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Case Report OMICS International

Can Haste in Pre-Anaesthetic Check-up Increase the Chances of Post-Operative Stroke: A Case Report

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Abstract

Background: In cardiac, neurologic, and carotid surgery, the incidence of stroke is known to be high (2.2-5.2%). Laparoscopy has been considered as low risk for stroke. Here we report a case of stroke in patient who underwent laparoscopic nephrectomy. Previous history of stroke was not disclosed at the time of surgery. Effect on intra-operative management due to this lapse and how it could have been rectified, has been discussed here.

Case presentation: This article reports a case of post-operative stroke in a 58 yr old male with moderate obesity that underwent laparoscopic nephrectomy under general anesthesia. Patient did not give any history of previous transient ischemic attack (TIA) although he had an episode of the same a year back. Intraoperatively, anti-hypertensives were used to control high blood pressure. Post extubation it was noted that he was unable to vocalize and move right upper and lower limbs. CT scan revealed fresh watershed infarct in frontoparietal region and an old infarct in occipital region.

Conclusion: Importance of history taking especially in elderly patients cannot be undermined. It is important not only for intraoperative management but for risk stratification and medico legal purpose as well.

Keywords: Case report; Peri operative stroke; Pre anesthetic checkup; Laparoscopic surgery

Introduction

Stroke is commonly defined as the sudden onset of focal neurologic or retinal symptoms associated with cerebral or retinal tissue ischemia [1]. Perioperative stroke is defined as a brain infarction of ischemic or hemorrhagic etiology that occurs during surgery or within 30 days after surgery [2]. Three of the most consistent risk factors for perioperative stroke identified in the literature are advanced age, renal failure, and a history of stroke or transient ischemic attack [3-8]. Mashour et al. further identified myocardial infarction within 6 months of surgery, hypertension, history of severe chronic obstructive pulmonary disease, current tobacco use, and a protective effect of Body Mass Index (BMI) of 35-40 kg/m^2 as independent predictors [9]. Surgical procedures also influence the incidence of stroke. Although no evaluation as to the risk during laparoscopy has been done, laparoscopic procedures can be considered as low risk for stroke. This article reports a case of post- operative transient ischemic attack (TIA) of embolic nature immediately after surgery in a patient of non-functioning kidney who underwent laparoscopic nephrectomy.

Case Report

A 58 yr old obese male with a BMI of 38Kg/m^2, presented with complaints of fever and abdominal pain in the department of urology in our institute. Investigations revealed non-functioning left kidney and laparoscopic left nephrectomy was planned. He had no other associated co-morbidity but ECG revealed ST-T changes in lead III and aVf. All other lab investigations were within normal limits. He gave no history of chest pain, dysponea on exertion or hypertension but in view of age and major surgery a cardiology opinion was sought. Fitness was given once Tread Mill Test turned out to be negative and 2D-echo was within normal limits.

Pre-operative vitals were: pulse 92/min, BP 160/92 mmHg and SpO_2 98%. Induction was done with inj. Glycopyrrolate (GPL) 0.2 mg and inj. Midazolam 1mg, inj. Fentanyl 100 µg, inj. Propofol 120 mg and inj succinylcholine 100 mg. Ventilation was difficult as anticipated but endotracheal tube was successfully secured in single attempt. SpO_2 was 90% at the time of intubation which came back to 100% once patient was ventilated with endotracheal tube in situ. For maintenance, O_2, N_2O and sevoflurane was used. However BP remained 180/100 mmHg despite adequate depth of anaesthesia and appropriate analgesia. Hence a bolus of nitro-glycerine (NTG) along with clonidine 75 µg was given. Blood pressure remained in the range of 110-95 mmHg (systolic) and 85-95 mmHg (diastolic) throughout the procedure. Other vitals remained within normal limits and patient was extubated after reversal with inj. Neostigmine 3.0 mg+inj. GPL 0.4 mg i.v.

Post extubation it was noted that he was unable to vocalize and move right upper and lower limbs. Neurology opinion was sought. CT scan revealed fresh watershed infarct in frontoparietal region and an old infarct in occipital region. On interrogation, attendant confirmed a similar episode one year back for which patient had taken some Ayurvedic treatment. He had recovered completely then. After 6 h post operatively patient had recovered fully with power 5/5 in both limbs and normal vocalization. He remained alright for an hour so and then deteriorated again. An embolic phenomenon was suspected. 2D-Echo was normal but carotid Doppler revealed acute on chronic thrombus critically reducing (70% blockage) the lumen of left internal carotid artery while right internal carotid artery was also partially narrowed.

Patient was put on anticoagulants and was finally discharged with no residual neurological sequel. He was followed for a year and no recurrence of the episode was noted.

