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Carotid Artery Endarterectomy Under Local Anaesthesia – Case Series

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Abstract: *Carotid artery stenosis accounts for approximately 10% of all ischemic strokes, causing significant morbidity and mortality.Carotid endarterectomy is a preventive surgery aimed at reducing the rate of stroke in patients at high risk of such an event.It is a procedure that is performed commonly for patients with symptomatic carotid artery stenosis.Carotid endarterectomy (CEA) can be done under local or general anaesthesia. Local anaesthesia is being proven advantageous over general anaesthesia. However, general anaesthesia is still indicated in case of patient preference or in conditions when conversion from local anaesthesia becomes necessary. The aim of the paper is to highlight the importance and benefit of regional anaesthesia in case of surgery of carotid endarterectomy.*

Keywords: *Carotid endarterectomy (CEA), Local Anaesthesia (LA), General Anaesthesia (GA)*

I. Introduction

Carotid artery disease is a manifestation of generalised arteriosclerosis. In carotid artery, atherosclerotic plaques develop at the lateral aspect of bifurcation of carotid artery[1]. Thrombosis is most likely to occur where plaques narrow the lumen to the greatest degree and that is the time when it is alarming for patient as he/she is prone for stroke and in case of significant stenosis, patient can be planned for carotid endarterectomy[2]. Patients undergoing carotid endarterectomy may undergo the procedure under either local anaesthesia or general anaesthesia. Advantages and disadvantages of each type of anaesthesia must be considered when choosing optimal anaesthetic for each patient. Technique of administration of local anaesthesia is easier and it also proves beneficial in terms of patient compliance. GA is preferred by surgeons for its advantages of operating on a patient without any movement, a clean operative field, early and stable control of the airway and ventilation, and the availability of devices to protect the brain in case ischemia develops.[3]

Case Series

Case 1- A 70 year old gentleman, a known case of coronary artery disease, congestive heart failure and diabetes mellitus type II presented to surgery department with the diagnosis of right carotid artery stenosis. Ultrasound Carotid vertebral Doppler showed circumferential plaque in right common carotid artery with extension into right internal carotid artery causing 60-70% stenosis of common carotid artery and 80% stenosis of proximal Internal carotid artery. His Echo report showed dilated cardiomyopathy, severe MR and TR, mild AR, global hypokinesia, reduced LV systolic function with LVEF-25%. He underwent right CEA under local anaesthesia. Intraoperatively it was seen that there was high bifurcation of right common carotid artery; atherosclerotic plaque at the bifurcation of the common carotid artery was extending into internal and external carotid artery (Figure 1 and 2). Intraoperative period was uneventful. The patient was conscious, oriented and haemodynamically stable. He was operated without the need of intense cardiac and neurological monitoring which was beneficial for him in view of his aforesaid cardiac status. Following CEA, the patient recovered well and was discharged in satisfactory condition. He is presently on regular follow-up and recovering well.

Case 2- A 63year old lady, a known case of coronary artery disease, diabetes mellitus-type II and old cerebrovascular accident, presented to the hospital with complaints of left sided weakness for three days. CT Angiography of neck and brain revealed partially calcified concentric plaque at the right common carotid bifurcation extending into ICA and ECA with severe stenosis of 80-90% in the proximal ICA and 70-75% in ECA. Her cardiac status was normal with LVEF-55%. She underwent right carotid endarterectomy under LA. Intraoperatively right common carotid artery was seen to have high bifurcation and the atherosclerotic plaques at the bifurcation of the common carotid artery extended into the ICA, ECA causing severe stenosis. During the surgery, she was alert and well responsive to the commands of anaesthetists and the operating team. She required minimal intra-operative monitoring of neurological and cardiac status. She recovered well and was discharged in satisfactory condition 3 days following the surgery.

