

An Unusual Case of *Staphylococcus lugdunensis* Endocarditis

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Background:

Though frequently associated with prosthetic valve endocarditis, coagulase-negative staphylococci are rarely a cause of native valve endocarditis.¹ Unlike its counterparts in this group, *Staphylococcus lugdunensis* has been shown to cause a rare, but particularly destructive form of native valve endocarditis comparable to that associated with *Staphylococcus aureus*.^{1,2,3} Typically community acquired, *S. lugdunensis* has a propensity to cause native, left-sided valve infection.³ We present a particularly unusual case of right-sided *S. lugdunensis* endocarditis involving the tricuspid valve.

Case Description:

A 25-year-old man was brought to the emergency department of a peripheral hospital with features of septic shock and delirium. Collateral history from his family revealed that he had become acutely confused and agitated earlier on that day, and had been otherwise well prior. His past medical history was significant for metastatic non-seminomatous germ cell tumour, chronic left brachiocephalic vein and superior vena cava (SVC) thrombus, and schizophrenia.

On presentation, he was noted to be hyperthermic (temperature > 40°C), tachycardic (>180bpm), tachypnoeic, hypotensive, and profoundly agitated. Subsequently, he was intubated, commenced on empirical therapy to cover for meningoencephalitis (with Aciclovir, Ceftriaxone, and Dexamethasone), and admitted to ICU. The provisional diagnosis was that of neuroleptic malignant syndrome.

Three sets of blood cultures demonstrated *Staphylococcus lugdunensis* sensitive to penicillin. A transthoracic echocardiogram revealed two large echodense masses in the right atrium (measuring 3x1.4cm) and on the tricuspid valve (measuring 5x2.5cm) with grade ¼ tricuspid regurgitation. A CT scan of the chest demonstrated known thrombus in the SVC and right brachiocephalic vein, with extension into the right atrium. In addition, a large area of dense consolidation was noted at the left base with an associated small pleural effusion, presumed to be secondary to septic emboli. He was treated with benzylpenicillin and anticoagulated with unfractionated heparin.

The patient's condition stabilised with medical therapy. Follow up transthoracic echocardiogram demonstrated extension of the mass into the right ventricle and right ventricular outflow tract. Urgent transoesophageal echocardiography suggested origin of the mass from within the SVC with subtotal luminal obstruction, measuring at least 14cm x 3cm x 3cm in size with 2-3/4 tricuspid regurgitation. He underwent urgent venous thrombectomy of the superior vena cava and innominate vein, and thrombectomy and bicuspidisation of the tricuspid valve.

Histopathology was consistent with infected thrombus with residual metastatic germ cell tumour with treatment effect. Subsequently, he completed 6 weeks of intravenous antimicrobial therapy with benzylpenicillin, and was commenced on lifelong warfarin. He was reviewed by medical oncology as an outpatient with a view to commencing chemotherapy.

Conclusion:

This case demonstrates the aggressive nature of *Staphylococcus lugdunensis* endocarditis, and to the best of our knowledge, is the first case of association with thrombus and tumour. It highlights the importance of urgent echocardiography in cases of *S. lugdunensis* bacteraemia, as well as the need for serial echocardiography in these patients. In addition, it demonstrates the necessity for early cardiothoracic evaluation.

