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Rate Dependant Left Bundle Branch Block under Anaesthesia.

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ABSTRACT

Congenital rate dependant bundle branch block can take anaesthesiologists by surprise in the operating room. These patients have a normal ECG during preoperative assessment visits. But an increase in heart rate due to anxiety or other causes unmasks the bundle branch block pattern. This is usually first diagnosed on the operating table. Our patient presented for laparoscopic sterilization. The goals of anaesthesia is control of heart rate to keep heart beating in normal sinus rhythm.

Keywords:LBBB, rate dependent arrhythmia, peri operative assessment.

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INTRODUCTION

Bundle branch blocks are intraventricular conduction defects causing in co-ordinate contraction of the ventricles. The most common cause of left bundle branch block is ischemic heart disease. We present a case of congenital rate dependant bundle branch block posted for laparoscopic sterilization.

Case Report

A 24 year old women presented for emergency LSCS, indication being fetal distress. Her preoperative investigations were within normal limits. Preoperative ECG showed normal sinus rhythm. On connecting the patient monitors in the Operating room, the ECG showed left bundle branch block pattern. She was having a heart rate of 110 due to anxiety. Since it was an emergency, further evaluation could not be done under subarachnoid block. Intraoperative hemodynamics were stable. Procedure went on uneventfully.

Post-operative cardiac evaluation did not reveal any cardiac abnormalities in ECHO. A treadmill test was deferred due to postoperative state. A tentative diagnosis of rate dependent left bundle bunch block was made.

The same patient came for laparoscopic sterilization after 3 months. The procedure was done under balanced anaesthesia with Propofol, Fentanyl and Atracurium and airway control with endotracheal tube.

Intra procedure whenever the rate increased to >70bpm, the rhythm shifted from normal sinus rhythm to left bundle branch block. The rhythm was maintained with judicious use of IV Esmolol. This conversion between left bundle branch block and normal sinus rhythm occurred 3-4 times.

DISCUSSION

Rate dependant left bundle branch block is usually a benign condition. Due to slower conduction in the left bundle branch, it becomes susceptible to refractory blockade above a certain critical heart rate. This manifests as a sudden change in rhythm. There is usually no change in hemodynamics.[1]

Though benign, its diagnosis assumes importance because left bundle branch block is associated with myocardial ischemia and infarction.[2]

Left bundle branch block is common abnormal finding in hypertensive patients and coronary artery disease patients. In a young patient, left bundle branch block maybe associated with "Athlete heart" and Hypertrophic obstructive cardiomyopathy. [3]

Rate dependent left bundle branch block is rare. Arrhythmia in general anaesthesia occurs when heart rate exceeds critical value which usually occurs during intubation.[4,5]

The exact mechanism of rate dependent left bundle branch block is obscure but may result from anatomic/pathologic interruptions in cardiac conducting bundle due to ventricular enlargement or strain or without any underlying lesions. The onset is sudden and persists till the heart rate falls below critical value. This critical rate is also dependent on change in heart rate. With rapid decrease in heart rate, normal sinus rhythm may appear at higher rates and with rapid acceleration, in heart rate, rate dependant left bundle branch block may appear at lower rates.[6,7]

Its diagnosis and treatment has clinical importance.[8,9]

- It may mask ECG manifestations of other disturbances like myocardial infarction.
- May be mistaken for slow ventricular tachycardia & inappropriately treated.

If diagnosis is not obvious, judicious use of heart rate lowering methods like carotid massage, deep inspiration and pharmacologic agents like Neostigmine, Edrophonium or Propranolol change the rate dependent left bundle branch block back to normal sinus rhythm.[10,11]



REFERENCES

- [1] Fahy GJ, Pinski SL, Miller DP, McCabe N, Pye C, Walsh MJ, et al. *Am J Cardiol* 1996;77: 1185-90.
- [2] Grady TA, Chiu AC, Snader CE, Marwick TH, Thomas JD, Pashkow FJ, et al. *JAMA* 1998;279: 153-6.
- [3] Domino KB, LaMantia KL, Geer RT, Klineberg PL. *Can AnaesthSoc J* 1984;31(3 Pt 1):302-6.
- [4] Francia P, Balla C, Paneni F, Volpe M. *ClinCardiol* 2007;30: 110-5.
- [5] Littmann L, Symanski JD. *J Electrocardiol* 2000;33Suppl: 115-21.
- [6] Rabkin SW, Mathewson FA, Tate RB. *Br Heart J* 1980;43: 164-9.
- [7] Corrado D, Pelliccia A, Bjornstad HH, Vanhees L, Biffi A, Borjesson M, et al. *Eur Heart J* 2005;26: 516-24.
- [8] Mishra S, Nasa P, Goyal GN, Khurana H, Gupta D, Bhatnagar S. *Middle East J Anesthesiol* 2009;20: 295-8.
- [9] Bauer GE. *Circulation* 1964;29: 730-8.
- [10] Bauer GE. *Br Heart J* 1964;26: 167-79.
- [11] Wallace AG, Laszlo J. *Am Heart J* 1961;61: 548-55.