

Reporte de Caso

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Transient left bundle branch block during anesthesia

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ABSTRACT

The sudden occurrence of left bundle branch block (LBBB) during anesthesia is infrequent. Its appearance has been associated to hypertension, tachycardia, myocardial ischemia, and to the use of some drugs. A transient LBBB, which appeared after endotracheal intubation and again after the tracheal tube was removed is presented. Heart rate was higher than 90-95 bpm when the LBBB was present. A misdiagnosis of ventricular tachycardia was made. Lidocaine 80 mg was given intravenously without any change in the QRS pattern. Heart rate decreased and ECG reverted to normal atrioventricular conduction 2 minutes after fentanyl 150 µg was given intravenously. Is possible that this LBBB was rate-related (*Rev Mex Anest*, 1998;21:211-213).

Key words: Anesthesia: conduction heart defects; Heart: arrhythmia.

RESUMEN

Bloqueo fascicular izquierdo pasajero durante la anestesia. Reporte de caso. La ocurrencia súbita de un bloqueo fascicular izquierdo durante anestesia es raro. Generalmente se asocia con hipertensión, taquicardia, isquemia miocárdica y con el uso de algunos fármacos. Se presenta el caso de un bloqueo fascicular izquierdo pasajero que apareció después de la intubación endotraqueal y a la extubación. La frecuencia cardíaca fue de 90 – 95 latidos minuto cuando se presentó. Se hizo el diagnóstico erróneo de taquicardia ventricular y se administraron 80 mg de lidocaína IV, sin ningún cambio en el complejo QRS. La frecuencia cardíaca disminuyó y revirtió a conducción atrioventricular 2 minutos después de la administración de 150 µg de fentanyl. Es probable que en este caso, el bloqueo fascicular esté relacionado con la frecuencia (*Rev Mex Anest*, 1998;21:211-213).

Palabras Clave: Anestesia: defectos de conducción cardíaca, arritmias

TRANSIENT conduction defects during anesthesia have been rarely reported. Transient or intermittent left bundle branch block (LBBB) may be associated with ischemic heart disease,¹ hypertension, tachycardia,^{2,3} and the use of some drugs.^{4,5} In other cases it was not possible to find a cause for the intermittent LBBB.^{6,7} A case of transient LBBB, that first occurred after endotracheal intubation and was misdiagnosed as sustained monomorphic ventricular tachycardia (SVT), is reported.

Case Report

A 56-kg, 60-yr-old female patient, ASA II, was scheduled for a hysterectomy for cervical carcinoma. Past medical his-

tory included only mild hypertension treated with hydrochlorothiazide. Physical examination was unremarkable. Preoperative ECG (Figure 1A), chest x-ray, complete blood count and blood chemistries were all within normal limits. Potassium serum level was 4.2 mmol/L.

Diazepam 5.0 mg was given i.m., 1 h before induction of anesthesia. Arterial pressure was 130/70 mmHg, heart rate was 75 bpm and the central venous pressure (CVP) was 8 cmH₂O before induction of anesthesia. The CVP catheter had been inserted via right internal jugular vein the night before and its tip position confirmed to be in the superior vena cava by chest roentgenogram. A combined general and regional anaesthetic technique was chosen. The patient received epidural bupivacaine (15 ml of 0.5% with adrenaline 1:200,000) at the L3-L4 lumbar interspace and a T6 dermatomal level of sensory analgesia was achieved. After 25 min, general anesthesia was induced with fentanyl 100µg, etomidate 12 mg and pancuronium 5 mg. Endotracheal intubation was performed and the lungs could be easily ventilated. One minute later, the QRS complexes became markedly widened, heart

