



Case Reports &amp; Reviews

# Rhabdomyolysis in a Physically Active Patient on Isotretinoin Therapy: A Case Report

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## Abstract

Isotretinoin therapy remains the therapeutic resort when all other treatments for acne have failed, however it is accompanied by a high side-effect profile. Isotretinoin-induced muscle injuries have been associated with markedly elevated creatine kinase (CK) in multiple reports in the literature. We report the case of a 36 year-old female on isotretinoin therapy for intractable acne who developed generalized myalgia one day subsequent to a strenuous workout at the gym.

## Introduction

Isotretinoin (Oratane) or 13-cis retinoic acid has been proven to be highly effective for the treatment of acne vulgaris, specifically severe or unmanageable disease when all other treatment options have been unsuccessful. However, Isotretinoin is teratogenic with several common adverse effects which have been established with relation to mucocutaneous and extracutaneous findings. The most common side effects include cheilitis, dry skin and mucus membranes, desquamation, photosensitivity, pruritus, and epistaxis [1]. Furthermore, patients who are started on isotretinoin therapy are requested to have their serum lipid profiles and liver functions studies (LFTs) checked on a monthly basis, as Isotretinoin can lead to transient abnormalities in these markers [2]. Although not usually recommended, some practices advise the additional monitoring of CK levels as well. Several case reports have reported cases of isotretinoin-associated muscle injury with significant levels of CK in their patients [3-5]. In this report, we present the case of a 36 year-old female on isotretinoin therapy for intractable acne who developed generalized myalgia one day subsequent to a strenuous workout at the gym.

## Case report

A 36-year-old female with a history of intractable acne presents to the emergency department (ED) with acute generalized myalgia one day after a vigorous workout at the gym. She reports taking one ibuprofen tablet (400 mg) prior to presenting to the ED for pain relief. She also states that she leads a healthy lifestyle with several workouts per week but has never experienced generalized

myalgia following a workout; her soreness has always been proportional to the strain she places on herself. The patient had been started on isotretinoin (Oratane – 20 mg/day) four weeks prior to her current admission for severe intractable acne with associated scarring and hyperpigmentation.

Additionally, her one month follow-up laboratory workup which had been done three days prior to her presentation, revealed a significantly elevated CK of 18556 IU/L (normal 29-168 IU/L) as well as an elevated alanine aminotransferase (ALT) and aspartate aminotransferase (AST), 119 IU/L and 278 IU/L, respectively. The patient was advised to immediately stop her isotretinoin and seek medical attention, however she declined as she was asymptomatic. Consequently, she went to the ED three days later after developing generalized myalgia.

In the ED, Further laboratory workups were performed which revealed a CK of 10304 IU/L and a urinalysis which was normal. She was treated with IV fluids to prevent kidney injury and was discharged.

We plan to start the patient on oral and topical antibiotics with the intent of reinitiating isotretinoin 10mg q.a.d. once her laboratory markers return to baseline. The patient will also be advised to avoid vigorous exercise throughout the course of isotretinoin therapy.

## Discussion

Isotretinoin therapy has been reserved for treatment of severe recalcitrant acne unresponsive to conventional therapy (e.g. Benzoyl peroxide, systemic antibiotics, etc.). Isotretinoin therapy is associated with a major side effect profile, therefore physicians

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prescribing isotretinoin must be aware of the guidelines for evidence-based monitoring of possible side effects. A study by Landau et al [6], which looked at 442 patients undergoing treatment for acne with isotretinoin reported mild elevations in CK (2-4x normal values) in 37.3% of patients, but markedly significant elevations (CK > 5000 IU/L) in only 1.81%. The authors concluded that hyperckemia is a benign phenomenon and that the testing for CK levels is questionable. However, it did warrant that these patients must temporarily stop isotretinoin and avoid strenuous exercise [6]. Comparatively, the highest CK recorded in their cohort was 14645 IU/L whereas in our case, the patients CK was 18556 IU/L with both patients reporting myalgia.

The current guidelines recommend routine monitoring of serum lipid profiles, LFTs, monthly pregnancy tests, CBC with differential and platelet count, baseline sedimentation rate, glucose and Creatine Phosphokinase (CPK) [2]. However, many reviews published in the literature have since been published which advocate against unnecessary testing and balancing patient care with healthcare cost. A retrospective review by Hansen et al [7] recommended routine monitoring of serum lipid profiles, liver function studies and monthly pregnancy tests with the elimination of CBC monitoring to reduce the per capita cost of healthcare while maintaining patient safety.

The abnormal elevation in CK raises the concern of rhabdomyolysis and other potentially life-threatening conditions such as acute renal failure, acid base disorders and severe electrolyte abnormalities in physically active patients taking isotretinoin [8]. Therefore, it is reasonable to monitor CK levels, especially in patients who are keen on performing vigorous activity in their daily lives as it is believed that there may be a synergistic effect between physical activity and isotretinoin [9].

## Conclusion

Significant elevations in CK following isotretinoin therapy may be a rare entity, however this finding may lead to potentially

debilitating complications. Although the synergistic effect of isotretinoin therapy and strenuous activity on muscle is not clearly understood, it is advisable to routinely monitor elevations in CK along with LFTs and lipid panels during the course of isotretinoin therapy. Fortunately, our patient was treated with IV fluids and acute kidney injury (AKI) was prevented in her case. However, AKI remains a possibility and physicians must educate their patients about when to immediately discontinue therapy and seek urgent treatment.

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