



# Thalidomide Life Threatening Hypokalemia

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## Case Report

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## Abstract

Normal serum potassium levels range from 3.5 to 5 mEq/L; however, certain illnesses, and dietary deficiencies and medication can lead to potassium imbalances in the body. Thalidomide was teratogenic but it has reemerged in the market. Thalidomide has anti-angiogenic and immunomodulatory properties. Low-dose thalidomide significantly reduced the cough and also improved the patients' quality of life but it can cause hypokalemia. We present to you a case of interstitial lung disease taking thalidomide in low dose for her intractable cough suffering from severe hypokalemia.

**Keywords:** Thalidomide; Hypokalemia; Potassium; Immunomodulatory; Neuropathy

## Introduction

Potassium plays a crucial role in many metabolic cell function. The balance of potassium is regulated by the sodium-potassium adenosine triphosphatase (ATPase) pump, an active transport mechanism [1-5]. About 80% of consumed potassium is eliminated in the urine, 15% is excreted in the feces, and 5% is lost in sweat [3,4]. Hypokalemia results either when there is a total-body potassium deficit, or when serum potassium is shifted into the intracellular compartment [1-6]. In the geriatric population, medication-induced hypokalemia is fairly common [7].

## Case Presentation

A 62-year-old female presented to the emergency department with a chief complaint of ongoing fatigue and weakness. She had noticed a gradual increase in symptoms over the past three weeks. She had required more frequent rest breaks during that time than she had in the past, with intermittent episodes of dyspnea. She had been hospitalized three months earlier for newly diagnosed interstitial lung disease, which was treated with IV hydrocortisone and fluid replacement and Thalidomide. During the admission to our

hospital, her blood pressure was 110/70 mm Hg, her pulse was 80 beats per minute, and her respiratory rate was 22 breaths per minute. Her potassium level was measured at 2.9 mEq/L (normal, 3.5–5 mEq/L). Her lungs had decreased breath sounds bilaterally. Her oxygen saturation was 93% on room air. Upon medication review, the clinical pharmacist recommended holding the thalidomide. After three days without thalidomide, therapeutic potassium levels were achieved by replacing potassium with potassium chloride intravenous. She was counseled not to resume thalidomide, and, since she was no longer hypokalemic, chronic potassium supplementation was not needed.

## Discussion

Thalidomide exerts anti-angiogenic and immunomodulatory effects [8,9]. It is used in Interstitial lung diseases for intractable cough as used in this patient. Besides teratogenicity, thalidomide can cause constipation, sedation, fatigue, and neuropathy, the most common side effects include somnolence, fatigue. Less common side effects include xerostomia, neutropenia, toxic epidermal necrolysis, electrolyte abnormalities, hyperglycemia, hyperkalemia, hyperuricemia, hypocalcemia [10]. This is the

first case report describing a unique adverse effect of drug i.e hypokalemia. Determining the etiology of the hypokalemia is essential in order to appropriately manage patients. For this patient it was thalidomide use. Treatment for hypokalemia focuses on restoring a normal potassium balance Potassium chloride (KCl) is the most common salt used for repletion of potassium.

### Conclusion

Hypokalemia can cause serious complications that could be life-threatening if not treated early. The vast majority of hypokalemia cases are drug-induced, as was finally evident in this case. Our patient exhibited profound hypokalemia with thalidomide use. Determining the etiology of the hypokalemia is essential for appropriate management of the patient. When patients taking thalidomide have persistent fatigue muscle cramps without a definite cause, drug-induced hypokalemia should be considered, although rare, and appropriate examinations and management should be done.

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