Case 3- A 52 year old gentleman, a known case of systemic hypertension, diabetes mellitus-type II, presented to the casualty with chief complaints of weakness in left upper limb for one hour prior to the time of presentation. He was diagnosed to have progressive stroke. He was evaluated by CT Angiography- brain which showed lipid rich atheromatous plaque involving the right CCA bifurcation, causing moderate stenosis of

around 80%, most severe at ICA origin. Right carotid endarterectomy was done under LA. Operative findings of the surgery were as follows- lipid rich soft plaque at common carotid artery bifurcation with right carotid artery bifurcation and posterior medial aspect of distal common carotid extending into the proximal ICA; moderate stenosis; External Carotid Artery was free of plaques. During the procedure, the patient was fully awake, conscious and oriented. His vital signs remained stable with good oxygen saturation.Postoperatively, he was discharged after an observation period of 4 days in view of his progressive stroke. Presently the patient is doing well, asymptomatic and on regular follow-up visits.

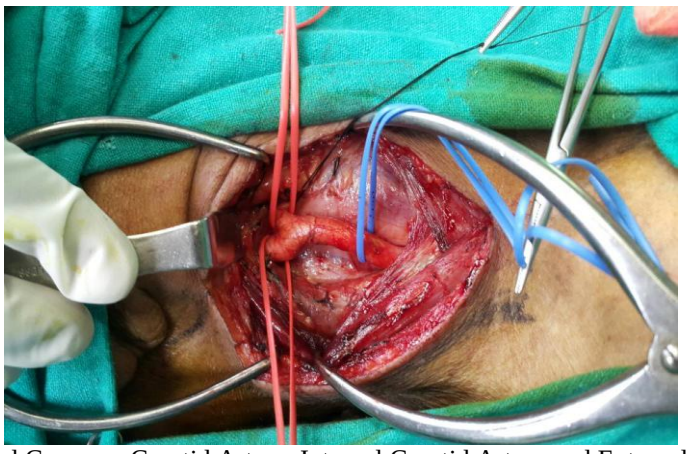

Figure 1: Isolated Common Carotid Artery, Internal Carotid Artery and External Carotid Artery

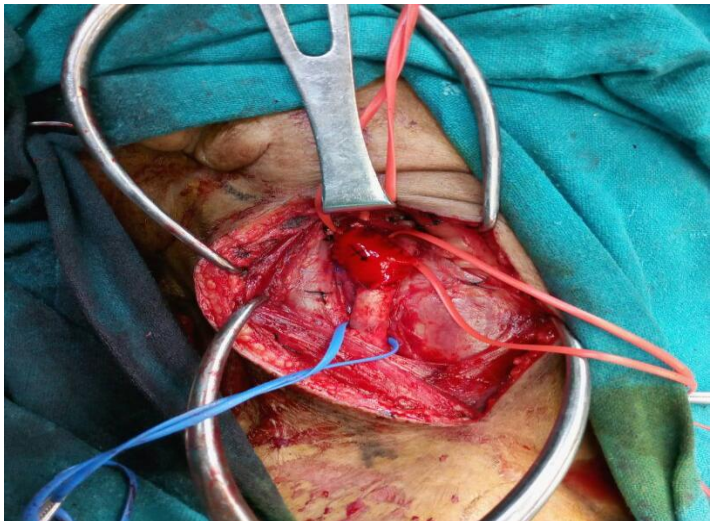

Figure 2: After applying the PTFE Patch

II. Discussion

Carotid endarterectomy was described as an effective modality for prevention of strokes in patients with carotid artery stenosis[4]. Carotid End Arterectomy performed under LA proved advantageous over GA in terms of decreased morbidity with respect to incidence of postoperative Myocardial Infarction, stroke. CEA performed under LA proves beneficial as it causes less postoperative pain which enables early ambulation, better respiratory outcome and faster recovery[5,6]. The advantages of LA must also be weighed against the possible patient anxiety during the procedure due to maintaining consciousness, or the possibility of a difficult lesion extending the operating time and increasing patient discomfort[7]. Local Anaesthesia is advantageous over General Anaesthesia with respect to easy neurological assessment during carotid cross clamping as against assessment measures in GA namely somatosensory evoked potentials, TCD, processed EEG and infrared spectroscopy[8]. Procedure under LA is preferred in view of immediate postoperative neurological assessment, greater cardiovascular stability, better postoperative analgesia, shorter hospital stay thereby being economically better[9]. Conversion of form of anaesthesia from LA to GA when indicated, though rare, is feared by the operating team due to danger of chances of added morbidity and mortality[10]. Cross-clamping of internal carotid artery during CEA causes arterial supply shutdown to the contralateral cerebral hemisphere. Hence, a major issue in carotid endarterectomy is assessment of cerebral perfusion after the procedure[11]. Operations under GA