Discussion

In cardiac, neurologic, and carotid surgery, the incidence of stroke is known to be high (2.2 5.2%) [10]. Currently, the incidence of perioperative ischemic stroke in non-cardiac, non-neurologic, and non-major vascular surgery is in the range of approximately 0.1-1.9% depending on associated risk factor [11]. Stroke presenting immediately after extubation is rare and suggests intraoperative etiology. Bitekar et al. found that age and preoperative history of stroke were strong risk factors for peri-operative acute ischemic stroke in patients undergoing non-cardiaothoracic, non-vascular surgery [12]. Thus if a previous episode of stroke is not disclosed, it can alter the course of intra-operative and post-operative events. With this case report we would like to highlight few points

1. Importance of history taking especially in elderly patients cannot be undermined. In our case history of previous TIA was not given. The patient and the relatives did not reveal previous episode, thinking it to be inconsequential. All patients presenting for surgery with a history of cerebrovascular compromise should be regarded as high risk for perioperative stroke. In our case if the previous episode was known further workup would have been possible. The risk stratification could have been done and explained to the patient and relatives. This is important from medico legal aspects as well. Burkle et al. in their study have concluded that majority of the patients in U.S. want rare and serious complications to be discussed prior to surgery [13]. Although no such study has been conducted among Indian population, but experience shows similar sentiments especially in urban population.

2. Beach chair position is known to cause an increase in neurologic injury. However there is no literature to suggest the same during kidney position given for nephrectomy. This has been reported here for the first time. Probably, the rotation of neck might have dislodged emboli.

3. Better preoperative control of blood pressure could have prevented fluctuations in blood pressure intraoperatively. This holds true especially in case of laparoscopy where capnoperitoneum further increases haemodynamic variability. A meta-analysis of randomized trials showed that antihypertensive medications reduced the risk of recurrent stroke after stroke or TIA [14]. Recent ASA guidelines on stroke prevention in patients who already had stroke or TIA recommends initiation of BP therapy for previously untreated patients with ischemic stroke or TIA [2].

4. Nitrous oxide is known to increase plasma homocysteine concentration thereby impairing the endothelial function [15]. No association has been demonstrated in several large studies between intraoperative administration of nitrous oxide and postoperative stroke [15-17]. But due to the high risk involved in this case, it could have been totally avoided.

5. Intraoperative hypotension in the presence of severe internal carotid artery stenosis or occlusion is a known risk factor for watershed infarcts. Bijker et al. in their study found that a decrease in intraoperative mean arterial pressure of more than 30% below baseline is associated with postoperative stroke [18]. They concluded that "Hypotension is best defined as a decrease in mean blood pressure relative to a preoperative baseline, rather than an absolute low blood pressure value". Soo et al. had concluded that using a single baseline blood pressure measured upon admission, a decrease in systolic blood pressure (SBP) or Mean artery pressure (MAP) of approximately 30% resulted in blood pressures similar to the nadir values that occurred during normal sleep. Intra-operative nadir blood pressures were usually lower than this, and often lower than nadir sleep blood pressures, suggesting that the intra-operative period is associated with falls in blood pressure greater than those seen during physiological sleep [19]. Blood pressure was controlled with clonidine and NTG in our case, with systolic blood pressure remaining in the range of 95-110. It represents a reduction of >30% of the pre-operative value. Reduced perfusion limits the ability of the bloodstream to clear or wash out emboli and microemboli and reduces available blood flow to regions rendered ischemic by emboli that block supply arteries [20]. Recent consensus statement from the Society for Neuroscience in Anesthesiology and Critical Care states that there are subsets of patients at increased risk for stroke who clearly are harmed by hypotension or low flow states. Hence hypotension should be avoided in high risk patients [2].

6. Disclosure of previous TIA would have shifted the patient from asymptomatic to symptomatic category. According to recent guidelines on the management of patients with extracranial carotid and vertebral artery disease [21], carotid endarterectomy (CEA) or carotid artery stenting is recommended in patients with high-grade (more than 70% stenosis) symptomatic carotid artery stenosis. A meta-analysis done by Rothwell have found that benefits of revascularization are more in men than in women, and in the elderly, and benefit decreased with time since last symptoms. The degree of symptomatic carotid stenosis is the most important determinant of benefit from carotid endarterectomy, but other factors, particularly the timeliness of surgery, are also important. The procedure should ideally be done within 2 weeks of the patient's last symptoms [22]. So the usefulness of carotid endarterectomy or stenting in this patient remains controversial.

Thus we can say a careful and detailed history taking goes a long way in successful outcome of surgery. Better guideline formulation is required to manage rare but fatal complications like stroke.

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