Case Report

Left Bundle Branch Block In Young Female Posted For Non Cardiac Surgery

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Abstract :

Though Left Bundle Branch Block (LBBB) is a common occurrence in general populace , yet it is found in rarity in young subset of patients . We are presenting a case of successful administration of general anaesthesia in a 28 year old female patient with LBBB ab initio posted for laparoscopic cholecystectomy . The patient maintained a status quo while under anaesthesia . Her LBBB neither deteriorated to complete heart block nor reverted to normal sinus rhythm . We hypothesize that such young patients may be taken up for surgery under general anaesthesia after complete cardiological evaluation and a long term follow-up plan may be drawn to monitor any future deterioration in patient's cardiac status.

Keywords:

Anaesthesia, LBBB, Conduction, Young

Introduction:

American College of Cardiology (ACC) and American Heart Association (AHA) define LBBB as follows-

1. Rhythm must be of superaventricular origin (EG: ventricular activation coming from atrial or AV nodal activation)
2. QRS Duration greater than 120 ms
3. Lead V1 should have either a QS or a small r wave with large S wave
4. Lead V6 should have a notched R wave and no Q wave1

LBBB is usually a sign of organic heart disease and so it may be the first clue to 4 previously undiagnosed but clinically important abnormalities :

1. Advanced Coronary Artery Disease
2. Valvular Heart Disease
3. Hypertensive Heart Disease
4. Cardiomyopathy

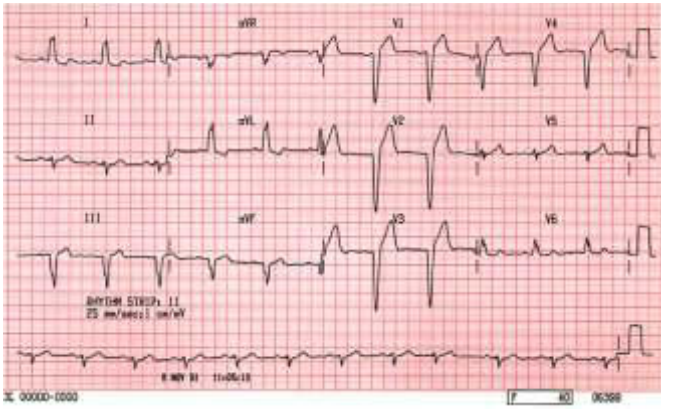
Most patients of LBBB also has Left Ventricular Hypertrophy.

LBBB is prevalent in about 0.06% to 0.1% of the general population. Approximately 33% of patients with heart failure have LBBB. Incidence increases with severity of left ventricular failure in heart failure patients.2

Preoperative Inverstigations:

Hb- 11.2 g/dl , TLC- 6000
B. urea- 15mg% S. Creatinine – 0.6mg%
S.electrolytes- S.sodium- 139meq/l, S.potassium- 4.6meq/l
S.billirubin/SGOT/SGPT/ALP- 0.6/41/57/115
HIV, HBV, HCV – NR
CPK-MB- 16 IU/L
PTI- 100%

Preoperative ECG of patient



Case Report

A 28 year old female presented to our hospital with pain abdomen associated with vomiting with no other positive history. There was no history of any chest pain and fainting episodes. On examination no abnormality was detected in cardiovascular and respiratory system. On abdominal palpation mild tenderness was present in right hypochondrium. All routine investigation including complete blood count, serum creatinine, blood urea, serum electrolytes, bleeding time, clotting time were within normal limits. Chest Xray was also normal. USG whole abdomen showed multiple echogenic masses in gall bladder suggestive of cholelithiasis and also there was grade 1 fatty liver. ECG showed wide QRS complexes in all leads and W pattern in lead V1 and M pattern in lead V6 suggestive of LBBB. To rule out IHD, Troponin T was done which came out to be negative. ECHO confirmed the presence of LBBB and ejection fraction of 61% with normal systolic and diastolic functions.

