

## Clinical Communications: Pediatrics



### LEFT MAIN CORONARY ARTERY DISSECTION IN PEDIATRIC SPORT-RELATED CHEST TRAUMA

Jose L. Diaz-Miron, MD,\* Patrick A. Dillon, MD,\* Arun Saini, MD,† David T. Balzer, MD,‡ Jasvinder Singh, MD,§  
Nikoleta S. Kolovos, MD,† Jennifer G. Duncan, MD,† and Martin S. Keller, MD\*

\*Department of Surgery, Division of Pediatric Surgery, Washington University School of Medicine, St Louis, Missouri, †Department of Pediatrics, Division of Critical Care, Washington University School of Medicine, St Louis, Missouri, ‡Department of Pediatrics, Division of Pediatric Cardiology, Washington University School of Medicine, St Louis, Missouri, and §Department of Medicine, Division of Interventional Cardiology, Washington University School of Medicine, St Louis, Missouri

Reprint Address: Martin S. Keller, MD, St Louis Children's Hospital, One Children's Place, Suite 5S40, St Louis, MO 63110

**Abstract—Background:** Traumatic coronary artery dissection (CAD) after blunt chest trauma (BCT) is extremely rare, particularly in children. Among coronary dissections, left main coronary artery (LMCA) dissection is the least common, with only two pediatric cases reported previously. Manifestations of coronary dissections can range from ST segment changes to sudden death. However, these manifestations are not specific and can be present with other cardiac injuries. To our knowledge we present the first pediatric case of traumatic LMCA dissection after sport-related BCT that was treated successfully with coronary stenting. **Case Report:** A 14-year-old child sustained BCT during a baseball game. Early in the clinical course, he had episodes of ventricular dysrhythmias, diffuse ST changes, rising troponin I, and hemodynamic instability. Emergent cardiac catheterization revealed an LMCA dissection with extension into the proximal left anterior descending artery (LADA). A bare metal stent was placed from the LMCA to the LADA, which improved blood flow through the area of dissection. He has had almost full recovery of myocardial function and has been managed as an outpatient with oral heart failure and antiplatelet medications. **Why Should an Emergency Physician Be Aware of This?:** Our case highlights that CAD, although rare, can occur after pediatric

**BCT.** Pediatric emergency responders must have a heightened awareness that evidence of ongoing myocardial ischemia, such as evolving and focal myocardial infarction on electrocardiogram, persistent elevation or rising troponin I, and worsening cardiogenic shock, can represent a coronary event and warrant further evaluation. Cardiac catheterization can be both a diagnostic and therapeutic modality in such cases. Early recognition and management is vital for myocardial recovery. © 2014 Elsevier Inc.

**Keywords—**blunt chest trauma; left main coronary artery; dissection; pediatric

### INTRODUCTION

Traumatic coronary artery dissection (CAD) is a rare occurrence that can be seen in younger patients after blunt trauma to the chest. CAD can manifest as dysrhythmia, myocardial ischemia, sudden death or late stenosis. The left anterior descending artery (LADA) is the most commonly dissected vessel (76%), followed by the right coronary artery (12%) and the circumflex artery (6%) (1). Injuries involving the left main coronary artery (LMCA) are exceedingly rare (1–5), with only two pediatric cases reported (6,7). The reported etiology of injury has included automobile and motorcycle collisions. We present a pediatric case of traumatic LMCA dissection

Institutional Review Board review was not required by our institution. However, written consent to review and publish the case was obtained from the patient's mother.

RECEIVED: 13 November 2013;

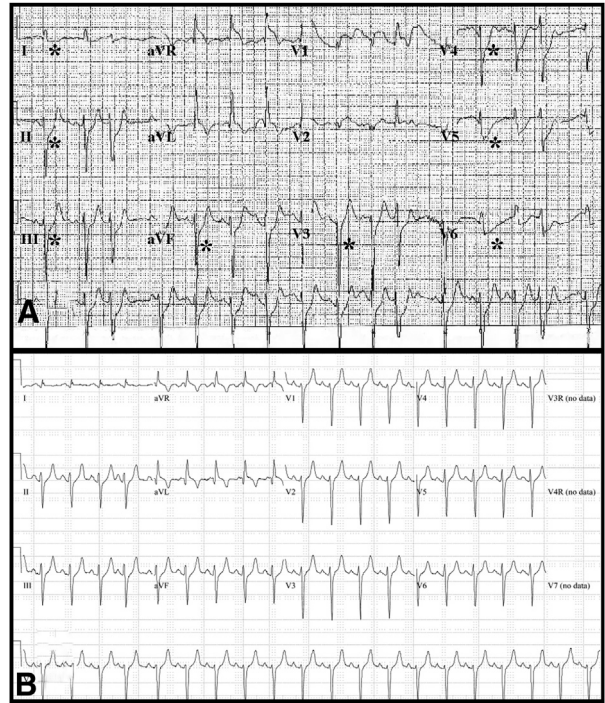
ACCEPTED: 28 April 2014

after blunt chest trauma (BCT) that was successfully treated by angiographic stenting.

