales*

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y la interrupción del flujo sanguíneo, pudiendo conducir a complicaciones neurológicas como el accidente cerebrovascular[1]. La disección puede no ser visible en la angiografía inmediata y puede ocurrir sin signos evidentes[2]. Las opciones de tratamiento incluyen antitrombóticos o intervención endovascular[3]. Presentamos el caso de una paciente femenina de 58 años, con hipertensión arterial sistémica y antecedente de hemorragia subaracnoidea, ingresada para arteriografía cerebral. Durante el procedimiento, se identificó una disección en el segmento cervical de la ACI derecha, ausente en exámenes previos. Se realizó trombectomía mecánica urgente, logrando recanalización completa. La angioplastia con un stent LEO de 4,5 × 50 mm restableció el flujo sanguíneo. La paciente evolucionó favorablemente, sin alteraciones neurológicas inmediatas, y fue trasladada a la UCI para monitorización. Este caso enfatiza la importancia del reconocimiento y tratamiento rápidos de la disección de la ACI para prevenir secuelas graves. La práctica clínica cuidadosa y las técnicas endovasculares meticulosas son esenciales para mejorar la seguridad y garantizar mejores resultados.

Palabras clave: *disección de la arteria carótida interna; lesiones de la arteria carótida; neurocirugía; procedimientos endovasculares; angioplastia; procedimientos neuroquirúrgicos.*

1 INTRODUCTION

Dissection of the internal carotid artery is an extremely serious vascular condition responsible for a high number of unfavorable outcomes[1]. This type of dissection may occur in association with invasive medical procedures, such as angiography, cervical manipulations during head and neck surgeries, as well as endovascular interventions[2]. It results from injury to the arterial wall during vascular manipulation, leading to separation of the arterial layers of the internal carotid artery, interruption of normal blood flow, and potentially severe neurological complications, including stroke[3].

Unlike vessel perforation, arterial dissection is not always visible on immediate angiography and may develop at any stage of the procedure, even in the absence of evident device protrusion from the vascular lumen. In such situations, the interventionist must promptly decide whether to proceed with the intracranial procedure, initiate antithrombotic therapy, or adopt an endovascular treatment strategy during or after the intervention[4].

This case of acute internal carotid artery dissection identified during cerebral arteriography highlights a rare but clinically significant vascular event with substantial potential for morbidity and mortality. Rapid recognition and appropriate management are crucial to prevent severe neurological outcomes. The publication of reports such as this one is essential for the advancement of medical knowledge, contributing to the refinement of therapeutic strategies and the improvement of safety standards in vascular and endovascular medicine.

2 CASE PRESENTATION

A 58-year-old female patient with a history of systemic arterial hypertension (SAH) and previous hospitalization in 2018, due to subarachnoid hemorrhage secondary to a ruptured intracranial aneurysm, was electively admitted for cerebral arteriography using the Seldinger technique.

The procedure was performed under local anesthesia, using nonionic contrast. The right common femoral artery was punctured and a 5F sheath was inserted. Subsequently, a Simmons 25F catheter was introduced to study the internal, external, and vertebral carotid arteries. During arteriography, a dissection was identified in the cervical segment of the right internal carotid artery, with occlusion of this vessel, which was absent in previous evaluations (Figure 1). An emergency mechanical thrombectomy was therefore indicated. The introducer was replaced with an 8F sheath, and a Ballast 088 long-sheath catheter was positioned. A Red 62 aspiration catheter was used in combination with a 027 microcatheter and a PT2 microguidewire for catheterization distal to the occlusion. Aspiration resulted in complete recanalization of the artery. After confirmation of the dissection in the cervical segment of the right internal carotid artery, angioplasty with implantation of a 4.5 × 50 mm LEO stent was performed to stabilize the dissected segment.

Post-procedure angiographic control demonstrated good stent apposition and satisfactory reestablishment of cerebral circulation. An Xper CT performed after the procedure showed no evidence of contrast extravasation or hemorrhage. An intravenous loading