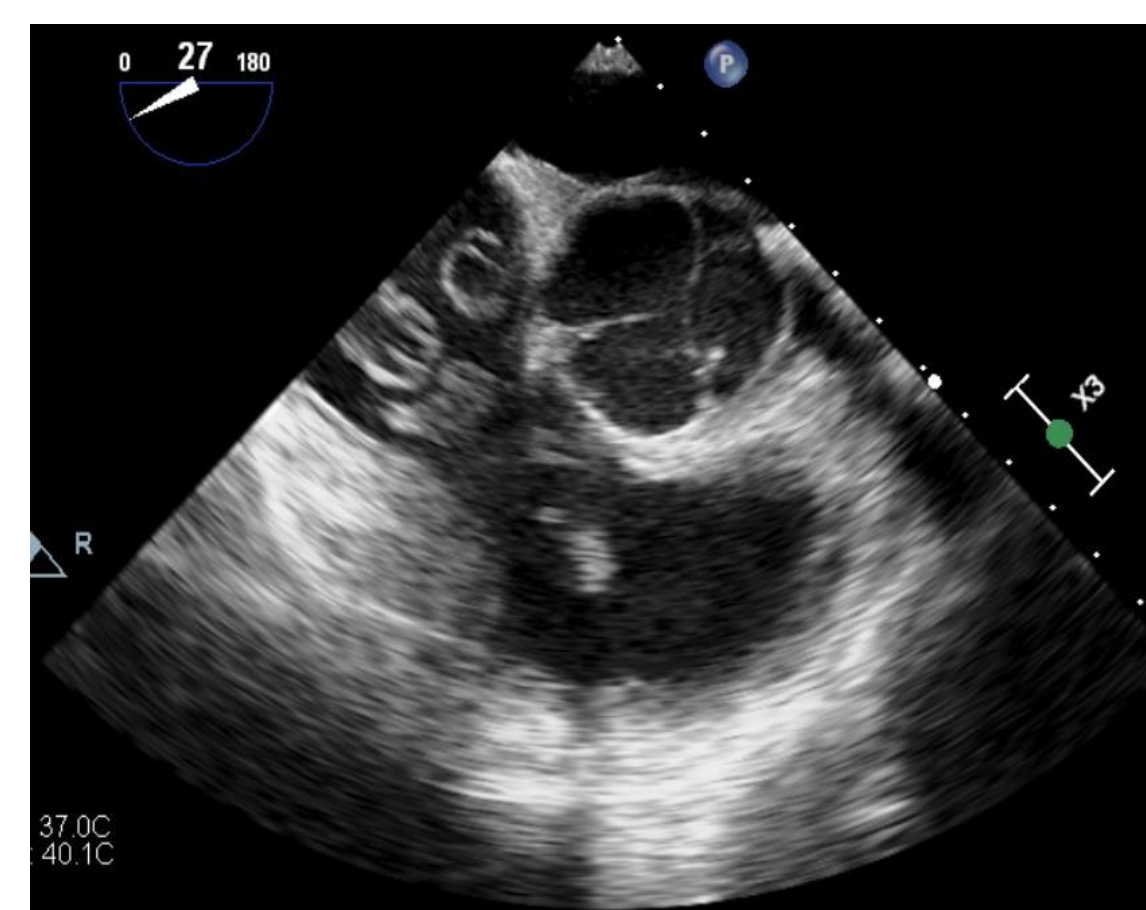


Figure 1: Transoesophageal echocardiography short axis basal view demonstrating a large multi-lobulated mass in the right atrial extending into the right ventricular outflow tract.



Figure 2 : Transoesophageal echocardiography view of right atrium demonstrating the large multi-lobulated mass in further detail.

