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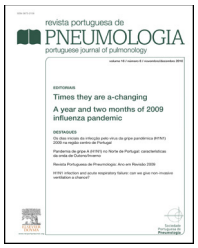

ORIGINAL ARTICLE

Symptoms, location and prognosis of pulmonary embolism

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KEYWORDS
Pulmonary embolism;
Subsegmental;
Computed tomography scan;
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Abstract
Background and objective: Pulmonary embolism (PE) is a common disease with variable symptoms and high overall mortality. The clinical relevance of the extent of PE is still debatable, and the role of anticoagulation in patients with subsegmental involvement has been contested. Our objective is to describe the clinical details of patients with PE in our hospital and to analyze their prognosis based on the extent of the disease.
Materials and methods: Retrospective study of 313 patients diagnosed with PE by chest computed tomography (CT) scan at the Hospital Complex of Pontevedra in Spain for six years. Predictors of mortality were determined by multivariate analysis.
Results: Women accounted for 56% of patients, and patient median age was 70 years (interquartile range 53–78 years). Subsegmental PE accounted for 7% of all cases; these patients were younger and had lower comorbidity; they reported chest pain more often, performed better in blood gas analysis and none of them had proximal deep vein thrombosis (DVT). Patients with subsegmental PE had a higher survival rate. Factors independently associated with mortality were cancer diagnosis and higher comorbidity.
Conclusions: Patients with subsegmental PE clinically differ from those with more proximal PE. Underlying diseases have more influence on the prognosis than the extent of the disease.

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PALAVRAS-CHAVE
Embolia pulmonar;
Sub-segmentos;
Tomografia computadorizada;
Prognóstico

Sintomas, localização e prognóstico de embolias pulmonares

Resumo
Contexto e objectivo: A embolia pulmonar (PE) é uma doença comum com sintomas variáveis e uma elevada taxa de mortalidade global. A relevância clínica da extensão da PE é ainda fonte de debate, e o papel da anticoagulação em pacientes com envolvimento de sub-segmentos foi contestado. O nosso objectivo é descrever os dados clínicos de doentes com PE no nosso hospital e analisar o seu prognóstico, com base na extensão da doença.
Materiais e métodos: Estudo retrospectivo de 313 doentes, diagnosticados com PE, através de uma tomografia computadorizada de tórax (TC) no Complexo Hospitalar de Pontevedra, em Espanha, durante seis anos. Os preditores de mortalidade foram determinados por análise multivariada.
Resultados: As mulheres representaram 56% dos doentes, e a idade média era de 70 anos (amplitude interquartis 53–78 anos). A PE ao nível dos sub-segmentos era responsável por 7% de todos os casos; estes doentes eram mais jovens e tinham uma taxa de comorbidade inferior; referiram dor torácica com maior frequência, tiveram melhores resultados na gasimetria arterial e nenhum deles sofreu uma trombose venosa profunda (TVP) proximal. Os doentes com PE ao nível dos sub-segmentos tiveram uma taxa de sobrevivência mais elevada. Os factores associados de modo independente com a mortalidade foram o diagnóstico de cancro e uma comorbidade mais elevada.
Conclusões: Os doentes com PE ao nível dos sub-segmentos diferem clinicamente daqueles com PE proximal. No prognóstico, as doenças subjacentes têm maior influência que a extensão da doença.

Introduction

Pulmonary embolism (PE) is a common disease with an annual incidence of 110 cases per 100,000 adults,[1] which has been increasing over recent years.[1,2] Symptoms may vary, from asymptomatic to obstructive shock following circulatory collapse.[3] Overall mortality is not only high, but also highly variable. In a recent study, overall mortality was 8.65% at three months.[4] Central arteries are most commonly involved,[5,6] while subsegmental PE accounts for 4–7% cases.[7–9] However, a number of studies report subsegmental involvement in up to 30% patients.[9]

The clinical relevance of the extent of PE is still debatable, and the role of anticoagulation in patients with subsegmental involvement has been contested in a number of studies.[10,11]

The objective of our study was to describe the clinical particulars of patients with PE in our hospital and to analyze their prognosis based on the extent of the disease.

Methods

We conducted a retrospective study of all patients above 18 years of age with confirmed CT chest scan diagnosis of PE[12] at the Hospital Complex of Pontevedra in Spain between January 2005 and December 2010. Follow-up ended on January 31, 2012, the survival deadline. Thus, the minimum follow-up was 14 months. Administrative data from coded hospital discharges were used for patient selection. Those patients with incomplete data and/or diagnosis made by methods other than chest CT scan were excluded from the initial 470 patient sample. Thus, 313 cases were included in the study.

The following data were analyzed:

1. Personal details: age, gender, active smoking and obesity (body mass index >30).
2. Clinical, physical examination and additional test data: recent surgery, anesthesia, trauma, cancer, prolonged travel and/or immobilization; lower limb paralysis; insertion of central catheter, thrombophilia or antiphospholipid syndrome; previous venous thromboembolic disease (VTE); lower-limb varicose veins; pregnancy, contraception or hormone therapy. Tachypnea, crepitant rale, signs of lower-limb DVT; vital signs, systolic hypotension (SBP < 100 mmHg), diastolic hypotension (DBP < 60 mmHg) and tachycardia (heart rate > 100).[13,14] Arterial blood gas analysis, hemoglobin, hematocrit, platelet count, leukocytosis, neutrophilia, glucose, urea, creatinine, sodium, potassium and fibrinogen, stratified as normal or abnormal as per the laboratory reference values in our hospital. D-dimer levels were determined with high-sensitivity turbidimetric immunoassay. D-dimer levels above 500 ng/ml were considered pathological. Renal function was considered normal with glomerular filtration rate as per the abbreviated MDRD equation above 60 ml/min/1.73 m^2.[15] Electrocardiographic and imaging findings: plain chest radiograph; lower-limb echo-Doppler (complete or distal) was performed at the discretion of the radiologist, based on patient clinical presentation. PEs were collected and classified into three groups with chest CT scanning: central (main trunk, right or left pulmonary artery,