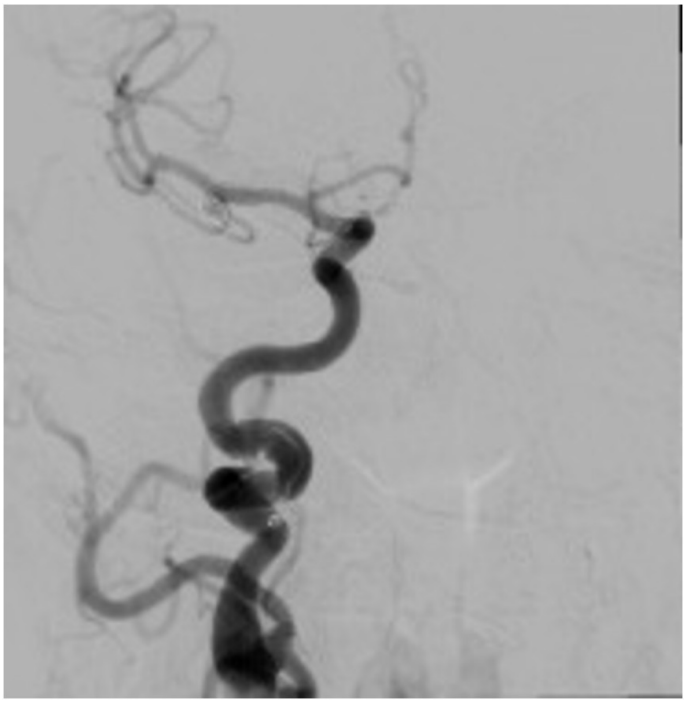

Figure 1. Arteriography, showing dissection in the cervical segment of the right internal carotid artery, with occlusion.

dose of tirofiban was administered prior to stent deployment. The patient was subsequently transferred to the Intensive Care Unit (ICU) for continuous monitoring, evolving without changes on physical examination and without immediate neurological sequelae.

3 DISCUSSION

Dissection of the internal carotid artery, as presented in this report, is a serious vascular event associated with invasive diagnostic and therapeutic procedures. This condition is generally related to injury of the arterial wall during endovascular manipulation, which may result from contact with intraluminal devices or complex vascular anatomy. The present case highlights the importance of careful selection of techniques and devices during endovascular interventions to minimize vascular injury[5-8]. Rapid recognition and appropriate management of arterial dissection are essential, particularly because initial angiographic evaluation may fail to demonstrate overt abnormalities. In the case described, the subsequent identification of acute vessel occlusion required urgent intervention to restore cerebral blood flow. The effectiveness of mechanical thrombectomy followed by angioplasty and stent placement in achieving vessel recanalization and stabilizing the dissected segment underscores the importance of technical preparedness and precision in the endovascular management of these complex vascular conditions. Cervical internal carotid artery dissections, although uncommon, represent a significant risk for cerebral ischemia and stroke. The analysis of such cases is fundamental for refining therapeutic strategies and advancing endovascular practices, ultimately contributing to improved patient outcomes.

4 CONCLUSION

Finally, the discussion around internal carotid artery dissection emphasizes the need for careful clinical practice, appropriate patient selection, and the adoption of meticulous endovascular techniques to reduce the risk of arterial injury. Further studies and reports such as this one are necessary to improve the safety of endovascular procedures and to ensure better clinical outcomes.

REFERENCES

1. Akpinar S, Yilmaz G. Dissection of extracranial internal carotid artery due to balloon guiding catheter resulting in asymptomatic internal carotid artery occlusion. Iran J Radiol. 2016;13(3):e28209. http://doi.org/10.5812/iranjradiol.28209. PMid:27853491.

2. Simonetti G, Hulliger B, Mathier J, et al. Iatrogenic vessel dissection in endovascular treatment of acute ischemic stroke. Clin Neuroradiol. 2019;29(1):143-51. http://doi.org/10.1007/s00062-017-0639-z. PMid:29098320.

3. Cloft HJ, Jensen ME, Kallmes DF, Dion JE. Arterial dissections complicating cerebral angiography and cerebrovascular interventions. AJNR Am J Neuroradiol. 2000;21(3):541-5. PMid:10730648.

4. Engelter ST, Grond-Ginsbach C, Metso TM, et al. Clinical features, risk factors, and outcome of carotid artery dissections: a systematic review and meta-analysis. Lancet Neurol. 2012;11(9):774-84.

5. Debette S, Compter A, Labeyrie MA, et al. Epidemiology, pathophysiology, diagnosis, and management of intracranial artery

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dissection. Lancet Neurol. 2015;14(6):640-54. http://doi.org/10.1016/S1474-4422(15)00009-5. PMid:25987283.

6. Sarikaya H, Arnold M, Engelter ST, et al. Outcomes of intracranial hemorrhage after carotid artery dissection. J Neurol Neurosurg Psychiatry. 2013;84(3):273-8.

7. Markus HS, Hayter E, Levi C, et al. Antiplatelets versus anticoagulation for dissection: CADISS nonrandomised arm and meta-analysis. Neurology. 2011;77(10):970-7.

8. Lee VH, Brown RD Jr, Mandrekar JN, Mokri B. Incidence and outcome of cervical artery dissection: a population-based study. Neurology. 2006;67(10):1809-12. http://doi.org/10.1212/01.wnl.0000244486.30455.71. PMid:17130413.

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