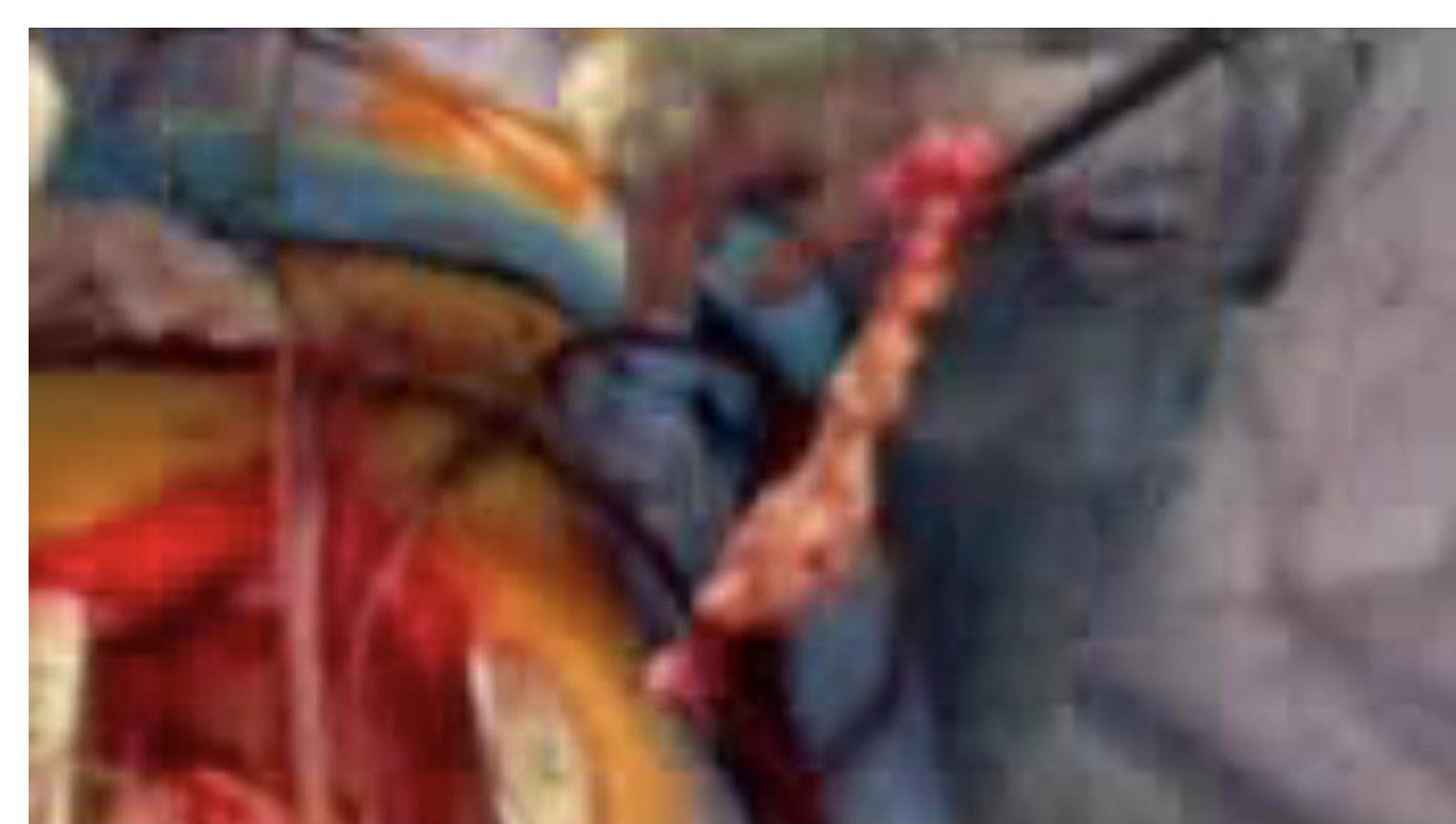


Figure 3 (above) and Figure 4 (adjacent): The 14cm x 3cm x 3cm mass extracted during urgent venous thrombectomy of the superior vena cava and innominate vein, and thrombectomy and bicuspidisation of the tricuspid valve, performed by Dr Bruce Thomson, Cardiothoracic Surgeon, The Prince Charles Hospital.

