Pulmonary Artery Bullet Embolism following Cardiac Gunshot Wound

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Penetrating chest trauma is common but few need surgical treatment (10–20%). The mortality of gunshot wounds of the heart is 45%, among the wounded arriving at the hospital. The suspicion of wound heart with an inlet in the heart area (limited by costal awnings down, clavicles top, and mid-clavicular line outside) and pericardial effusion remains a surgical indication. Gunshot wounds of the heart with migration of the projectile in the pulmonary artery are rare. Migration of projectile into the pulmonary artery is described most often with lesions of peripheral veins without concomitant cardiac involvement. The indication of projectile extraction is not clearly defined in the literature. Conservative management of selected cases of pulmonary artery bullet emboli may be warranted in light of the risks of extraction.

Penetrating cardiac injuries are associated with significant morbidity and mortality. Urgent surgical intervention remains the mainstay of treatment and can be life-saving. Clinical pulmonary embolism resulting from a bullet entering the right ventricle is rare. We describe a gunshot wound to the heart in a 59-year-old man that cause pulmonary embolism.

CASE REPORT

A 59-year-old man was brought to the emergency department immediately after being injured with a penetrating gunshot wound to the left side of the chest caused by a bullet from a rifle. Examination revealed blood pressure of 140/95 mm Hg, pulse rate of 76 beats/min, and respiratory rate of 17/min. He was conscious and complained of thoracic pain. An entrance wound was noted on the left side of the chest, parasternal, next to the fifth intercostal space (Fig. 1). There was no exit wound. Arterial blood gas did not detect hypoxemia or acidosis. ECG showed normal sinus rhythm. Chest radiograph revealed a large caliber bullet in the left part of the mediastinum without evidence of hemothorax (Fig. 2). Computed tomography (CT) scan (Figs. 3 and 4) demonstrates a hemopericardium and the bullet localized in the left pulmonary artery close to its posterior wall and the descending thoracic aorta. The entrance wound in the pulmonary artery was not visible. Echocardiography confirmed hemopericardium (1.5 cm), absence of right and left ventricular dysfunction, and the integrity of the cardiac structures.

Surgery was performed through a median sternotomy. The hemopericardium was evacuated with removal of a hematoma. A rupture of the anterior face of the right ventricle (penetrating injury) was repaired using large, Teflon-reinforced mattress sutures. The bullet could not be found. The aorta and the posterior side of the pulmonary artery were seen to be intact. The left and the right sides of the chest were examined by means of digital control in an attempt to find the bullet (Figs. 5 and 6). However, no mass that could be imagined to be a bullet was found by means of palpation either in the pulmonary trunk or in the left lung hilus. The wounds were irrigated, 2 chest tubes were placed and after the sternum was closed, the patient was transferred to the intensive care unit in a stable condition. He was extubated on the third day postoperatively. But he was reoperated 12 days later for left pleural effusion by thoracoscopy. Postoperative imaging showed no projectile migration. The patient...