Clinical Case and Questions for Digital Presentation

Michael is a 47-year-old male who presented to the Emergency Department with sudden onset shortness of breath, sharp right-sided chest pain, and light-headedness. He reports that the symptoms began approximately 24 hours after returning home from a three-week trip to Europe.

Michael is a non-smoker, 1.82 m tall, 112 kg (overweight), and works in IT, a job that requires prolonged periods of sitting. He flew home on a 23-hour flight with two stopovers. He states that during the flight he "*mostly slept or watched movies*" and only stood up once or twice.

His past medical history includes hypertension (managed with medication) and a knee injury two months prior that limited his mobility. On assessment, Michael appeared anxious and tachypnoeic, with a respiratory rate of 28 breaths per minute and oxygen saturation of 90% on room air. Heart rate was 118 beats per minute, and blood pressure was 148/92 mmHg. Lung auscultation was clear, but he reported pleuritic pain on deep inspiration.

A CT pulmonary angiogram (CTPA) revealed a thrombus in the right pulmonary artery, consistent with pulmonary embolism. A venous duplex ultrasound of the left leg confirmed the presence of a deep vein thrombosis (DVT).

DIAGNOSIS: Pulmonary Embolism

Question 1:

Explain how long-haul air travel may have contributed to the development of the patient's DVT. What additional risk factors from Michael's history may also have contributed, and how?

Question 2:

Hypothesize the location of the original thrombus formation and describe the route the thrombus would have taken to lodge in the right pulmonary artery.

Question 3:

Describe the clinical manifestations of pulmonary embolism and link them to the underlying pathophysiology. Why might the patient have normal lung auscultation despite significant symptoms?