Metastatic seeding in Staphylococcus infection

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DESCRIPTION

A 14-year-old male patient presented to the emergency room with fever, loose stools, shortness of breath and swelling over the right popliteal fossa for 5 days. He had no significant past medical history and received all the vaccinations according to the immunisation schedule. He had an oxygen saturation of 96% on 4 L/min of oxygen via nasal cannula. The chest radiograph showed consolidation in the right lung with hydropneumothorax. (figure 1A) The pleural fluid analysis revealed empyema and blood cultures were positive for staphylococcus aureus sensitive to oxacillin, vancomycin and linezolid. Serial transthoracic echocardiography showed normal valve morphology with no vegetations. CT of chest and abdomen revealed right-sided pleural effusion and consolidation in the right lower lobe, and hypodense areas in the spleen signifying splenic infarcts. (figure 1B,C) Ultrasonography of the right popliteal fossa showed a popliteal vein with its lumen distended with hypoechoic content, suggestive of thrombosis along with a small abscess. (figure 2) A diagnosis of *Staphylococcus aureus* bacteraemia was kept and the patient was started on intravenous oxacillin according to the culture sensitivity. Empyema and the popliteal abscess were drained. The patient improved and was discharged from the hospital.

Staphylococcus aureus is both a commensal organism and also an important opportunistic human pathogen, causing a variety of pathologies such as bacteraemia sepsis, endocarditis, pneumonia, osteomyelitis and skin diseases. Risk factors for *Staphylococcus aureus* bacteraemia include extreme age, HIV-infected individuals,

Figure 2 (A) Longitudinal grey-scale ultrasound image of the left hypochondrium showing a peripheral, wedge-shaped hypoechoic area in the spleen (white arrow), suggestive of infarct. (B) Transverse grey-scale ultrasound image of popliteal fossa showing popliteal vein (white arrow), with its lumen distended with hypoechoic content, suggestive of thrombosis. The red arrow shows a small abscess.

intravenous drug users, impaired host immune defences like neutrophil dysfunction, iron overload and diabetes mellitus.^{1 2} The incidence of *Staphylococcus aureus* bacteraemia in high-income countries is estimated between 8 to 26 per 100 000 per year.³ *Staphylococcus aureus* bacteraemia can be classified as complicated or uncomplicated. Complicated infection is one that results in mortality, central nervous system involvement, embolic phenomena, metastatic site infections or recurrences within 12 weeks. Thirty days mortality in case of bacteraemia without focus is 22% to 48%.⁴ *Staphylococcus aureus* bacteraemia

Figure 1 (A) Chest radiograph showing consolidation in the right lung and right hydropneumothorax. The pigtail catheter is seen in-situ. (B) Axial contrast-enhanced CT image of thorax showing right-sided pleural effusion and consolidation in the right lower lobe. (C) Axial contrast-enhanced CT image of the upper abdomen showing peripheral, wedge-shaped non-enhancing areas in spleen suggestive of infarcts.

Patient's perspective

I understand the illness and the complications related to the illness I have. I know with all the efforts of the healthcare workers and the treatment given by them I will surely beat this illness and walk home.

Learning points

- ▶ Disseminated staphylococcal infection is reported very rarely nowadays due to improvement in personal hygiene and availability of appropriate and effective antibiotics.
- ▶ Infective endocarditis is one of the closest differential diagnoses of disseminated staphylococcal infection.
- ▶ Here in this case thorough search leads to the identification of popliteal abscess as a seeding source for disseminated staphylococcal infection, not infective endocarditis.

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is managed by identifying and removing the infected focus, and appropriate antimicrobial therapy with regard to agent, dose and duration.

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