demand neurological monitoring by EEG, somatosensory evoked potentials, transcranial Doppler and carotid artery stump pressure[12]. Performance of CEA under Local Anaesthesia surpasses use of sophisticated neurological monitoring methods and enables efficient cerebral perfusion adequacy assessment by neurological observation[13]. In our study it was noted thatfor patients with co-morbidities where general anaesthesia should be avoided in view of its possible dangers, surgical procedure under local anaesthesia proves advantageous with respect to intraoperative monitoring and postoperative patient care.

Conclusion

The choice of anaesthesia in performing Carotid End Arterectomy affects patient outcome to a great extent. Incentreswhere cerebral perfusion monitoring and cardiac status assessment is difficult, local anaesthesia is found to be a safer option in terms of patient's comfort. General anaesthesia wherever indicated, requires efficient patient monitoringto ensure good surgical outcome. Monitoring of an awake patient is easy while operating on an awake patient is challenging as it demands good patient cooperation.

References

[1]. Hemming HC, Hopkins PM. Foundation of Anaesthesia: Basic Science for Clinical Practice. 2nd ed. Philadelphia: Elsevier Science; 2006. p. 249-50.
[2]. Aaslid R, Lindegaard KF, Sorteberg W, Nornes H. Cerebral Autoregulation Dynamics in Human. Stroke 1989;20:45-52.
[3]. Gurer O, Yapici F, Ozler A, Isik O. Comparison between local and general anaesthesia for carotid endarterectomy: early and late results. Vasc Endovascular Surg 2012;46(2):131-8.
[4]. Barnett HJM, Taylor DW, Haynes RB, et al. Beneficial effect of carotid endarterectomy in symptomatic patients with high-grade carotid stenosis. N Engl J Med 1991;325(7):445-453.
[5]. Liu SS, Strodtbeck WM, Richman JM, Wu CL. A comparison of regional versus general anaesthesia for ambulatory anaesthesia: a meta-analysis of randomised control trials. Anesth Analg. 2005;101(6):1634-42.
[6]. Svircevic V, Van Dijk D, Nierich AP, et al. Meta-analysis of thoracic epidural anaesthesia versus general anaesthesia for cardiac surgery. Anaesthesiology. 2011;114(2):271-82.
[7]. Cronenwett J, Johnston W. Management of extracranial cerebrovascular disease. Rutherford's vascular surgery. 6th ed.Philadelphia: Elsevier;2005:p.1977.
[8]. Pennekamp CW, Moll FL, de Borst GJ. The potential benefits and the role of cerebral monitoring in carotid endarterectomy. Curr Opin Anaesthesiol 2011;24:693-7.
[9]. Schechter MA, Shortell CK, Scarborough JE. Regional versus general anaesthesia for carotid endarterectomy: the american college of surgeons national surgical quality improvement program perspective. Surgery 2012;152(3):309-14.
[10]. Pandit JJ, Satya-Krishna R, Gration P. Superficial or deep cervical plexus block for carotid endarterectomy: a systematic review of complications. Br J Anaesth 2007;99(2):159-69.
[11]. Cottrell JE, Smith DS. Anaesthesia and neurosurgery. 4th ed. St Louis: Mosby; 2001.p. 19-32.
[12]. Jansen C, Vriens EM, Eikelboom BC, Vermeulen FEE, Gijn JV, Ackerstaff RGA. Carotid endarterectomy with transcranial Doppler and electroencephalographic monitoring: a prospective study in 130 operations. Stroke 1993;24:665-9.
[13]. Bosiljevac JE, Farha SJ. Carotid endarterectomy: results using regional anaesthesia. Am J Surg 1980;46(7):403-8.

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