Protein-losing enteropathy post-valvular surgery with severe tricuspid regurgitation in Subutex-related endocarditis

Lee L C, Wong R, Raju G C, Khor C, Yip J

ABSTRACT

We report a 25-year-old Malay man with Subutex-related endocarditis, complicated by protein-losing enteropathy from severe tricuspid regurgitation and congestive heart failure. The intestinal protein loss was reversed with surgical valvular intervention. This case highlights the importance of recognising the rare association between protein-losing enteropathy and congestive heart failure in the setting of endocarditis.

Keywords: congestive heart failure, drug abuse, endocarditis, protein-losing enteropathy, Subutex

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CASE REPORT

We report a 25-year-old Malay man, a known intravenous Subutex abuser, who presented with fever and acute right hemiparesis and dysarthria. Clinically, he was septic and there was a loud holosystolic murmur at the apex. Blood culture was positive for *Staphylococcus aureus* in all six bottles and transoesophageal echocardiogram (TEE) demonstrated large vegetations attached to both mitral and tricuspid valves, complicated by severe regurgitations. Computed tomography of the brain confirmed the presence of a right parietal lobe enhancing lesions, consistent with embolic phenomenon. He subsequently underwent emergency valvular surgery due to worsening heart failure. Mitral valve replacement with a 25-mm St. Jude bileaflet mechanical prosthesis, debridement of tricuspid vegetations and De Vega tricuspid annuloplasty were performed.

Postoperative period was complicated by recurrent seizures from embolic infarcts, superior mesenteric artery branch mycotic aneurysm requiring coiling, pseudomembranous colitis associated with antibiotic use, and haemolytic anaemia. Routine postsurgery echocardiogram demonstrated normal functioning mitral prosthesis with mild regurgitation, and severe tricuspid regurgitation with estimated pulmonary artery systolic pressure (PASP) of 40 mmHg (Fig.1). Prior to discharge, a new holosystolic murmur was heard over the apex. Repeat TEE showed mitral valve prosthesis dehiscence, and severe mitral and torrential tricuspid regurgitation. The patient, however, remained clinically stable, and was discharged after completion of six weeks of antibiotics. Redo valve surgery was scheduled for a later date.

After discharge, he had recurrent admissions for right heart failure. Physical examination revealed tensed hepatomegaly, ascites and gross pedal oedema.

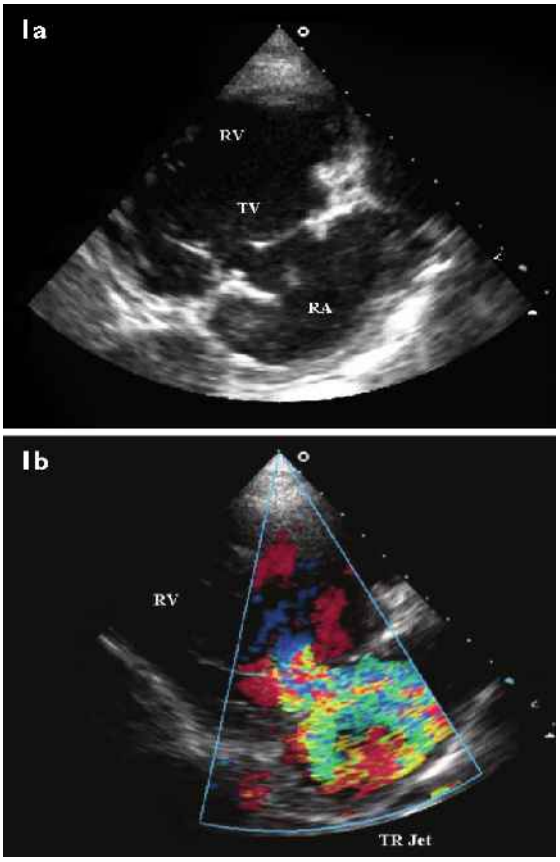

Fig. 1 Echocardiograms (parasternal long axis right ventricular inflow view) show (a) vegetations adhered to the tricuspid valve leaflets, causing malcoaptation of the leaflets at systole, and (b) severe tricuspid regurgitation.

