Air embolism

Qian Du, Chak Kwan Tong

CASE REPORT

A 63-year-old man suffered from severe musculoskeletal deformity due to scoliosis, left renal stone, old stroke and on long term nasogastric tube. He presented with hydronephrosis, urosepsis, pneumonia, septic shock and gastrointestinal bleeding. His heart rate was 145 bpm and blood pressure was 88/67 mmHg, and his hemoglobin dropped from 180 g/L to 108 g/L after 700 ml bloody gastric fluid drainage from the nasal gastric tube. Then he underwent right axillary vein catheter insertion which showed central venous pressure (CVP) was only 2 mmHg, upper endoscopy and percutaneous left nephrostomy. He became hemodynamically very unstable, his heart rate dropped to 40 bpm, his blood pressure dropped to 60/30 mmHg, and noradrenaline was increased from 0.55 ug/kg/min to 2.2 ug/kg/min to maintain MAP>65 mmHg, CT was repeated showing systemic air embolism. We detected air emboli in the pulmonary artery and aorta (Figure 1), right atrium (Figure 2) and right scapula and vertebral arch. His CT brain revealed intraparenchymal gas and diffuse edema (Figure 3). Agitated saline test did not reveal any right to left shunt on Transesophageal Echocardiogram study. Mediastinum appeared unremarkable on contrast CT Thorax, except for the presence of an esophageal diverticulum. Unfortunately, no definite cause could be attributed for the air embolism although each of the invasive procedure that he received posed the risk. This patient’s BAL culture and blood culture both yielded MDRPA, and pus from percutaneous nephrostomy yielded mycobacterium tuberculosis. His clinical condition declined progressively and had passed away after nine days.

DISCUSSION

Air embolism is an uncommon, but potentially catastrophic, event that occurs as a consequence of the entry of air into the vasculature. Air embolism can be venous or arterial. Surgery, trauma, vascular interventions, and barotrauma from mechanical ventilation and diving are the most common causes of air embolism [1–5]. The diagnosis is best made by demonstrating air in the intravascular space or organs.
in a patient with a known risk factor for air embolism. Regardless of the mechanism responsible for the embolism, rapid and aggressive treatment is essential to preserve life and function [6]. For venous gas embolism, the mainstays of treatment are the prevention of further entry of gas, volume expansion, the administration of 100 percent oxygen, often with ventilatory support; positive inotropic support; and cardiopulmonary resuscitation, if necessary. For arterial gas embolism, hyperbaric oxygen is the treatment of choice, as soon as cardiopulmonary stabilization has been achieved. Massive venous and arterial air embolism is rare within most of the reported cases. Our case demonstrated an air embolism associated with large air pockets in the right atrium, pulmonary artery, aorta and cerebral parenchyma.

CONCLUSION

Air embolism should always be suspected when patients experience sudden-onset respiratory distress (venous air embolism) and/or experience a neurological event (arterial embolism) in the setting of a known risk factor (eg, surgery, trauma, vascular interventions, esophagogastroduodenoscopy).

REFERENCES


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Qian Du – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Chak Kwan Tong – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

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Authors declare no conflict of interest.

Data Availability
All relevant data are within the paper and its Supporting Information files.

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