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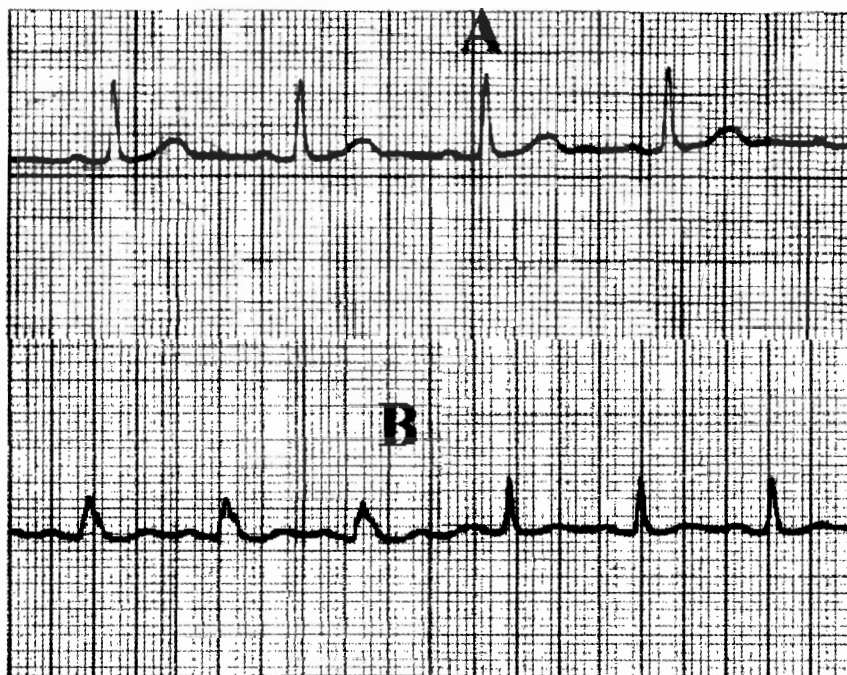


Figure 1. A. Standard lead II tracing showing normal preoperative sinus rhythm. B. Standard lead II tracing showing left bundle branch block converting to normal sinus rhythm at the recovery room.

rate was approximately 120 bpm, arterial pressure was 100/60 mmHg and CVP was 13 cmH₂O. As the P wave could not be recognized the arrhythmia was mistaken for a SVT and the patient received a bolus of lidocaine 80 mg intravenously without any further change in the QRS pattern. Fentanyl 150 µg was then given intravenously because inadequate blockade of autonomic responses to tracheal intubation might be causing the arrhythmia. ECG reverted to normal atrioventricular conduction 2 minutes after fentanyl administration without any other treatment. Heart rate decreased to 90-95 bpm and arterial pressure was 115/60 mm Hg. A blood sample was immediately collected and sent for blood gas analysis with all results between normal limits. Oxygen saturation was 99% during the entire induction period as revealed by pulse oximetry. The surgery proceeded uneventfully for 2 hours with a normal sinus rhythm throughout the entire procedure and anesthesia was maintained with 50% nitrous oxide and 0.5% isoflurane in oxygen. At the end of surgery, the patient received atropine 0.75 mg and neostigmine 1.5 mg for the reversal of neuromuscular blockade. While she was recovering from anesthesia, the QRS became widened again, immediately after the tracheal tube was removed, when the heart rate was 105 bpm. The patient was moved to the recovery room and the rhythm spontaneously reverted to normal sinus while the 12-lead ECG was being performed, confirming the LBBB (Figure 1B). Heart rate was decreasing slowly and was approximately 90-95 bpm at the moment the QRS returned to normal. The patient had no complaints and did not present the LBBB again during the 6 hours period she stayed at the recovery room unit for rhythm monitoring. She spent an additional 6 days at the Hospital and although she refused further investigation, no cardiovascular event was documented after a 4-month period, when she returned for a routine gynecological consultation.