Cardiac Department, National University Hospital, 5 Lower Kent Ridge Road, Singapore 119074

Lee LC, BSc, MBBS, MRCP
Registrar

Yip J, MBBS, MRCP
Senior Consultant

Wong R, MBBS, MRCP
Consultant

Department of Pathology

Raju GC, FRCPath
Consultant

Department of General Medicine

Dr Khor C, MRCP
Consultant

Correspondence to:
Dr Lee Li Ching
Tel: (65) 6772 5211
Fax: (65) 6872 2998
Email: leeliching@yahoo.com

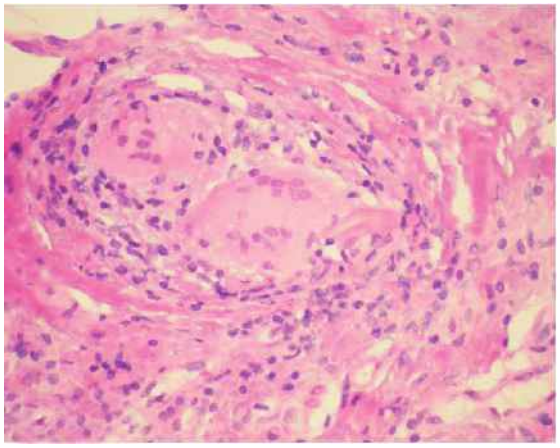

Fig. 2 Photomicrograph shows dilated lymphatic channels mainly in the lamina propria consistent with intestinal lymphagiectasia, which is suggestive of protein-losing enteropathy (Haematoxylin & eosin, × 200).

Echocardiogram then demonstrated dilated right heart chambers, with a PASP of 62 mmHg and similar valvular findings as before. He responded to diuretic treatment each time, but serum albumin level was noted to drop precipitously from 32 g/L to 11 g/L over two months. The peripheral lymphocyte count and serum gamma-globulin concentration were also gradually decreased. The lymphocyte count dropped from 1.14×10^9/L to 0.49×10^9 /L during the same period. Liver function was otherwise stable, and 24-hour urine protein loss of 0.04 g/day ruled out renal cause. He was put on intensive high calorie/protein diet and received two weeks of intravenous albumin infusion, but serum albumin level remained less than 20 g/L. He then underwent oesophagogastroduodenoscopy with jejunal biopsy. Histology showed dilated lymphatic channels mainly in the lamina propria consistent with intestinal lymphagiectasia, suggestive of protein-losing enteropathy (Fig. 2).

The patient underwent both redo mitral valve replacement and tricuspid valve replacement two months later. Although postoperative albumin level was around 17–18 g/L, and clinically the oedema has resolved, stool alpha-1-antitrypsin level then was still 137 mg/dL (expected value ≤ 54 mg/dL). Although we did not have a preoperative value for comparison, the value further confirmed our diagnosis of protein-losing enteropathy. He was discharged well after an uneventful recovery.

DISCUSSION

Intestinal lymphangiectasia refers to tortuous and dilated intestinal lymphatic channels secondary to impaired small intestinal lymphatic drainage. It is caused by primary intestinal lymphatics disorder or secondary from increased interstitial pressure such as increased right heart pressure, portal hypertension, and mesenteric lymphatic obstruction. It presents clinically as protein-losing enteropathy, characterised by an excessive loss of serum proteins into the gastrointestinal tract, leading to hypoproteinaemia, oedema, and occasionally pleural and pericardial effusions.

The association of protein-losing enteropathy with cardiac disease was first described in 1961 by Davison et al.[1] Since then, other associated cardiac causes that have been reported include constrictive pericarditis, structural heart disease (such as tricuspid insufficiency, congenital pulmonary stenosis and atrial septal defect), post-Fontan procedure and cardiomyopathy. To date, there are only few reported cases of protein-losing enteropathy associated with tricuspid regurgitation.[2-5] We described, for the first time, bacterial endocarditis secondary to Subutex use, leading to severe tricuspid regurgitation precipitating protein-losing enteropathy postoperatively.

It has been postulated that raised right atrial pressure causes gastrointestinal vascular and mucosal congestion leading to impaired lymphatic drainage. This results in gastrointestinal protein loss. Raja et al showed that out of the 57 patients studied, gastric mucosal changes were observed in 50 (88%) and duodenal mucosal changes in 31 (54%).[6] These changes included mosaic-like pattern, punctate spots, thickened folds, watermelon stomach, and telangiectasia. Ten cases had gastric mucosal telangiectasia and two have duodenal telangiectasia. The severity of duodenopathy but not that of gastropathy was said to be significantly associated with increasing severity of tricuspid regurgitation, larger portal vein diameter and lower ejection fraction.[6] In addition, studies on patients post-Fontan also suggested that poor cardiac output might impair intestinal mucosal perfusion.[7]

Surgical management is the ultimate solution in the management of protein-losing enteropathy associated with severe tricuspid regurgitation besides dietary modification, steroids and heparin, although tricuspid regurgitation is usually well-tolerated in the absence of severe pulmonary hypertension.[2-4] It has been demonstrated that serum total protein and albumin were normalised after tricuspid valve surgery in cases of isolated tricuspid regurgitation with protein-losing enteropathy.[2,8] This case highlights the importance of recognising rare association between protein-losing enteropathy and congestive heart failure associated with severe tricuspid regurgitation, as potential treatment via surgical valve intervention may effectively reverse intestinal protein loss.

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