Pulmonary Thromboembolism as a Complication of an Electrophysiological Study: A Case Report

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ABSTRACT

Pulmonary thromboembolism (PTE) is a fatal condition that may rarely occur due to complications of coronary catheter insertion. In this case report, a 41-year-old male was presented 48 hours after radiofrequency catheter ablation (RFCA) for the management of Wolf-Parkinson-White syndrome with acute onset of dyspnea, hemoptysis, and chest pain. The physical examination revealed coarse crackles in the base of left hemithorax and laboratory tests were normal. The patient was suspicious for PTE based on clinical symptoms and the history of RFCA. Diagnosis was confirmed by computed tomography angiography of lungs. Patient symptoms improved after 3 months of treatment with warfarin.

Introduction

Acute pulmonary thromboembolism (PTE) is a fatal condition that may result in 10% mortality within the first hour from the initiation of the event (1). Mortality may increase to 30% in untreated cases (2). The main cause of mortality in acute PTE is due to the underlying causes (3). The clinical presentation of acute PTE is diverse and makes its diagnosis challenging (1). Immobilization, malignancy, recent major surgery, and orthopedic surgery are among predisposing factors for PTE, as well as dyspnea, tachycardia, and chest pain (1). One of the rare causes of PTE is coronary catheter insertion due to the pressure injection of contrast media (4). We hereby report a case of PTE incidence due to coronary catheter insertion for treatment of Wolf-Parkinson-White (WPW) syndrome.

Case presentation

The case was a 48-year-old man with sudden occurrence of dyspnea, pleuritic chest pain, and hemoptysis who was admitted to the Pulmonology Ward of the Imam Reza Hospital, Mashhad, Iran. He had no history of medical conditions. The patient experienced episodes of palpitation in 2 years prior to the study. He was diagnosed with WPW based on the electrocardiogram (ECG). He was a...
Radiofrequency Catheter Ablation

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候选人用于射频消融（RFCA）。消融被在局部麻醉和透视下进行，使用Biosense Webster和St Jude在右后侧隔膜区域。RFCA程序是成功的。四十八小时后，RFCA的病人突然有急性胸痛，非大量血痰。此外，病人没有先前有心房颤动、长期失衡或家族病史的历史。在基础体格检查中，他有稳定的生理和血红蛋白状态。在听诊时，左肺基底听到喘息声。两下肢对称，无明显区别。实验室检测，包括全血细胞计数（CBC）、血尿素、血肌酐、血钠和钾、凝血酶原时间、部分凝血活素时间及国际标准化比率（INR）均在正常范围内。静脉肝素用于诊断为肺栓塞的病人。病人接受了计算机断层血管造影（CTA）。CTA显示了左下肺段支气管肺动脉的填充缺陷，指示了肺栓塞（图1）。其他CTA的发现包括左肺上叶和基底叶边缘的间质性肺水肿，指示为肺栓塞。下肢超声多普勒检查正常，左心室射血分数为60%。在静息状态下，左心室大小、收缩功能以及肺动脉压力（PAP）正常，而舒张功能轻微异常。在血栓性疾病的筛查中，蛋白C和S水平、抗磷脂抗体、抗磷脂抗体和抗凝血酶水平均正常，无蛋白C基因突变。根据事件的序列，病人的历史以及缺乏任何导致肺栓塞的风险因素，病人被诊断为由多个静脉鞘插入引起的医源性肺栓塞。病人接受了5天的静脉肝素治疗，3个月服用华法林，以维持INR在2.5至3.5之间。在随访中，症状缓解，病人未出现血痰或呼吸困难。胸部X光显示改善的肺间隔条带。3个月后，控制超声心动图正常，未见PAP升高。血浆D-二聚体为阴性，因此，药物被撤出治疗。图1: CT血管造影显示了左下肺段支气管肺动脉的填充缺陷

讨论

肺栓塞（PTE）的机制有三部分：静止、血管内皮损伤和高凝状态。静止可以由手术、造影或劳动后的长期不动造成。血管内皮损伤可以由肿瘤侵袭或创伤造成。高凝状态也可以由怀孕、脾切除或恶性肿瘤（5）造成。在本病例中，血管内皮损伤可能与静脉鞘插入有关，随后造成肺栓塞。另外，对比剂的化学特性可能增加了凝固性并且导致了肺栓塞（6）。

如前所述，肺栓塞死亡率高，最重要的预测因子是事件从开始到诊断和治疗的时间（6）。肺栓塞可能伴有症状，包括胸部疼痛、突然出现的呼吸困难。

静脉肝素5天，华法林5mg服用3个月。期间，症状缓解，病人未出现血痰或呼吸困难。胸部X光显示改善的肺间隔条带。3个月后，控制超声心动图正常，未见PAP升高。血浆D-二聚体为阴性，因此，药物被撤出治疗。
cough, tachycardia, and shock. The PTE diagnosis solely based on clinical symptoms is difficult. Suspicion of PTE should be confirmed by blood tests, chest X-ray, ECG, and echocardiography, as well as lung perfusion scintigraphy and pulmonary CTA (7).

Management of PTE is based on the extent of involvement and severity of the patients' symptoms. Primary systemic fibrinolysis is unfavorable in intermediate-risk PTE; therefore, catheter-directed techniques are considered as an option in patients with hemodynamic decompensation who have a high risk for bleeding. New oral anticoagulant agents are effective and safe alternatives to standard anticoagulation regimens (7).

**Conclusion**

Physicians should always consider PTE as a differential diagnosis for acute respiratory symptoms after diagnostic or interventional coronary procedures. Furthermore, all patients undergoing cardiac catheter insertion should be monitored for signs and symptoms of PTE after the procedure to prevent and timely diagnose potential complications.

**Conflict of Interest**
The authors declare no conflict of interest.

**References**


