Anaesthetic Management of a Case of Hypertrophic Obstructive Cardiomyopathy for Non-Cardiac Surgery under Local Anaesthesia.

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Subject: Anaesthesia.

Abstract:

Hypertrophic obstructive Cardiomyopathy is a rare disorder. There is paucity of literature on anesthetic management of this disorder. In this case report we highlighting the anesthetic problems encountered during management of such patients. There is inappropriate and elaborate left ventricular hypertrophy with mal-alignment of myocardial fibers. Heart failure occurs due to stiff non-compliant ventricles which impede diastolic filling.

Keywords: Hypertrophic obstructive Cardiomyopathy, Anaesthesia, Management. etc.

Introduction:

Increased diastolic filling pressures are seen. Pressure gradient is dynamic and varies from beat to beat. Narrowing of sub aortic area is due to hypertrophy of septum. Dynamic left ventricular outflow tract (LVOT) obstruction and MR due to abnormal systolic anterior motion (SAM) of anterior mitral leaflet is seen [8,9,13]. Narrowing of already small Lt ventricular outflow tract is aggravated by SAM of mitral valve against hypertrophied septum, i ) Increased left ventricular contractility ii) Decreased ventricular volume (Preload) iii ) Decreased (Afterload) [1].

A 62 yrs male was admitted with C/o - Swelling on Left inguinal region since 3-4 mths. H/o - Palpitation, Sweating, headache. No c/o – Cough, URTI, Dyspnoea, Chest pain, Syncope. No h/o hypertension, diabetes, asthma. Not taking any cardiac drugs. Effort tolerance was good.

Personal History: patient was a Chronic Smoker (Bidi) – since 40 yrs and occasional Alcoholic – since 40 yrs. On examination patient was Consc. Oriented, Afebrile, obese having No pallor, icterus, cyanosis, clubbing and edema. He had edentulous lower jaw and loose teeth in upper jaw, Mouth opening was adequate with MPC Grade – II. His vitals were PR – 60/ bpm, regular, B.P – 180/110 mmHg, RR- 16 cpm. With weight – 72 kg. Pt. was evaluated by Physician and following treatment was started Tab. Metpure XL 25mg I. OD, Tab. Nicardia 10 mg 1.BD. On systemic examination patient was conscious oriented with S1S2 – Normal, having No murmur, Air entry equal on both sides, No added sounds having emphysematous chest, on per abdomen examination was soft, non-tender with Left inguinal hernia. Routine Blood investigations like CBC, BSL, KFT – WNL.

2D -ECHO & COLOUR DOPLER:

E/o – Systolic Anterior Motion of anterior mitral leaflet, Severe hypertrophy of LV wall, Good LV systolic function, LVEF – 60%. On COLOUR DOPLer there was E/o – Relaxation type diastolic dysfunction. Showed Hypertrophic Obstructive Cardiomyopathy (H.O.C.M), E/o – Systolic anterior motion (SAM)

Patient was accepted for anesthesia under grade-III ASA and was posted for left sided inguinal hernia repair. Pre – operatively pt. was Nbm x 6 hrs prior to surgery, Anti-hypertensive drugs were continued on the day of surgery, Tab. Restyl 0.25 mg HS and Tab. Rantac 150 mg HS/ Morning of Sx were prescribed.

In operation theatre table pulse rate – 62/ bpm, BP – 150/96 mmHg, SPO2 – 98 % on air. Under all aseptic precautions left Hernia block was given by injecting 0.25% Bupivacaine 40 ml diluted. Adequate level of anaesthesia was achieved. IV sedation was given with Inj. Midaz 1.5mg iv + Inj.Fentanyl 25 + 25 µg iv [1].
Intra op vitals remained stable and procedure was completed uneventfully. During post op period patient was conscious and obeying verbal commands with pulse rate 60 bpm, BP 150/96 mmHg, sPo2 98% on Air. Post op course was uneventful.

**Discussion:**

Our AIM was to:
- i) Minimize LVOT obstruction
- ii) Avoid sympathetic stimulation, hypovolemia and vasodilatation that worsens LVOT obstruct. Events that increase Left Ventricular outflow tract obstruction are – i) Events that Increased myocardial contractility like β adrenergic stimulation (catecholamines) ii) Events that Decrease pre - load like hypovoluemia, vasodilators, tachycardia, IPPV iii) Events that Decrease after load like Hypotension, vasodilator [4,13].

**Anaesthetic Management:**

While deciding the type of anaesthesia after review of literature [3,5,6,7,9 ] we had following considerations for,

**General anaesthesia:** Hypotension – decreased systemic vascular resistance, Vasodilatation, Intubation response – increase in B.P & tachycardia, IPPV (decrease preload & predispose hypovolemia). [1,11,12]

**Spinal / Epidural anaesthesia:** Fixed cardiac output diseases are a major contraindication for central neuraxial blockade [11,13]. Hypotension due to peripheral sympathetic blockade. As a treatment of hypotension, use of β adrenergic agonist - ephedrine, dopamine, dobutamine increases myocardial contractility & tachycardia causing LVOT obstruction. Instead we can USE α adrenergic agonist – phenylephrine [1]. Patient had diastolic dysfunction. Therefore aggressive fluid replacement for treating hypotension may result in pulmonary edema [14]. We have to use diuretics, nitrates, digoxin with caution to treat pulmonary edema. Therefore spinal / epidural anaesthesia are relatively contraindicated.

**Local anaesthesia:** After knowing the pathophysiology of HOCM and the problems with G.A and spinal/ epidural anaesthesia the procedure was completed with Hernia block with minimal hemodynamic changes intraoperatively. Also provides post op analgesia.[10,11,15].

Regional anaesthesia offers better and longer pain relief with fewer side effects than do opioids. Regional anaesthesia is used to avoid some dangers of G.A like Hypotension – decreased systemic vascular resistance, Vasodilatation, Intubation response – increase in B.P & tachycardia, IPPV (decrease preload & predispose hypovolemia) and provide post operative pain relief. Regional anaesthesia is used less frequently because of inexperience of anaesthetists and fear of failure, fear of neurological complications.

**Advantages:**

Risk of S.A avoided, It makes surgeon gentle, Patient can cough during operation if required, Catheterization is eliminated, Considering all these factors we decided to give hernia block.

- Technique is as follows:
From a point 2 cm above and medial to the anterior superior iliac spine inject 5 – 10 ml of LA under the external oblique aponeurosis in a fanwise fashion.

We felt a ‘click’ as the needle pierced the aponeurosis. Now injected under the aponeurosis from just lateral to the pubic tubercle, 5 ml towards the umbilicus and 5 ml laterally.
We waited for 15 minutes and then infiltrated subcutaneously in the line of the incision 1. Nerve supply to inguinal and femoral herniae comes from anterior br. of 6 lower intercostals nerves which continue forward on the anterior abdominal wall accompanied by the last thoracic (subcostal nerve). The iliohypogastric and ilioinguinal nerves (T12 and L1) supply the lower abdomen. The genitofemoral nerve (L1,2) supplies inguinal cord structures and the anterior scrotum via its genital br and supplies the skin and subcutaneous tissues of the femoral triangle via the femoral branch [10,11].

**Conclusion:**

It may be worth emphasizing that successful anesthetic management of a patient with HOCM requires thorough understanding of the hemodynamic changes, proper intraoperative vigilance , avoiding factors that may increase LVOT obstruction with proper medication and intravascular fluid therapy.

Regional anaesthesia must always be considered for all its advantages as it helps to avoid general anaesthesia and central neuraxial blockade in patients of severe cardiac disease where hemodynamic balance is of prime importance.

**References:**

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