DISCUSSION

Transient or intermittent LBBB have rarely been reported to occur during anaesthesia^{2,3,6,7} and a recent extensive review on perioperative dysrhythmias did not include those disturbances.⁸ Transient blockade is defined as an intraventricular conduction defect that subsequently returns to normal conduction. Intermittent blockade is characterized by the presence, in a single ECG tracing, of complexes showing the bundle branch blockade and normally conducted beats.⁷ They may occur after the use of lidocaine⁴, trimethaphan⁵ and in a number of other clinical conditions including tachycardia and hypertension.² The wide QRS complexes during a LBBB can be mistaken for SVT.⁹ In the present case, the sudden widening of the QRS and the tachycardia made the identification of P wave impossible on our ECG monitor, and a misdiagnosis of SVT was made. Treatment was started with lidocaine⁸ without any improvement in the apparently life-threatening condition. The class 1A and 1C antiarrhythmic drugs could be hazardous in this kind of patient because they strongly depress the distal conduction system, whereas lidocaine (class 1C) would be more safe. Taking into account that the patient had no heart disease symptoms on preoperative evaluation, and the absence of response to lidocaine or significant

hypotension during the arrhythmia, a doubt arouse concerning the SVT diagnosis. In the present case, the LBBB reverted to normal sinus rhythm after fentanyl administration, lowering the heart rate to 90-95 bpm. Furthermore, the LBBB reappeared during tracheal extubation and reverted spontaneously to normal sinus while the ECG was being performed and heart rate was decreasing, again to approximately 90-95 bpm, strongly suggesting a possible rate-related LBBB. Although the etiology and the significance of rate-related LBBB remains obscure,⁴ it was already shown that transition from normal to abnormal conduction may be related to alterations in heart rate by only 1 or 2 bpm.¹ It should be noted that the heart rate apparently did not change while the ECG was being performed in the present case (Fig 1B) but in fact the LBBB was present only when heart rate was above 90-95 bpm. In addition, left ventricular performance¹⁰ and ventricular filling¹¹ can deteriorate when normal conduction gives place to an intermittent LBBB. The modest fall in arterial pressure and the increase in CVP probably reflected the decreased ventricular performance during the blockade. Central venous catheterization of the right atrium or right ventricle¹² and abnormal blood gases or electrolytes⁹ are other possible etiologies for the arrhythmia, not operative in the present case. Passing catheters to the pulmonary artery in this setting should be done carefully because of risk to mechanically severing the remaining right bundle.

Finally, although widened QRS complexes can be easily misdiagnosed and mismanaged, a transient

LBBB should be suspected when an unexpected widening of QRS complexes supervenes in an otherwise fit patient.

REFERENCES

1. Bauer GE. Transient bundle branch block. *Circulation* 1964;29:730-738.
2. Pratila MG, Pratilas V, Dimich I. Transient left-bundle-branch block during anesthesia. *Anesthesiology* 1979;51:461-463.
3. Rorie DK, Muldoon SM, Krabill DR. Transient bundle branch block during anesthesia. *Anesth Analg* 1972;51:633-637.
4. Tanglente TM, Jayagopal S. Transient left bundle branch block following lidocaine. *Anesth Analg* 1989;69:545-547.
5. Young WL, Gitelman DR, Tatemichi TK. Acute left bundle branch block precipitated by trimetaphan. *Anesth Analg* 1989;69:413-414.
6. Reyford H, De Groote P, Guermouche T. Intermittent left bundle branch block revealed during anaesthesia. *Br J Anaesth* 1994;72:700-701.
7. Edelman JD, Hurlbert BJ. Intermittent left bundle branch block during anesthesia. *Anesth Analg* 1980;59:628-630.
8. Atlee JL. Perioperative Cardiac Dysrhythmias. *Anesthesiology* 1997;86:1397-1424.
9. Stoelting RK, Dierdorf SF. Abnormalities of Cardiac Conduction and Cardiac Rhythm. In: Stoelting RK, Dierdorf SF, eds. *Anesthesia and Co-Existing Disease*. New York: Churchill Livingstone Inc, 1993:57-78.
10. De Nardo D, Antolini M, Pitucco G, et al. Effects of left bundle branch block on left ventricular function in apparently normal subjects. *Cardiology* 1988;75:365-371.
11. Xiao HB, Gibson DG. Effects of intermittent left bundle branch block on left ventricular diastolic function: a case report. *Int J Cardiol* 1994;46:85-88.
12. Kasten GW, Owens E, Kennedy D. Ventricular tachycardia resulting from central venous catheter tip migration due to arm position changes: report of two cases. *Anesthesiology* 1985;62:185-187.