

Abstract

BACKGROUND

Carotid artery atherosclerotic disease and stenosis is a risk factor for the development of transient ischemic attack (TIA) and stroke. Calcification of atherosclerotic lesions can make percutaneous intervention more difficult to perform and has been shown to negatively impact the outcome of these procedures. Intravascular lithotripsy (IVL) is an emerging technology used to treat calcification in blood vessels. Previous studies have demonstrated efficacy of IVL in treating both peripheral vascular disease and coronary artery disease, though there is little literature surrounding the successful, novel IVL use in the carotid arteries. Therefore, it appears that lithotripsy in conjunction with controlled balloon deployment could be a useful tool in treating heavily calcified carotid artery stenosis in patients who are poor surgical candidates.

CASE REPORT

We report the case of a 79-year-old female who has a complicated history of multiple ischemic strokes, TIA, and seizures secondary to bilateral carotid artery disease, atrial fibrillation, and microangiopathy from suspected cerebral amyloidosis. The patient was status-post bilateral transcarotid artery revascularization (TCAR) when she re-presented with a witnessed seizure and subsequent in-hospital stroke due to restenosis of the right internal carotid artery stent with a near-complete vessel occlusion. During repeat TCAR, lithotripsy with a 5 x 60 mm Shockwave balloon was used to predilate the lesion due to heavy calcifications. This was followed by 5 x 40 mm chocolate balloon angioplasty of

the stent. One-month follow-up carotid duplex study revealed no evidence of significant re-stenosis.

CONCLUSION

In conjunction with the embolic protection of TCAR, Shockwave intravascular lithotripsy pre-dilation and Chocolate balloon angioplasty can be used to successfully manage heavily calcified plaques in re-stenosed carotid artery atherosclerotic lesions in patients who are poor surgical candidates or who require a greater degree of neuroprotection. Nonetheless, it is imperative to weigh the risks and benefits of undergoing such procedures on an individualized basis for each patient.