Fiberoptic Bronchoscope-Related Outbreak of Infection with Pseudomonas

To the Editor:

This report concerns a series of positive cultures of Pseudomonas due to faulty sterilization of the fiberoptic bronchoscope. During a 12-day period between Sept 12 and Sept 24, 1976, seven patients underwent nine bronchoscopic procedures. Eight of these procedures were performed with a fiberoptic bronchoscope (Olympus B2), whereas the last procedure was performed using a rigid bronchoscope. Bronchial washings were collected under sterile conditions and were submitted for bacteriologic and cytologic studies.

A rash of positive cultures of Pseudomonas prompted a closer look. Although bacteriophage typing of the organisms was not performed, it became obvious that all of the positive cultures were caused by the same organism, as indicated by studies of susceptibility. A spot-check of the bronchoscopic equipment with multiple cultures was done. The source of outbreak was traced to the biopsy-suction attachment part of the bronchoscope.

Instead of being dismantled for sterilization, the suction attachment was being soaked in the antiseptic solution in the assembled form. Apparently, the inside of the suction adapter could not be sterilized by immersion in the antiseptic solution.

The initial inoculation of the suction attachment occurred on Sept 12, 1976, during a bronchoscopic procedure performed on a 15-year-old girl admitted to the hospital in diabetic coma. Once inoculated, the organisms persisted in the suction attachment, not only contaminating the subsequent specimens from bronchial washing but also inoculating the offending organism into the right lower lobe of one patient. This 36-year-old man had initially undergone a bronchoscopic procedure to evaluate hemoptysis following blunt injury to the chest. Biopsy was performed on a suspicious lesion from the medial basal segment of the right lower lobe. The patient became febrile, developed an infiltrate in the right lower lobe, and exhibited signs of pulmonary infection. The biopsy was suggestive of malignant neoplasm but was not conclusive. A repeat bronchoscopic procedure with the rigid bronchoscope showed purulent secretions in the right lower lobe, cultures of which grew Pseudomonas. In retrospect, the pulmonary infection developed as a result of inoculation at the time of the first bronchoscopic procedure.

The techniques of proper sterilization of the fiberoptic bronchoscope have been standardized and are dependable.1,2 This particular outbreak occurred because the procedures for sterilization that are recommended by the manufacturer were not followed.

Under certain clinical situations, it may be difficult to ignore a positive culture from a patient who has symptoms of disease of the respiratory tract or slowly resolving pulmonary infiltrates. Under these circumstances a positive culture could, in some cases, dictate unwarranted treatment with rather potent and potentially hazardous antimicrobial agents.

Complete familiarity with the fiberoptic bronchoscope and proper sterilization of its different components are mandatory. A periodic bacteriologic spot-check of the sterilized instrument and its different components to ensure adequate sterilization cannot be overemphasized.

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Echocardiographic Pulmonic Valvular Motion in Idiopathic Hypertrophic Subaortic Stenosis

To the Editor:

Several reports1,2 have described the echocardiographic patterns of pulmonic valvular motion in patients with pulmonary hypertension. Absence of the "a" wave, flattening or negative slope in diastole, and midystolic notch are the features mainly recognized. In a recent study by Kaku et al,3 no normal subjects exhibited a midystolic notch, and this finding was considered indicative of pulmonary hypertension; however, midystolic closure or notching can be present in patients with normal pulmonary arterial pressure. We are reporting such a case.

CASE REPORT

A 14-year-old asymptomatic black male patient was referred for evaluation of a cardiac murmur. On physical examination a triple impulse was felt on palpation of the apex. A grade-3/6 systolic ejection murmur was heard best at the lower left sternal border.

The chest x-ray film showed mild cardiomegaly. The electrocardiogram showed left ventricular hypertrophy. An echocardiogram obtained prior to cardiac catheterization re-
vealed marked thickening of the interventricular septum and anterior systolic motion of the anterior and posterior leaflets of the mitral valve. The echocardiogram of the pulmonic valve showed a normal diastolic slope of the echo of the posterior pulmonic cusp, a normal "a" wave, and midsystolic notching (Fig 1, arrow). The right-sided ventricular systolic time intervals were within normal limits. Cardiac catheterization at rest demonstrated a systolic pressure gradient of 70 mm Hg across the left ventricular cavity. The pulmonary arterial pressure was normal (25/10 mm Hg; mean, 15 mm Hg), and no pressure gradient was noted across the pulmonic valve or right ventricle. Cineangiographic studies confirmed the diagnosis of idiopathic hypertrophic subaortic stenosis.

**DISCUSSION**

It is not known why the midsystolic closure occurred in this patient in the absence of pulmonary hypertension or obstruction of the right ventricular outflow tract. An accelerated rate of rise in the early part of right ventricular ejection may occur in patients with idiopathic hypertrophic subaortic stenosis, and a midsystolic dip with a late systolic elevation of the pulmonary arterial pressure curve has been reported. Echocardiographic evaluation of the pulmonic valve is potentially useful. Further experience will determine its applicability in the assessment of pulmonary hypertension. Midsystolic closure or notching of the pulmonic valve as an isolated finding is of limited value. A combination of echocardiographic measurements, the pattern of motion, and right-sided intervals may be more helpful in detecting pulmonary hypertension in an individual patient.

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Figure 1. Echocardiogram of pulmonic valve (PV), showing normal diastolic slope and "a" wave. Note midsystolic notching (arrow).