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Letter

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Rhabdomyolysis as the presenting symptom of lung carcinoma: a case report

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Abstract

Rhabdomyolysis may rarely be observed as a complication of dermatomyositis. Here we report a case of paraneoplastic dermatomyositis with rhabdomyolysis as a presentation of lung cancer.

Key words: Lung carcinoma, rhabdomyolysis.

Dear Editor,

Rhabdomyolysis is acute necrosis of striated muscle. The classic triad of symptoms includes muscle pain, weakness and dark urine. Muscle cell contents such as myoglobin are released into circulation and cause acute tubular necrosis resulting in acute renal failure. Presence of myalgias, significant muscle weakness, red-to-brown urine (myoglobinuria), and elevated CK levels are considered as clues to rhabdomyolysis.[1,2] Rhabdomyolysis may rarely be observed as a complication of dermatomyositis. Paraneoplastic dermatomyositis with rhabdomyolysis as a presentation of lung cancer has not been reported so far.

A 61-year-old man was admitted to our department with fatigue, severe myalgias, nausea, vomiting and generalized weakness. He had had myalgias for the last two months and in the preceding month he suffered progressive muscle weakness. On physical examination he had periorbital edema, periungal erythema, a heliotrope-like periorbital rash. On neurologic examination deep tendon reflexes could not be elicited in the lower limbs and muscle strength was noted to be 1 over a scale of 5 in both proximal and distal muscles. The CPK level was 42670 U/L (30-200), CK-MB 2544 IU/L (0-25), sedimentation rate 97 mm/h, CRP 145 mg/dL (0-5), AST: 1745 U/L (0-45), LDH: 2289 U/L (125-243), urea 242 mg/ dL (10-50), creatinine 6.7 mg/dL (0.9-1.3), hemoglobin 13.9 gr/dL. Myoglobinuria was not detected. He was diagnosed with rhabdomyolysis and treated with intravenous saline infusion in the emergency department but after 2 days he required hemodialysis due to reduction in urinary output and increased urea and creatinine levels. There was no history of trauma, seizures, surgery, snake or insect bite, contact with chemical agents, or drug abuse. He didn't take any drugs regularly and had been smoking for thirty years. He reported an alcohol consumption of 25-50 grams every day. Thyroid function tests were normal. An initial computed tomography showed supraclavicular lymph nodes (6 mm), bilat-

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eral minimal pleural effusion, a noncalcified (<5 mm) nodule in the upper lobe of the left lung. CT of the abdomen revealed left paraaortic, precaval, interaortocaval lymph nodes (<1 cm). These lymph nodes were not investigated further because of their small size. Dorsal and lumbar magnetic resonance images showed extensive pathological signal increase in paravertebral muscles. Antinuclear antibodies, rheumatoid factor, anti SM, anti RNP, anti Jo1, c-ANCA, p-ANCA were negative. An electromyographic (EMG) study showed normal nerve conduction, needle EMG of the muscles revealed increased insertion activity, spontaneous denervation potentials and short myotonic discharges. Motor unit potentials recorded during voluntary contractions were essentially normal except for a few myogenic motor unit potentials. The electrophysiologist's impression was that the findings indicated a non-specific process caused by muscle necrosis. A muscle biopsy from a right lower extremity was obtained before the patient was treated with 3 pulses of 1 g intravenous methylprednisolone followed by oral prednisolone 1 mg/kg/day. The muscle biopsy result was normal. After 3 weeks in the Rheumatology department, renal failure resolved, CPK was normal and dialysis was no longer needed but the acute phase response never responded to treatment, with the CRP ranging from 5 to 50 times upper limit of normal and a sedimentation rate above 100 mm/h. The ESR and CRP did not change during or after treatment. He had severe muscle wasting including hands and lower extremity distal muscles and unable to carry-out any daily activity without assistance. He was transferred to the department of Physical Medicine and Rehabilitation for physiotherapy. After two months in rehabilitation, he started having pain on his left shoulder which limited his movement and was worse at night. His laboratory analyses revealed hypercalcemia and profound anemia. A Tc99m bisphosphonate scintigraphy showed multiple bone metastases. There were enlarged aortopulmonary and hilar lymph nodes (>2 cm) in the repeated CT of the thorax. F-18 FDG PET/CT revealed a hypermetabolic mass (3.5x2x3 cm) in the apical lobe of the left lung and multiple metastases in mediastinum, adrenal glands, peritoneal area, bones and muscles (Figure 1), there was no mass lesion or mediastinal lymph nodes in his initial chest CT at admission. The patient refused bronchoscopy but agreed to a liver biopsy. The liver biopsy specimen revealed metastatic adenocarcinoma.

