Treatment of a Persistent Postoperative Chylothorax With Somatostatin

Peter C. Rimensberger, MD, Beatrice Müller-Schenker, MD, Afksendiyos Kalangos, MD, PhD, and Maurice Beghetti, MD

Departments of Pediatrics and Cardiovascular Surgery, Hôpital des Enfants, University Hospital of Geneva, Geneva, Switzerland

Chylothorax is a rare but potentially serious complication of pediatric cardiac operations. We report the case of a 4-month-old boy who underwent a Senning procedure for correction of d-transposition of the great vessels. A persistent postoperative chylothorax developed, necessitating continuous drainage, despite conservative treatment over 3 weeks. Thereafter, continuous somatostatin infusion for 14 days led to the reduction and finally cessation of chyle production. This treatment allowed early enteral feeding and avoided further surgical intervention.


Chylothorax is a rare but potentially serious complication of pediatric cardiac operations, with an incidence of around 1% [1]. Conservative therapy with the use of a low-fat diet containing medium-chain triglycerides or total parenteral nutrition, combined with pleural drainage, is often effective. Operation is advocated after 3 to 4 weeks of unsuccessful nonoperative treatment [2]. Different surgical methods have been described (eg, ligation of the thoracic duct, pleuroperitoneal shunt, pleurodesis), but the results are not always very satisfactory [2–4].

A 4-month-old boy (weight, 5 kg) underwent the atrial switch procedure for correction of d-transposition of the great vessels. The early postoperative course was uneventful with normal hemodynamic measurements. However, on day 2 postoperatively hemodynamics became unstable with increasing central venous and left atrial pressure, lower mean arterial pressures, and decreasing diuresis. Chest radiography revealed bilateral pleural effusions, despite chest and pericardial drains in place. Echocardiography showed an important pericardial effusion, a mildly decreased systemic ventricular function, and a gradient of 5 mm Hg at the junction of the superior vena cava with the systemic atrium. Chest and pericardial drainage were replaced surgically. Analysis of drainage fluid showed increased cellularity with a predominance of lymphoeytic cells (>70%); Sudan III staining was positive. The diagnosis of a bilateral chylothorax and chylopericardium was confirmed.

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Address reprint requests to Dr Rimensberger, Critical Care, Department of Pediatrics, Hôpital des Enfants, University Hospital of Geneva, 6, Rue Willy-Donzé, CH-1211 Geneva 14, Switzerland (e-mail: rimensberger-peter@hcuge.ch).

Total parenteral nutrition was started. Drainage decreased over the first few days (minimum, 500 mL/24 h) but increased again to reach a maximum of 1,150 mL/24 h (230 mL · kg⁻¹ · 24 h⁻¹) on day 17 (Fig 1). Volume and electrolyte homeostasis was maintained and losses of proteins, coagulation factors, and immunoglobulins were replaced regularly. On day 17 echocardiography showed absence of superior vena cava or innominate vein thrombosis and absence of stenosis of superior vena cava–systemic atrium junction.

In the presence of increasing drain losses under conservative treatment, we decided to attempt reduction of lymph production with somatostatin as a continuous infusion (3.5 μg · kg⁻¹ · h⁻¹) before considering ligation of the thoracic duct. Within the next 24 hours drainage was reduced drastically; it decreased further over the next 4 days, and remained stable at 380 mL/24 h (see Fig 1). The somatostatin dose was doubled (7 μg · kg⁻¹ · h⁻¹) to attempt further reduction. When drainage was less then 5 mL · kg⁻¹ · day⁻¹, somatostatin administration was withdrawn over 4 days. No side effects such as hypotension or hyperglycemia were observed during the whole treatment. Enteral nutrition with a medium-chain triglyceride diet was introduced 1 day later, and chest drains were removed 5 days later. The boy was discharged from the hospital on day 46 postoperatively and kept on the medium-chain triglyceride diet for only another 3 weeks. He showed no recurrence of pleural effusions.

Comment

Chylothorax is a rare, but serious complication of cardiovascular operations for congenital heart disease. A conservative treatment strategy is currently recommended to avoid unnecessary early operation [2]. However, patients may present with massive lymph drainage, which will induce critical losses of fluid, lymphocytes, proteins, coagulation factors, and antibodies, thus increasing morbidity and mortality [1]. This is particularly true in small babies, for whom early operation is advocated [3]. Somatostatin reduces gastric, pancreatic, and intestinal secretions [5]. Somatostatin also causes a decrease of hepatic venous pressure gradient and a mild but sustained decrease of splanchnic blood flow without influencing systemic hemodynamics [5–7]. These could be useful in an
attempt to decrease chyle production, as reported by Ulibarri and associates [8] in an adult patient. We obtained a similar result in an infant, in whom the introduction of somatostatin resulted in an immediate effect on chyle production, without any side effects, and operation was avoided. Controlled studies are required to confirm these observations and the effects of somatostatin treatment on morbidity and mortality.

References

Left Atrial Reduction for Chronic Atrial Fibrillation Associated With Mitral Valve Disease

N. Madhu Sankar, MS, PhD, and Alan E. Farnsworth, FRACS

Department of Cardiothoracic Surgery, St. Vincent’s Hospital, Darlinghurst, Sydney, Australia

Currently available surgical procedures to control chronic atrial fibrillation associated with mitral valve disease are not always successful. The size of the left atrium is a major factor in the initiation and maintenance of atrial fibrillation. Here we describe a case of ablation of atrial fibrillation with left atrial reduction and pulmonary vein isolation in a patient with mitral valve disease.


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Address reprint requests to Dr Farnsworth, Cardiotoracic Unit, St. Vincent’s Clinic, LEJEL 8, 438 Victoria St, Darlinghurst, Sydney, NSW 2010, Australia.