Journal of Cardiovascular Disease Research

ISSN:0975 -3583,0976-2833 VOL14, ISSUE 07, 2023

Anaesthetic management of geriatric patient with bifid uvula with ejection fraction of 30% posted for surgery of intertrochanteric femur fracture

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Abstract

Anaesthetic management of geriatric patient with associated cardiac disease coming for non cardiac surgery is always challenging. Geriatric patient presenting with heart disease which results in heart failure and low ejection fraction. These patients are at increased risk of myocardial ischemia, myocardial infarction, conduction disturbances and cardiac arrest perioperatively. Here we report a case of successful anaesthetic management of 74 year old female with unknown history of history of IHD with ejection fraction of 30% with introchanteric fracture femur surgery under combined spinal epidural anaesthesia.

Keywords: IHD, geriatric, bifid uvula, ejection fraction

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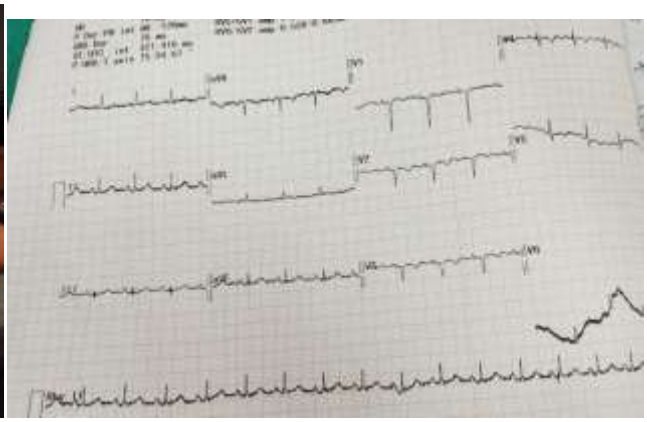
Introduction

Worldwide IHD is the leading cause of morbidity and mortality and perioperative complications in cardiac patients.[1] These patients require risk factor identification which includes age, diabetes mellitus, hypertension, hypercholesterolemia, renal dysfunction, obesity, smoking, myocardial infarction, heart failure and peripheral vascular disease.[2] These patients should have preoperative evaluation, optimisation, risk stratification and any intervention needed prior to surgery. Geriatric patient have their own age related problem. These patients are at increase risk of acute exacerbation of heart failure in perioperative period. Normal ejection fraction is 55-70%. Ejection fraction less than 35% may result in serious cardiac complications in the perioperative period.[3] Bifid uvula can have associated cardiac anomalies.

Case report



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A 73 year old female with known history of hypertension since 10 years presented to orthopedics emergency department and was diagnosed to have intertrochanteric fracture femur and was posted for femoral nailing. Preoperative assessment was done. Patient was having speech difficulty because of bifid uvula and history was given by his son. Patient had history of hypertension since 10 years for which patient was taking tablet amlodipine 10 mg once a day. Other than hypertension patient had no chronic illness. There was not any previous surgical history. There was no history of blood transfusion and any drug allergy. On examination patient was thin built, pulse rate of 90/min and blood pressure of 140/70 mmHg. Mouth opening was adequate but the patient was edentulous. The patient was having bifid uvula. Neck movements and the spine was normal. On auscultation chest was bilaterally clear. Hematological and biochemical investigations were within normal limits. Chest radiography was normal. ECG was showing T wave inversion in V2-V5 chest leads. 2D-echocardiography and cardiologist opinion was taken for ECG changes. 2D-echo shows moderate mitral regurgitation, trace tricuspid regurgitation, severe LV dysfunction and ejection fraction of 25-30%, hypokinetic anterior septum, anterior wall and anterolateral wall at base and apex. 2D-echo was suggestive of ischaemic heart disease and was opined to take up the patient for surgery under high cardiac risk during perioperative period. Patient was optimised with tab ecosprin 75mg and atorvastatin 10mg at night, tab metoprolol 25mg once daily, tab nicorandil 50 mg twice a day and tab aldactone 25 mg once daily. Patient was kept fasted 6 hours for solids and 2 hours for liquids prior to surgery. Antihypertensive medication was continued on the day of surgery. Preoperative counselling was done and informed and written high risk consent was taken from the patient and the attendant. Patient was then shifted to operation theatre. All the emergency drugs were kept ready. Expected surgical time was 2 hours. Standard ASA monitoring was done. Baseline vital parameters were heart rate which was regular and ranging from 80-90, oxygen saturation of 97% on room air and blood pressure of 134/68 mmHg. Intravenous access was secured in right hand with 18G cannula. Ringer lactate was used as maintenance fluid. Patient was then made in sitting position. Under all aseptic precautions, cleaning and draping was done. Skin was infiltrated with 2% plain lignocaine in L2-L3 and L3-L4 intervertebral spaces. 18G tuohy's needle was inserted at L2-L3 intervertebral space and identification of epidural space was done using loss of resistance technique and epidural catheter was fixed at 8cm from the skin. Test dose with 3ml of 2% lignocaine was given after negative aspiration. Spinal anaesthesia was given using 23G quincke's needle in L3-L4 intervertebral space and free flow of CSF noted and 2ml of injection bupivacaine 0.5% heavy and 25 mcg of injection fentanyl was given in subarachnoid space. Adequate block was achieved till T10 level. Oxygen supplementation was given using face mask. The surgery lasted for 2 hours. The duration of spinal anaesthesia was 3 hours and epidural top up was not required during surgery. The BP and pulse rate were maintained within 20% of the initial values throughout the surgery. For postoperative analgesia epidural top up was given using 8 ml of 0.125% plain bupivacaine every 8 hourly for 48 hours after surgery. Day 3 onwards patient was comfortable and epidural catheter was removed 3 days after surgery. The intraoperative and postoperative periods were uneventful.

