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Commentary on “Acute carotid stent thrombosis: A case report and literature review”

Willman M *et al.* Commentary on “Acute carotid stent thrombosis”

Abstract

In this commentary on the article entitled “Acute carotid stent thrombosis: A case report and literature review”, the key points of the article are discussed. Acute carotid stent thrombosis (ACST) in the setting of carotid artery stenting (CAS) represents a rare but potentially catastrophic event. There is a wide range of treatment options available, including carotid endarterectomy, which is generally recommended for cases of refractory ACST. While there is no standard treatment regimen, dual antiplatelet therapy is typically recommended both before and after CAS to reduce risk of ACST.

Key Words: Acute carotid stent thrombosis; Carotid artery stenting; Carotid endarterectomy

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Core Tip: This commentary evaluates the article entitled “Acute carotid stent thrombosis: A case report and literature review”, discussing acute carotid stent thrombosis and the current treatment options available. Specifically, carotid endarterectomy is evaluated as a treatment option for refractory stent thrombosis. Additionally, dual antiplatelet therapy, stent material, and stent architectural design are addressed in the commentary.

TO THE EDITOR

Acute carotid stent thrombosis (ACST) is a rare (0.5%-5%) complication associated with significant risk in carotid artery stenting (CAS) as the study described^[1-3]. Treatment options include thrombolysis, facilitated thrombolysis, percutaneous mechanical thrombectomy, thromboaspiration, and carotid endarterectomy (CEA), the procedure that was demonstrated in the case report of this paper.

Article findings and discussion

Zhang *et al*^[3] outlined several risk factors that may be associated with ACST formation, including inadequate antiplatelet therapy and faulty positioning of the stent. In the subacute setting of carotid stent thrombosis, faulty positioning of the stent plays a more significant role in neointimal hyperplasia *via* vascular injury, which may ultimately cause restenosis after CAS^[4].

The approach to ACST treatment is influenced by numerous factors. These factors include the presence of neurological injury, the timing ACST occurrence during stent placement or after the procedure, and the overall resources available to the treatment team. CEA is generally recommended in cases of refractory ACST and neurological deterioration^[5]. While it has debatable benefit as a single criterion, carotid artery stump pressure measurement has been used to monitor cerebellar perfusion and potentially indicate the need for shunting during CEA^[6]. In situations of asymptomatic ACST, the overall recommendation is to pursue conservative management without surgical intervention like CEA^[5]. While there is limited data on the efficacy of dual antiplatelet therapy (DAPT) and no standard treatment dosing regimens are recommended, aspirin (75-325 mg) and clopidogrel (75 mg) DAPT daily are generally advised both before and after CAS for a minimum of four weeks post-procedure^[7,8]. After discontinuation of DAPT, a daily aspirin lifelong regimen is advised. While there is increasing interest in the development of numerous stent materials, bare-metal carotid stents are currently the most commonly used^[9].

The direction of future research and conclusion

At this time, there is limited data evaluating the use of drug-eluting carotid artery stents^[9]. When comparing the open-cell to closed-cell architecture carotid stents, there is indication of lower rates of occlusions occurring in open-cell architecture carotid stents^[10]. Research into the use of drug-eluting stents and stent architecture may offer therapeutic advantage for future treatment. Zhang *et al*^[3] highlight the importance of predicting the potential risk of delayed treatment and the associated risk of ischemic

brain injury. In the setting of an ACST, the balance between the benefit of CEA stroke reduction and the risks associated with surgical complications are difficult to predict in each patient situation. As Zhang *et al*^[3] stated, the data is limited on the topic of ACST and further research into CEA as an intervention for ACST could prove beneficial.

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