

## Case Report

# Minocycline-Associated Pancreatitis: A Rare Adverse Effect of a Commonly used Drug

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**Received:** May 16, 2016; **Accepted:** June 20, 2016;**Published:** June 21, 2016**Abstract**

Minocycline is an antibiotic used increasingly in a variety of situations including MRSA infections and also known for its anti-inflammatory properties. Its side effects are usually benign and well known. We report a first of its kind case of minocycline-associated acute pancreatitis in a patient in whom all other common causes of pancreatitis were ruled out. The aim is to raise awareness about this rare but serious side effect of a widely-used antibiotic.

**Keywords:** Minocycline; Pancreatitis, Adverse effects**Introduction**

Minocycline is a bacteriostatic antibiotic of the tetracycline class which covers a broad spectrum of bacteria and is used for a wide variety of clinical situations including skin infections especially acne vulgaris and ones associated with MRSA [1,2]. The side effects are well-known and mostly include nausea, vomiting and dizziness. Unlike other drugs in the same class, like tetracycline whose association with acute pancreatitis is well known, minocycline has not been associated with pancreatitis and to our knowledge has been reported only once in a mini case series involving two patients with Cystic Fibrosis (CF) in 2001 [3]. We present a recent case of acute pancreatitis associated with first time use of minocycline in a non-Cystic Fibrosis patient and with other common causes of acute pancreatitis ruled out.

**Case Presentation**

We present the case of a 66 year old man with known hypertension, hyperlipidemia and a chronic shoulder surgical wound with recurrent cellulitis who came to the ED with one day onset of right upper quadrant abdominal pain. He described the pain as burning in nature, constant, non-radiating, 10/10 in intensity, and associated with nausea and vomiting. He denied any smoking or alcohol history and also denied NSAID use. He was started on minocycline 100 mg orally twice daily, fifteen days ago by his dermatologist for the surgical wound on his shoulder. On this presentation, the patient's vitals included a pulse of 68 bpm, blood pressure of 146/84 mmHg, respiratory rate of 18 and pulse oximetry of 98% on room air with temperature of 97.9° F. Laboratory studies showed a leukocytosis of 9500 cells/mcL with left shift, blood glucose of 189 mg/dL, BUN of 19 mg/dL, creatinine of 0.8 mg/dL, elevated lipase at 3220 U/L and amylase at 274 U/L. Alkaline phosphatase was 95 U/L, direct bilirubin less than 0.1 mg/dL and total bilirubin 0.5 mg/dL. AST and ALT were 50 and 65 U/L respectively. Triglycerides were 238 mg/dL. US abdomen excluded cholelithiasis and IgG4, TTG were within normal limits as well. CT abdomen showed inflammatory changes of the uncinate process of pancreatic head and duodenum suggestive of acute pancreatitis and duodenitis. He was treated conservatively with IV fluid hydration with normal saline, morphine Patient Controlled Analgesia (PCA), and Nil Per Oral (NPO) status. His symptoms improved by the following day and he was gradually progressed to

a regular diet. He was discharged after his antibiotic was switched to Doxycycline as recommended by the Infectious Disease team. He was seen in the clinic 1 month after discharge and reported no symptoms. Repeat lipase was found to be within the normal range.

**Discussion**

Minocycline is primarily an anti-microbial drug used in a variety of skin and soft tissue infections like MRSA-related infections and acne vulgaris. It is also known for its anti-inflammatory properties and has been shown to play an effective role in Rheumatoid Arthritis as well, earning the title of a Disease-Modifying Anti-Rheumatic Drug (DMARD) [4]. Twice daily oral dosing makes it especially convenient for use in the outpatient setting. The most common side effects associated with minocycline are nausea, vomiting and vertigo [5]. Given its widespread use, clinicians should also be aware of its unknown and rare adverse effects as well.

Minocycline is classified as a class III drug according to the Badalov classification of drug-induced pancreatitis [6]. Its association with acute pancreatitis has only been described once in the English medical literature, in a mini case-series in 2001 where it was reported in two patients with CF [3]. In both of these cases Minocycline was being used for respiratory infections and was temporally related to episodes of pancreatitis. It is important to point out that CF is a disease known for its inherent risk of pancreatic insufficiency and hence patients with this condition may have an increased susceptibility to drug induced pancreatitis.

Our case, seen in 2015, is the first reported association of acute pancreatitis with Minocycline use in a non-CF patient with all other common causes like alcohol, gallstones, hypertriglyceridemia and other medications being ruled out and therefore, according to the Naranjo probability scale, the adverse event was most likely related to minocycline [7]. The mechanism of injury behind pancreatic toxicity has not been clarified yet with some theories suggesting it is due to an accumulation of toxic metabolites, and others suggesting a hypersensitivity reaction through the action of antibodies made against metabolites of minocycline and cross-reacting with native cells [8,9]. The latter pathway has also been hypothesized to be involved in minocycline's hepatotoxic effects.

As the use of minocycline grows wider it will be helpful for clinicians to recognize this serious adverse effect and thus it is suggested to have a high index of suspicion for minocycline as a cause of acute pancreatitis in a patient with concerning symptoms and in absence of more common causes. Currently there is no data to help identify which patients on minocycline therapy are at a higher risk for developing acute pancreatitis and hence screening with lipase levels is not recommended. It is hoped that by case reports like this we can identify certain risk factors.

## References

1. Strauss J, Krowchuk D, Leyden J, Lucky A, Shalita A, Siegfried E, et al. Guidelines of care for acne vulgaris management. *Journal of the American Academy of Dermatology*. 2007; 56: 651-663.
2. Bishburg E, Bishburg K. Minocycline-an old drug for a new century: emphasis on Methicillin-Resistant *Staphylococcus Aureus* (MRSA) and *Acinetobacter baumannii*. *International Journal of Antimicrobial Agents*. 2009; 34: 395-401.
3. Boyle MP. Minocycline-Induced Pancreatitis in Cystic Fibrosis. *Chest*. 2001; 119: 1283-1285.
4. O'Dell J, Blakely K, Mallek J, Eckhoff P, Leff R, Wees S, et al. Treatment of early seropositive rheumatoid arthritis: A two-year, double-blind comparison of minocycline and hydroxychloroquine. *Arthritis & Rheumatism*. 2001; 44: 2235-2241.
5. Somech R, Arav-Boger R, Assia A, Spierer Z, Jurgenson U. Complications of Minocycline Therapy for Acne Vulgaris: Case Reports and Review of the Literature. *Pediatric Dermatology*. 1999; 16: 469-472.
6. Badalov N, Baradaran R, Iswara K, Li J, Steinberg W, Tenner S. Drug-Induced Acute Pancreatitis: An Evidence-Based Review. *Clinical Gastroenterology and Hepatology*. 2007; 5: 648-661.
7. Naranjo C, Busto U, Sellers E, Sandor P, Ruiz I, Roberts E, et al. A method for estimating the probability of adverse drug reactions. *Clin Pharmacol Ther*. 1981; 30: 239-245.
8. Balani A, Grendell J. Drug-Induced Pancreatitis. *Drug Safety*. 2008; 31: 823-837.
9. Teitelbaum J, Perez-Atayde A, Cohen M, Bousvaros A, Jonas M. Minocycline-Related Autoimmune Hepatitis. *Arch Pediatr Adolesc Med*. 1998; 152.