accurate and reproducible. We cannot explain the discrepant hemodynamic measurements obtained in the one patient reported in the present letter which contradicts our findings, except to say that hemodynamic measurements may lag behind changes in the respiratory cycle during CSB.

We do agree with the author that further evaluation of the precise hemodynamic changes associated with CSB requires further investigation.

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Morphology of Ductus Arteriosus and of the Pulmonary Arteries in Patients With Pulmonary Atresia and Complex Congenital Heart Disease

To the Editor:

The pattern of the pulmonary arteries anatomy and the blood supply to the lungs is well known in patients with pulmonary atresia with intact ventricular septum (IVS)® and in children with pulmonary atresia and ventricular septal defect (VSD).® A patent ductus arteriosus (PDA) is always present in the first malformation (pulmonary atresia with IVS),® in a subgroup of patients with pulmonary atresia with VSD,® and in the majority of cases with pulmonary atresia and complex congenital heart disease (CCHD), as we recently reported.® Since the morphology of PDA has been considered a precise marker for the timing of embriogenesis of these malformations,® and because there are no data on the morphology of PDA in patients with pulmonary atresia and CCHD, we reviewed the angiograms of 65 children with this anomaly.

Ages ranged from one day to 18 years. Each patient had a right or left ventricular angiocardiogram (or both) to confirm the diagnosis and to reveal intracardiac anatomy. Each patient also had an aortogram to demonstrate the morphology of PDA® and of the pulmonary arteries. Single ventricle was present in 24 cases, transposition of great arteries in 19, tricuspid atresia in 13 and corrected transposition of great arteries in nine children (Table 1). A single PDA with confluent pulmonary arteries was present in 61 of 65 patients (93.8 percent). All but one with tricuspid atresia (98.4 percent) had an acute inferior angle with the descending aorta (Table 1). Two patients—one with transposition and one with single ventricle—had major collateral arteries to the lungs, and two patients with single ventricle presented a bilateral PDA, all with nonconfluent pulmonary arteries. Our results confirm that the pattern of pulmonary arteries anatomy and blood supply is quite uniform in children with pulmonary atresia and CCHD.® Major collateral arteries, bilateral PDA discontinuity or absence of pulmonary arteries are rare in this condition.® Furthermore, the acute inferior angle of the PDA to the descending aorta reveals prenatal hemodynamics with blood flow directed from the aorta to the pulmonary arteries, and suggests an early embryogenesis for this type of pulmonary atresia as previously reported for patients with pulmonary atresia and VSD.®

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Symptomatic Loculated Malignant Pleural Effusion Treatment With Indwelling Tenckhoff Catheter

To the Editor:

Most malignant effusions can be controlled by thoracentesis and/or closed thoracostomy tube drainage and sclerosis of the pleural cavity. In resistant cases, pleuro-peritoneal shunt has given good results. Loculated malignant effusions however, are inherently resistant to the usual approaches because of nonexpanding underlying lung.

We report a case in which loculated recurrent pleural effusion was treated by insertion of an indwelling Tenckhoff catheter.1 A 50-year-old man was seen in December, 1986 with a right-sided pleural effusion and collapse of the right lower lobe. Thora-

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<thead>
<tr>
<th>Table 1—Patterns of Blood Supply and Morphology of PDA in 65 Patients with Pulmonary Atresia</th>
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<tbody>
<tr>
<td>No. of patients</td>
</tr>
<tr>
<td>Single ventricle</td>
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<tr>
<td>Transposition of great arteries</td>
</tr>
<tr>
<td>Tricuspid atresia</td>
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<tr>
<td>Corrected transposition of great arteries</td>
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<tr>
<td>Total</td>
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