Discussion

IHD can leads to perioperative complications. So these patients should be optimised preoperatively which can be done with beta blockers, calcium channel blockers, diuretics, vasodilators, ACE inhibitors and angiotensin receptor blockers. In patients with IHD our

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main aim is to maintain hemodynamic stability, optimising myocardial oxygen supply and reducing myocardial oxygen demand, monitoring for ischaemia or infarction, maintaining normothermia, preventing hypoxia and avoiding blood loss.[4] In our case patient doesn't give history of chest pain in the past and during preoperative assessment and during work up came out to be a case of IHD. Cardiologist opined to take up the case under high risk.

The geriatric patients are high risk patients because of their altered physiology and associated comorbidities as well as pharmacokinetic and pharmacodynamic changes that may alter drug responses. The physiological changes in aging cardiovascular system affect the arterial and venous musculature, myocardium, autonomic nervous system and making the older person more prone to cardiovascular instability. The cardiovascular changes that occur are arterial stiffening so much of the stroke volume is stored in stiff thoracic aorta which causes increased pressure during systole and thus systolic hypertension.[5,6,7] So hypertensive disease in elderly increases systemic vascular resistance. There is also myocardial stiffening which causes delayed relaxation during diastole so impaired early diastolic filling. Stiff ventricles causing late diastolic filling become dependent on atrial kick and atrial pressure.[8] So net effect make the heart more prone to diastolic dysfunction. There is also venous stiffening, so changes in blood volume or shifts in blood distribution like blood loss are poorly tolerated. There is sympathetic overactivity causing desensitisation of beta adrenoreceptors which causes decreased chronotropic and inotropic response to beta stimulation.[9] There is blunting of cardiovascular response to stress, exercise and exogenous catecholamines. There is weaker baroreceptor reflex, so there is decreased ability to compensate for sudden hemodynamic changes due to changes in posture or volume which causes increased cardiovascular instability. There is lower basal vagal tone in older people, so there is less increase in HR in response to atropine.[10] The major challenge in anaesthesia for geriatric patients with cardiovascular disease is maintenance of hemodynamic stability particularly in the face of reduced physiological reserve and capability to respond to periods of stress.

Bifid uvula is a cleft in uvula and considered as a marker of submucous cleft palate. It is rarely found in adults. Bifid uvula can have sometimes syndromic association like Cornelia de Lange syndrome and can cause airway problem due to anatomical distortion.[11]

Technique of anaesthesia whether general or regional depends upon the type of surgery and patient requirements. During general anaesthesia goal is to avoid tachycardia and hypertension which causes myocardial oxygen demand supply mismatch which can lead to myocardial ischemia. General anaesthesia is associated with fall in blood pressure due to intravenous induction agents, tachycardia and hypertension due to sympathetic response during laryngoscopy and intubation which can be prevented with regional anaesthesia.[4] In these patients spinal and epidural anaesthesia can be opted. Although regional anaesthesia can cause hypotension due to sympathetic blockade which can be managed with adequate preloading and vasopressor such as phenylephrine. Larger dose of local anaesthetic can cause myocardial toxicity and depression.

Epidural anaesthesia is better for post operative analgesia and suppressing the stress response to surgery and decreasing myocardial ischaemia and dysrythmia. Yeager et al concluded that epidural analgesia group patient has lesser incidence for postoperative myocardial morbidity compared with general anaesthesia group scheduled for high risk surgery.[12] Beattie et al

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concluded that there is reduction in cardiac events with postoperative epidural analgesia as it reduced postoperative MI also.[13]

Conclusion

Geriatric patient with IHD should have thorough preoperative assessment, risk stratification, strict intraoperative monitoring, postoperative care and pain relief as all these are important aspect of anaesthetic management. Spinal and epidural anaesthesia can be a good alternative to general anaesthesia as they reduce preload and afterload and maintain myocardial oxygen supply and reduces myocardial oxygen demand and reduces harmful effects of general anaesthesia like hypotension due to intravenous induction agents and pressor response to laryngoscopy and intubation.[4]

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