### CASE REPORT

A 14-year-old child suffered BCT when another player's knee landed on his chest during a baseball game. The patient initially appeared stunned, then stood up, and walked to the bench. Shortly thereafter, he collapsed while attempting to walk to the car. Emergency medical services were called and found the patient unresponsive but with a pulse. In the emergency department (ED), the patient complained of severe chest pain and was found to have ventricular tachycardia that degenerated into ventricular fibrillation. He required defibrillation twice to restore sinus rhythm and was started on a lidocaine infusion. He developed worsening respiratory distress and oxygen desaturation. He was emergently intubated and was found to have copious pink frothy secretions concerning for pulmonary edema. A repeat electrocardiogram (ECG) revealed sinus tachycardia with diffuse ST segment depression (Figure 1A).

The patient was subsequently air lifted to our institution and required initiation of a dopamine infusion en route. A repeat ECG revealed normal sinus rhythm, a left axis deviation, and apparent resolution of ST segment changes (Figure 1B). An echocardiogram in the ED demonstrated intact great vessels, no isolated wall motion abnormalities, but severely depressed left ventricular (LV) systolic function with a left ventricular fraction shortening (LVFS) of 13%. After initial stabilization in the ED, he was transferred to the pediatric intensive care unit (PICU) on dopamine, lidocaine, and sedative infusions. In the PICU, he required escalation of the dopamine infusion and had a rising troponin I level (peaked at 62.97 ng/dL). A few hours after arrival to the PICU, he had recurrence of ventricular tachycardia and demonstrated ischemic changes on ECG (Figure 2). Due to hemodynamic instability and rapid worsening of clinical status, the patient was taken emergently to the cardiac catheterization laboratory, where an angiogram revealed a dissection of the proximal portion of the LMCA, with diminished flow in the distal portions of the LADA (Figure 3A). Intravascular ultrasound (IVUS) confirmed a complex dissection extending from the left main ostium to the LADA, with sparing of the circumflex ostium (Figure 4). A 3.5 × 18-mm bare metal stent was deployed to completely cover the region of the dissection. The stented LMCA was then post dilated with a 4.5 × 8 mm coronary balloon. Follow-up angiography and IVUS demonstrated markedly improved flow through the LMCA (Figure 3B). Immediately after the procedure, he received clopidogrel 600 mg, aspirin 81 mg, and was continued on a heparin infusion before transferring to the cardiac intensive care unit (CICU).



**Figure 1. Electrocardiograms (ECGs) from pediatric patient after blunt chest trauma (BCT). (A) ECG from outside hospital institution demonstrating ST depressions in I, II, III, aVF, and V3–V6 (asterisks). (B) Apparent resolution of ST changes on ECG in the same patient upon arrival to our emergency department.**

In the CICU, the patient had low cardiac output (cardiac index range of 1.5–2.8 L/min/m<sup>2</sup> measured by a pulse index continuous cardiac output [PiCCO; Phillips, Andover, MA]), with elevated lactate levels and low mixed venous saturations (62%–74 %) during the first 48 h after the procedure. He required initiation of an epinephrine infusion for inotropic–vasoactive support. After a period of stable hemodynamics, he was started on milrinone and nitroprusside infusions for afterload reduction. Over the next few days, he was extubated, but follow-up echocardiograms demonstrated globally diminished LV function, raising concern about myocardial recovery. A myocardial radionucleotide imaging scan was therefore performed, demonstrating evidence of viability in all segments of the myocardium. Nine days after the procedure, he was discharged home on carvedilol, clopidogrel, and aspirin, as well as lisinopril for afterload reduction.

At the first visit in the outpatient clinic 2 weeks after discharge, the patient's carvedilol was discontinued and an echocardiogram showed no segmental wall motion abnormalities and improved LV function, with an LVFS of 27%. A repeat echocardiogram on the second follow-up clinic visit revealed an unchanged LVFS and normal LV size and function. Currently, he continues on lisinopril as well as aspirin and clopidogrel for a 6-month antiplatelet regimen.

Download English Version:

<https://daneshyari.com/en/article/3247089>

Download Persian Version:

<https://daneshyari.com/article/3247089>

[Daneshyari.com](https://daneshyari.com)