Dermatomyositis is among the paraneoplastic diseases associated with lung cancer.[3] Our patient presented features of dermatomyositis like heliotrope rash, periungual erythema and progressive muscle weakness. But he also had features that are not usual for dermatomyositis like, muscle pain and a very high creatine kinase level which is suggestive of severe rhabdomyolysis in which muscle weakness is expected to be of sudden onset. Electrophysiologic testing revealed features suggesting inflammatory myopathy like increased spontaneous activity and myogenic motor unit potentials. Needle EMG is generally normal in patients with rhabdomyolysis but myogenic motor unit potentials are not uncommon.[4] He subsequently suffered an episode of acute renal failure probably because of tubular obstruction. However we failed to detect myoglobinuria in his initial evaluation, but myoglobinuria is detected in a varying proportion (28-70 %) of patients with rhabdomyolysis.[1] Serum myoglobin precedes the rise in CK and drops rapidly thus may be undetectable in a patient presenting with muscle weakness and high CK.[5] Our patient had a 2 month history of weakness and myalgias thus myoglobinuria may be undedectable at presentation.[6] Muscle biopsy is not always necessary in patients with unequivocal rhabdomyolysis and generally shows loss of cell nuclei and muscular striae without an inflammatory infiltrate. Muscle biopsy shows evidence of inflammation in 80% of patients with polymyositis or dermatomyositis.[7] Our patient had a normal muscle biopsy which neither supports, nor rules out dermatomyositis or rhabdomyolysis. Our biopsy site choice was not directed by EMG or MRI findings, and this may be another reason for a negative biopsy.[8]

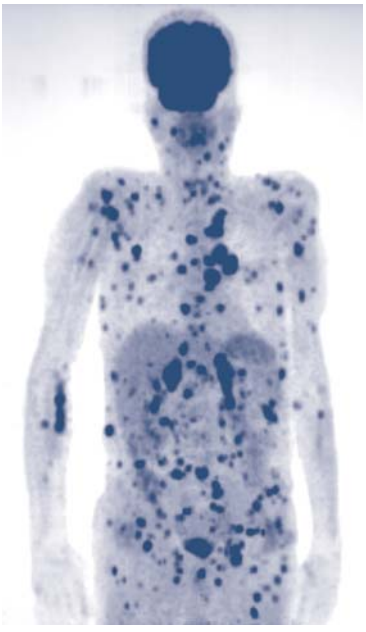

Figure 1. A hypermetabolic mass in the apikal lobus of the left lung; multipl metastasis in mediastinum, surrenal glands, abdomen, bones and muscle areas.

Rhabdomyolysis in patients with cancer generally occurs as a side effect of treatment or result of an infection. We could identify only 3 reports in which patients had rhabdomyolysis as a feature of neoplastic disease. One of these patients had a tongue cancer and presented with a necrotizing myopathy,[9] another was a patient with hepatocellular carcinoma who had polymyositis and rhabdomyolysis,[10] third case was a patient with breast cancer who had dermatomyositis and rhabdomyolysis.[11] An initial search for malignant disease was unrevealing in our patient. This is also the case in a proportion of patients who have paraneoplastic dermatomyositis. The current recommendation is to keep surveillance for another 2 years after diagnosis.[12] Our patient was diagnosed with lung carcinoma after he developed a profound anemia and pain due to bone metastases 3 months after he presented with the muscle disease.

This patient presents a diagnostic challenge. He satisfied 3 of the Peter and Bohan classification criteria for dermatomyositis and he had typical skin signs, but his EMG findings and muscle biopsy did not strongly support an inflammatory myopathy. Although he suffered progressive muscle weakness, severe myalgia as in our patient is not a predominant symptom of dermatomyositis. Piling all the findings together we think this patient suffered from paraneoplastic dermatomyositis which may rarely lead to rhabdomyolysis. To our best knowledge our case is the only patient who had paraneoplastic dermatomyositis presenting with rhabdomyolysis associated with lung cancer in the literature.

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