Letters to the Editor

Total parenteral nutrition by central venous catheter complicated by right atrial septic thrombus

Sir,

Infectious complications of central venous catheters are well recognized. Among them, right atrial septic thrombi, although rare, are usually fatal. We describe a patient with severe malabsorption due to alpha heavy chain disease, who began total parenteral nutrition by a silicone central venous catheter soon after admission. Two weeks later he developed pyrexia due to a right lower lobar pneumonia. Imipenem and amikacin were instituted. Three days later fever persisted. The blood cultures previously performed were negative. Vancomycin was added, the fever subsided and the X-ray, performed 10 days later, was clear.

In the fifth hospitalization week he was again febrile, again hyperthermic and chest X-ray revealed diffuse bilateral pulmonary infiltrates. Real-time two-dimensional echocardiography revealed a large right atrial mass (Figure 1). Blood cultures yielded Candida lusitaniae and Staphylococcus hominis. The central venous catheter was removed. The culture of its tip yielded the same pathogens. Ciprofloxacin and vancomycin and lysosomal amphotericin B were instituted, and the atrial mass was removed by cardiomyotomy. Pathological examination revealed a septic thrombus, 4 × 3 × 2 cm, with numerous Gram-positive cocci. The antibiotics were stopped 6 weeks after surgery.

Our patient developed a large septic right atrial thrombus primarily related to long-term central venous cannulation, and two sequential pneumonias, possibly the result of septic pulmonary emboli.

The recognition of this condition is essential, as it is potentially lethal. It should be suspected always if a patient with a central venous catheter develops persistent or recurrent fever. Real-time two-dimensional echocardiography allows an accurate diagnosis and should be performed in all suspected patients. Rapid institution of treatment is crucial. This should include catheter removal, long-term specific anti-infectious therapy and thrombectomy.

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References

Non-fatal massive right atrial thrombus associated with Hickman catheter in an adult receiving chemotherapy for acute leukaemia

Sir,

Cases of right atrial thrombus related to central venous catheters occur mainly in infants receiving total parenteral nutrition (TPN). We describe the first such case in an adult receiving chemotherapy for malignancy who had successful surgical removal of a large thrombus attached to the tip of an infected Hickman line.

A 17 year old male began chemotherapy in April 1992 following a diagnosis of acute lymphatic leukaemia (common ALL). His initial Hickman catheter was removed after 3 months because of persistence of a streptococcal septicaemia despite appropriate antibiotics. Four weeks later, prior to the onset of late intensification, a second double-lumen Hickman catheter was inserted via the left external jugular vein with its tip located in the right atrium. Both Hickman catheters were surgically inserted under cover of a prophylactic dose of teicoplanin 400 mg intravenously.

After completion of late intensification chemotherapy, the Hickman line exit site became inflamed with a purulent discharge. Over the following 2 weeks, he had intermittent pyrexia despite therapy with various broad-spectrum antibiotics. Blood cultures from the Hickman line only grew a coagulase-negative Staphylococcus albus. Subsequently, the neutrophil count recovered to 3.0 × 10⁹/l and the patient became afebrile with no

Figure 1 Parasternal long axis view – enlargement of the right atrium (RA) and mass attached to the RA. RV = right ventricle, TV = tricuspid valve.
localized signs of infection, normal heart sounds and no evidence of heart failure. However, because of a prominent tachycardia with marked malaise, two-dimensional (2-D) echocardiography was performed. This showed a mobile mass in the right atrium, intermittently prolapsing into the tricuspid valve (Figure 1).

The right atrium was surgically explored by median sternotomy and the Hickman line was removed along with two thrombi attached to its tip. The larger of the two thrombi measured 4 cm by 4 cm in diameter but no organism was grown from either thrombus or from the tip of the Hickman catheter. The patient made a good postoperative recovery and received a further 3 weeks of antibiotics. Repeat echocardiograms have been normal.

Upper extremity venous thrombosis is a well-recognized complication in patients with haematological malignancies and centrally placed indwelling silicone elastomer catheters.

However, right atrial thrombus associated with central venous catheters is almost exclusively a complication of infancy related to prematurity, TPN and continuous catheter use. We are aware of only five adult cases of thrombosis of the right side of the heart related to central venous catheterization (right atrial in four1-3 and right ventricular in one4). All of these cases were receiving long-term TPN and all had documented infections of the central venous catheters. Both patients who survived underwent surgical removal of the right atrial thrombus.2

The remaining three cases had sudden fatal cardiovascular collapse with obstructed tricuspid valve5 and occlusion of the main pulmonary artery in the two patients who had autopsies.

Optimal therapy for such a complication remains open to debate. The central venous catheter should be withdrawn (unless attached to the thrombus when embolus is a potential risk) and appropriate antibiotics given. Resolution of the thrombus has occurred with heparin, thrombolytic therapy or occasionally spontaneously.5 Surgical removal is probably indicated if the thrombus is large with a risk of tricuspid valve occlusion, as in our patient, or if it is not responding to more conservative management. The possibility of right atrial thrombus should be considered in any patient with an indwelling central venous catheter with unresolved infection despite appropriate antibiotics or with evidence of cardiorespiratory compromise. In such circumstances, 2-D echocardiography is an invaluable diagnostic procedure.

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References

Sudden cardiac death and the potential role of beta adrenoceptor-blocking drugs

Sir,

The article by Rayman and Kendall1 was a timely reminder of the truism that there is more to prevention of post-myocardial infarction sudden death than mere identification and abolition of ventricular arrhythmias. For the majority of patients, a useful treatment flow chart would consist of long-term low-dose aspirin for its proven value in reducing the risk of recurrent myocardial infarction and, hence, the potential risk of sudden death in silent as well as in symptomatic myocardial ischaemia,2 beta-adrenergic blockade for those with intact left ventricular systolic function because of the benefits outlined by the authors,1 and the alternative use of angiotensin-