AN UNEXPECTED COMPLICATION FROM IV CONTRAST

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INTRODUCTION: The presence of gas bubbles into blood vessels can be associated with lethal consequences. Air embolism is an under-recognized complication associated with any procedure that involves vascular manipulation. Particular importance should be given to intravascular catheters insertion and intravenous contrast injections due to their frequency in every-day practice. We present a case of a pulmonary arterial embolism after a contrasted CT.

CASE PRESENTATION: A 40-year-old male with a history of sigmoid diverticulitis presented to the ED complaining of sharp left lower abdominal pain. Vitals and physical examination were unremarkable except for moderate tenderness on the left lower quadrant of the abdomen. Abdominal CT scan with contrast revealed obstructing lithiasis in the distal left ureter; laboratory workup was unremarkable. Pain control was achieved and he was discharged with tamsulosin and Urology follow up. However, CT over-read disclosed gas bubbles in the main pulmonary artery, suspected to be iatrogenic from IV contrast power injection. He was prompted to return and admitted to the MICU. He denied chest pain or difficulty breathing but mentioned mild shortness of breath while the contrast was administered. EKG and chest x-ray were unremarkable. He was placed on Trendelenburg - left lateral decubitus position and supplemental oxygen was delivered through a non-rebreather mask with subsequent air resorption and no long term sequelae.

DISCUSSION: Air embolism is an under-estimated risk from intravascular catheters and contrast injection. A breach in the vasculature plus a pressure gradient that favors the passage of air into the circulation allows bubbles to enter the circulation (arterial or venous). Arterial emboli causes end-organ ischemia. The air in the pulmonary microcirculation impedes blood flow and induces vasoconstriction leading to increased pulmonary arterial and right ventricular pressure. Inflammatory mediators and free radicals are released as well causing endothelial damage. Cases often present with dyspnea, chest pain, crepitus over superficial vessels, livedo reticularis; bubbles within retinal arteries are seldom seen. Diagnosis is made clinically when a patient with risk factors develops acute pulmonary, cardiovascular or neurological decompensation. Imaging tends to be normal because air is quickly absorbed. Patients are treated with repositioning (to avoid further embolization) and supplement oxygen with high FIO2 (to increase the air resorption rate). In cases of hemodynamic instability, neurologic deficits or end-organ damage: hyperbaric oxygen is indicated.

CONCLUSIONS: Air embolism is a potential complication of any procedure that involves vascular intervention; keeping this in mind will help with early recognition of cases and timely therapeutic intervention.


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