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Pulmonary embolism in pemphigus vulgaris, the need for judicious immunotherapy

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Pulmonary Embolism in Pemphigus Vulgaris, the need for judicious immunotherapy

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Abstract

Pemphigus vulgaris is a serious chronic mucocutaneous ailment. In recent decades advances in diagnostic and therapeutic measures have led to a significant decline in morbidity and mortality. However, with the advent of active and prolonged immunotherapy involving corticosteroids, there has been a rise in steroid-associated complications. This has led to significant concern globally over the sensible use of treatment regimen in pemphigus patients. We present a patient who underwent a massive pulmonary embolism following over usage of corticosteroid therapy for pemphigus vulgaris. Whilst the patient survived owing to timely assessment and aggressive surgical intervention, the need for cautious and judicious immunotherapy in pemphigus is emphasized.

Introduction

Pemphigus vulgaris is a rare albeit serious autoimmune dermatological condition associated with significant morbidity. Over the years, there has been a marked decline in mortality owing to the advent of corticosteroid and immunosuppressant therapy. This has, however, led to a number of steroid-associated complications in these patients. One of the gravest amongst these, is the occasionally reported pulmonary embolism (PE). We present a patient who underwent a massive PE, following overuse of systemic corticosteroids for pemphigus vulgaris. Even though timely and aggressive approach turned out to be lifesaving, the need for sensible immunotherapy usage is emphasized.

Case Report

A 50 years old lady presented to the emergency room with complaints of shortness of breath, palpitations and dizziness. She was a known case of pemphigus vulgaris and was receiving systemic glucocorticoid therapy for the past three months. There was no history of any pulmonary or cardiac ailment.

Upon assessment, she was found to be tachycardiac and tachypneic. Physical examination was unremarkable, only multiple vesiculobullous lesions of pemphigus were seen on her trunk. Laboratory investigations were normal, electrocardiography demonstrated supraventricular tachycardia and rightward deviation of QRS axis along with ST changes suggestive of right ventricular strain. Chest roentgenography and ultrasonography were within normal limits, apart from suggestion of mild bilateral pleural effusion. Echocardiography revealed dilated right sided cardiac chambers. High resolution computed tomography was subsequently carried out showing an extensive thrombus within the pulmonary trunk, with the clot extending from the main pulmonary artery into both pulmonary arteries (Figure).

Figure. Hypodense thrombus, appearing as a filling defect extending from main pulmonary artery and forming a cast in the left pulmonary artery.

Evidence of thrombosis within the superior vena cava and right atrium was also observed. Bilateral pleural effusion and atelectasis with focal infarction of the right upper lobe was also established.

Taking into consideration the acute presentation and substantiation of significant thrombosis, surgical intervention was performed. Embolectomy was carried out under cardiopulmonary bypass. In view of the patient's age and comorbidity, an inferior vena caval filter was consequently

deployed to obtain prophylaxis against future thromboembolic events.

The patient recovery was uneventful. She was placed on a modified immunosuppressant and glucocorticoid therapy for pemphigus along with an anticoagulation regime. During the ensuing period, she has documented a gradual resolution of her dermatologic ailment with no further embolic episodes.

Discussion

Pemphigus refers to a group of diseases characterized by painful lesions caused by intraepidermal acantholytic structures in the skin and mucous membrane. The precise pathophysiology remains unclear. It is a rare chronic mucocutaneous disease distinguished by intra-epithelial bullae, owing to autoantibodies directed against proteins of the desmosome-tonofilament complex between keratinocytes. Of this group of autoimmune disorders, pemphigus vulgaris is the most debilitating dermatitides.[1] A chronic erosive mucocutaneous disease, its molecular basis is due to production of autoantibodies directed against adhesion molecules (desmoglein 1 and 3) that belong to the cadherin family.[2] The lesions initially appear in oral mucosa in majority of patients[3] followed by blistering of the skin, which is often painful. The differential diagnosis includes nonimmune causes such as contact dermatitis, infections, insect bites and bullous reactions to drugs. Pemphigus may be discriminated by the age at which the disease first appears, the morphology and distribution of the lesions and the presence or absence of mucosal lesions and scarring. Because the clinical presentations of blistering disorders are often similar, special immunofluorescence tests are used to confirm the diagnosis.

In recent years there has been a rapid evolution in the understanding of the pathophysiology of autoimmune blistering diseases, with significant advancement in the development of modern diagnostic techniques and new therapeutic approaches. The emergence of concomitant corticosteroid and immunosuppressive therapy has decreased mortality of pemphigus vulgaris from 90% to around 30%.[1,4] At the same time, prolonged use of the above mentioned regimen has resulted in the development of serious complications such as diabetes, ulceration, arterial hypertension, cardiorespiratory disease, infection and sepsis. Even today, rarely reported and greatly dreaded is the development of pulmonary embolism (PE), which has been known to occur with high doses of corticosteroids required to control the disease process in pemphigus.[5,6]

PE is the most serious outcome of venous thromboembolism. Approach towards the patient requires a high-degree of clinical suspicion, timely assessment and prompt intervention. Asymptomatic embolisation is frequently encountered, with dyspnea and tachycardia being the only signs and symptoms. Physical examination may be deceptively normal and also lacking in the majority of cases is absence of clinical evidence of thrombophlebitis. On clinical grounds, therefore, a firm diagnosis of PE cannot be made, mandating further assessment by laboratory and imaging parameters.

Electrocardiography typically specifies merely tachycardia, showing right axis deviation only with severe congestion of pulmonary vasculature. A variety of modalities are now engaged in the diagnostic imaging algorithm of PE including; chest radiography, ventilation/perfusion (V/Q) scintigraphy, pulmonary angiography, and recently computed tomography and magnetic resonance imaging. Several biomarkers including d-dimers, troponins, and natriuretic peptides may provide additional information.

Chest radiographic findings in acute presentations include focal oligemia, vascular enlargement, atelectasis, pleural effusions, and air space opacities representing pulmonary hemorrhage or infarction.[7] The chest roentgenogram can occasionally be suggestive of PE, but is more often nonspecifically abnormal.[7] The main use of the chest radiograph in the evaluation of suspected PE, is to exclude entities that may simulate PE.[7] Because of its availability and familiarity the V/Q scan is the most frequently used noninvasive screening study for the diagnosis of acute PE in many centres globally.[8] Pulmonary angiography however, remains the gold standard for the diagnosis of PE.[7] CT and MR imaging techniques probably will have more significant roles in the future in the diagnosis and management of PE, but limited availability and familiarity with these imaging modalities make it impractical to currently recommend them as primary screening tools for acute PE.

Only about 22% of major pulmonary embolisms are correctly diagnosed.[9] Thrombolysis and anticoagulation constitute the cornerstone of management. However, in cases of massive and submassive thromboembolism surgical intervention is universally indicated. Indeed in acute cases pulmonary embolectomy is a lifesaving therapeutic alternative with a good long-term prognosis in patients who survive the early perioperative period.[10]

While timely assessment and rapid intervention are mandated in an acute event, it is believed that greatest improvement in mortality from PE is likely to come from improved and aggressive prevention and prophylaxis by the critical care team.

In conclusion our patient was a case of pemphigus vulgaris who developed acute massive PE owing to excessive corticosteroid use. Fortunately prompt evaluation and early surgical intervention turned out to be lifesaving. Implication is hence towards judicious and cautious use of the treatment regimen in pemphigus with routine monitoring and surveillance for potentially fatal conditions such as thromboembolism.

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