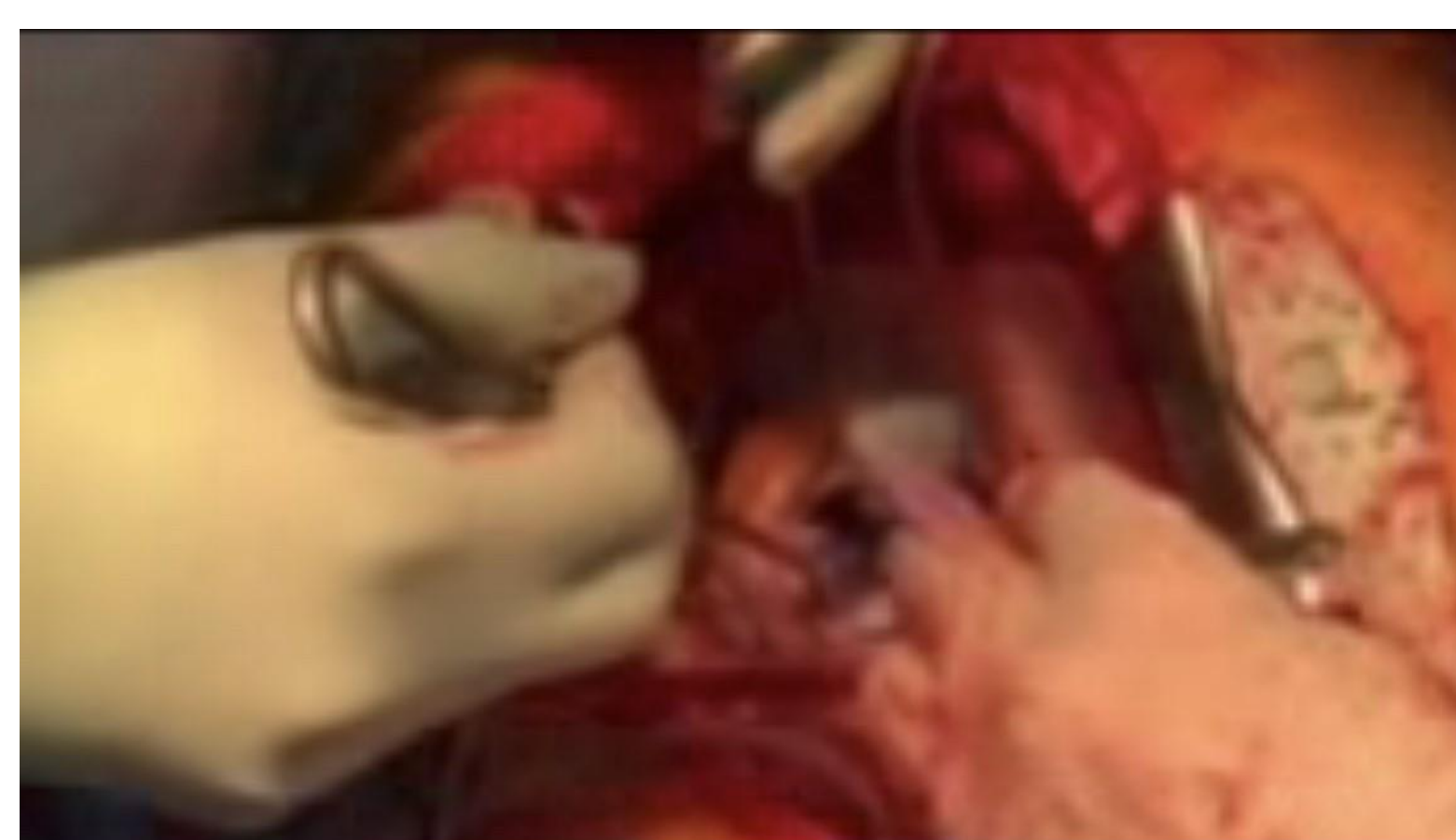
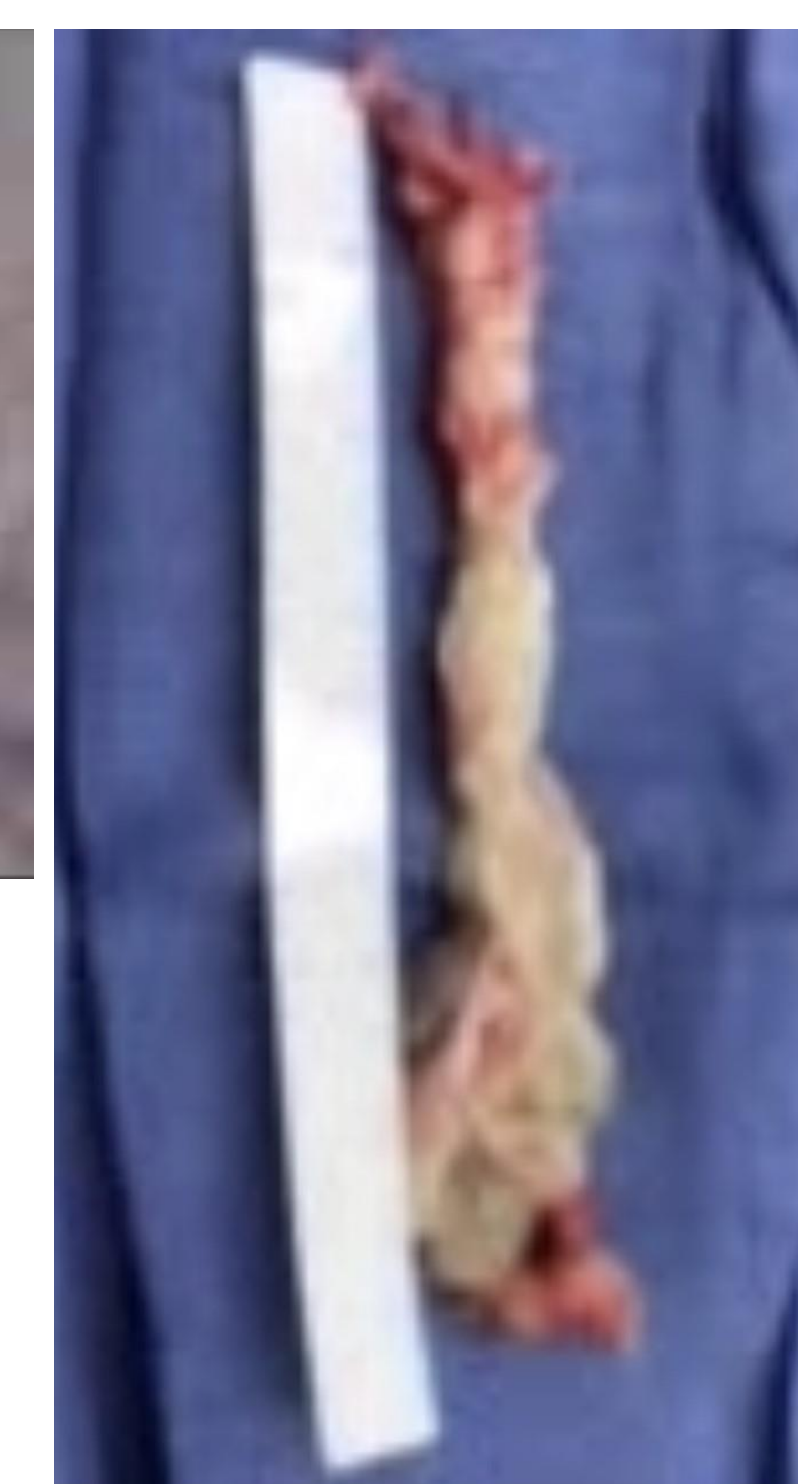


Figure 5: Tricuspid valve thrombectomy being performed during off-pump beating-heart surgery.

Acknowledgements:

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References:

1. Frank KL, Del Pozo JL, Patel R. From clinical microbiology to infection pathogenesis: how daring to be different works for *Staphylococcus lugdunensis*. Clin Microbiol Rev 2008; 21:111.
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3. Kyaw H et al. *Staphylococcus Lugdunensis* Endocarditis and Cerebrovascular Accident: A Systemic Review of Risk Factors and Clinical outcome. Cureus. 2018 Apr; 10(4): e2469.