Communications for this section will be published as space and priorities permit. The comments should not exceed 350 words in length, with a maximum of five references; one figure or table can be printed. Exceptions may occur under particular circumstances. Contributions may include comments on articles published in this periodical, or they may be reports of unique educational character. Specific permission to publish should be cited in a covering letter or appended as a postscript.

Interatrial Right-to-Left Shunting in the Absence of Elevated Right-Sided Pressures After Major Trauma

To the Editor:

It was with considerable interest that I read the recent report of Smeenk and Postmus1 describing 23 patients who, after pulmonary resections, developed hypoxemia secondary to right-to-left (R-L) shunting in the absence of elevated right-sided heart pressures. Several years ago, I was responsible for the care of an individual with a similar problem.

This 40-year-old white male was in excellent health before the night of admission when he was involved in a severe motor vehicle accident resulting in multiple fractures (Pelvic, tibia, fibula, ribs, and femur), flail chest, pulmonary contusion, respiratory failure, and head trauma. During his prolonged hospitalization, the patient’s medical problems gradually resolved with the exception of persistent and severe hypoxemia. Initially, it was thought that the hypoxemia was a result of atelectasis and pulmonary contusion. Two months after the accident, however, the patient continued to have persistent dyspnea that was worse in the upright position, and decreased exercise tolerance and hypoxemia requiring supplemental oxygen. Therefore, the patient underwent further evaluation. Physical examination at that time revealed an alert patient in no acute distress. His head, ears, eyes, nose and throat examination was normal. His lungs were clear to auscultation and percussion with no wheezing, rhonchi, or rales. Cardiovascular examination was normal with no murmurs or gallops. Abdominal examination was benign and there was no clubbing, cyanosis, or edema. With the exception of multiple healed rib fractures, the chest radiograph was normal. Electrocardiogram was normal. Routine laboratory studies including a CBC were normal. Pulmonary function tests were normal except for mild obstructive disease and a mild decrease in the diffusing capacity. Chest computed tomography scan was unremarkable. Arterial blood gases on room air revealed a pH of 7.48, a PO2 of 48, a PCO2 of 28, a bicarbonate of 21, and a saturation of 87 percent. Multiple blood gases confirmed severe hypoxemia on room air. Arterial blood gases on 100 percent oxygen while the patient was supine revealed a PO2 of 124 while the PO2 was only 92 while the patient was in the sitting position.

Ventilation and perfusion scan of the lungs was normal with no evidence of embolic disease or early appearance of counts over the kidneys. Pulmonary angiography was normal with no evidence of emboli. Mean pulmonary artery pressure was 6. Contrast echocardiography showed a R-L shunt at the atrial level. Cardiac catheterization revealed a right atrial pressure of 5, a right ven-

tricular pressure of 16/9, and a pulmonary artery pressure of 10/2 with a mean of 5. Pulmonary capillary wedge pressure was 8. Left atrial pressure was 7, left ventricular pressure was 126/10, left ventricular end diastolic pressure was 9, and aortic pressure was 120/80 with a mean of 97. Cardiac index was 3.6 L/min/m2. All chambers, and cardiac valves were normal. Coronary arteries were also normal. There was evidence of a R-L shunt at the atrial level with a ratio of 1.3 to 1. Subsequently, the patient underwent thoracotomy, and a 1 cm atrial septal defect was located and closed with a Gore-Tex patch. At the time of surgery, there were no unusual atrial abnormalities that could account for the R-L shunting despite normal right-sided pressures. Postoperatively, the patient did exceptionally well with a return to his previous strenuous occupation as a laborer. He was able to discontinue supplemental oxygen and his room air arterial blood gases revealed a PO2 of 76. He had a PO2 of 492 while breathing 100 percent oxygen. He has not experienced any difficulties in the past 4 years since his surgery.

This is a unique and interesting case in many respects. This previously healthy patient had platypnea and orthodeoxia (dyspnea and arterial desaturation accentuated by the upright position) following major trauma. Platypnea-orthodeoxia almost always is reported in association with major pulmonary disorders such as after resectional surgery, after pulmonary embolic disease, with a paralyzed diaphragm, or with parenchymal lung disease. This patient did not have evidence of any chronic lung disorder, and trauma represents an intriguing predisposing factor for the development of platypnea and orthodeoxia. This case is also unique in that it describes a patient with a R-L shunt through an atrial septal defect with normal right-sided pressures after major trauma. Although it is difficult to understand the pathophysiology, it seems likely that this patient did not shunt from right to left until after his severe motor vehicle accident. Despite working at a very strenuous construction job, he had not noted any symptoms of dyspnea before the accident. Although it is possible to speculate that the motor vehicle accident resulted in a traumatic pulmonary arterial-venous fistula contributing to his problem, it was not identified and the severe hypoxemia resolved after closure of the atrial septal defect. This case represents another clinical situation (major trauma) in which a R-L shunt can occur causing significant disability that can be reversed with surgical intervention.

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REFERENCE

1 Smeenk FWJM, Postmus PE. Interatrial right-to-left shunting developing after pulmonary resection in the absence of elevated right-sided heart pressures: review of the literature. Chest 1993; 103:528-31

To the Editor:

We would like to thank Dr. Pacht for his valuable comment on our article. In his comment, he describes a patient who developed a serious right-to-left (R-L) shunt in the absence of

A Unique ECG Finding after Esophagectomy (Robert Ferrari)