Technique

Patient was scheduled for laparoscopic cholecystectomy under general anaesthesia. In the preoperative room, patient was premedicated wih inj. midazolam. Inside the operation theatre, patient was made to lie supine on operating table. Intravenous line was secured and intravenous fluid attached. All routine monitors applied for monitoring intraoperative HR, NIBP, SPO2, ETCO2 and ECG .

Once patient was adequately hydrated and given antisialogogue inj. glycopyrolate, patient was preoxygenated with 100% Oxygen for 5 minutes. To maintain cardiovascular stability patient was induced with inj. Etomidate 3. Inj. Fentanyl was also used to attenuate stress responses by laryngoscopy and tracheal intubation.

Non Depolarising muscle relaxant inj. vecuronium given and endotracheal intubation was facilitated with 7 mm internal diameter cuffed tube orally. After confirming the correct placement of endotracheal tube on chest auscultation (bilateral equal air entry) and ETCO2 reading endotracheal tube was secured.

Maintenance of anaesthesia was done with oxygen, nitrous oxide (50:50), isoflurane 0.5% to 1% and inj vecuronium .

In perioperative period vitals were within normal limits.

Surgery went uneventful.

At the end of surgery Inj neostigmine and glycopyrolate was given and patient extubated smoothly. Patient was fully awake and following all verbal commands. Patient was supplemented with oxygen (4l/min) for 30 minutes after which she was shifted to recovery room.

Discussion

Left bundle branch block is common in patients with heart disease and this entity may progress to left ventricular dysfunction and worsen the prognosis. In contradistinction to this , LBBB is a very rare clinical entity in young population of patients without clinical evidence of cardiac dysfunction.4

In one study of USAF flying personnel (involving 237000 subjects), there were 125 individuals with LBBB out of which 119 were below 50 years of age. 101 of these did not have overt manifestation of LBBB. We are still in dark about the pathogenesis of LBBB in young adults without heart disease. The plausible causal association may be formed with familial progressive cardiac conduction disease (Lenegre disease), concealed coronary artery diseases, primary dilated cardiomyopathy and myocarditis.5

In another study involving prevalence of asymptomatic LBBB in noncardiac surgery in Asian population was 0.031% 6. New onset LBBB has been related to acute coronary syndrome and may mask the presence of ST segment abnormalities. Cardiomegaly in preoperative chest X-ray does not have a predictive value on progression of LBBB. There can be intermittent LBBB – Reversal to normal conduction during general anaesthesia . These changes are hypothesized to be heart rate dependent. The more the heart rate remains within normal range, the more the propensity of LBBB to revert to normal rhythm. The classical explanation of this varying behaviour of LBBB is firstly because of the vasodilatory effects of volatile anaesthetics which improves the coronary circulation thereby shifting the block pattern towards normal rhythm thus improving the hypoxic state of myocardium and secondly because of narcotics used during general

anaesthesia which have negative chronotropic effects on heart rate actually required for block pattern reversal.

Although intraoperative heart rate remained within normal limits in our patient yet we did not observe any reversal to normal rhythm. This shows that there were no structural ischaemic areas of heart which would have responded favourably to coronary dilatation after volatile anaesthetic agents.

In yet another study a previously healthy young 22 year old male athlete developed LBBB just after induction of anaesthesia twice using two different anaesthetic regimes, one being fentanyl, propofol and atracurium and another being fentanyl, etomidate and atracurium. The reason assigned for this development was physiological LVH or " Athlete's Heart" 7. The athletes heart has increased cardiac muscle mass and pumping ability. The surgery had to be abandoned on both the occasions. Here it was postulated that LBBB under anaesthesia is a consequence of his "athlete's heart".

Our patient took a middle path during the anaesthesia between above mentioned studies . Surgery went uneventful.

She was having LBBB ab initio and her normal rhythm was not reverted under general anaesthesia . Hence it can be inferred that she neither had any ischaemic areas in heart nor did she had LVH. Hence we are of the considered opinion that such young patients may safely be taken up for non cardiac surgery under general anaestgesia after proper preanesthetic cardiological evaluation. But these patients should be followed up for any complications of LBBB on long term basis.

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