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Nitrofurantoin Induced Pancreatitis: A Case Report

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Abstract

In this article, we present a case study of an 89-year-old female patient with nitrofurantoin-induced pancreatitis. Nitrofurantoin is commonly used to treat uncomplicated lower urinary tract infections (UTIs). Despite acute pancreatitis being a rare adverse side effect of this drug, it has been previously documented on a few other occasions. Drug-induced pancreatitis should be a key differential diagnosis in the case of acute pancreatitis. For a timely diagnosis, nitrofurantoin-induced pancreatitis should be considered in patients presenting with acute pancreatitis, recent use of Nitrofurantoin, and rule out other probable causes. Our patient was being treated with Nitrofurantoin 100 MG for UTIs when she developed severe abdominal pain and jaundice. She was taken to the emergency department and after further evaluations were done, she was diagnosed with Nitrofurantoin induced pancreatitis. Discontinuing the drug resolved the underlying acute pancreatitis.

Keywords: pancreatitis, acute pancreatitis, drug-induced pancreatitis, nitrofurantoin induced pancreatitis, medication-induced pancreatitis, nitrofurantoin

Introduction

Nitrofurantoin, a synthetic derivative of imidazolidine Dione, is an antibiotic that is used for the treatment of uncomplicated lowerurinary tract infections (UTI) **[1]**. Compared to other alternatives, nitrofurantoin is relatively safe and its side effect profile is mild and dose-related **[2]**. The most common reported side effects include: nausea, vomiting, diarrhea, and loss of appetite. Hypersensitivity reactions to the drug mainly give rise to pneumonitis, hepatitis, and cholesteric jaundice. These are quite rare but constitute the more severe reactions to the drug **[3]**. Pancreatitis is another rare adverse effect that, to our knowledge, has only been described four times in published works **[4,5,6,7]**. We report here another case of nitrofurantoin-induced pancreatitis.

Patient Description

An 89-year-old female presented to the emergency department complaining of intense abdominal pain and jaundice. She had an underlying history of COPD, Parkinson's, Coronary Artery Disease, and Hyperlipidemia. In addition to these, the patient also had an 8-year history of recurrent idiopathic pancreatitis with unexplained bouts of jaundice simultaneous to her flares. Notably, these attacks occurred every 6 to 12 months but she had not had one in almost a year before the current presentation. The patient has also had a history of recurrent urinary tract infections (UTIs).

A few days before admission, the patient was diagnosed with a UTI and was placed on nitrofurantoin monohydrate macro 100g that she was to take orally (two times a day). A few hours after starting her treatment she suffered from a mild vague crampy periumbilical pain but only came into the emergency department when the pain persisted and she began to notice that she was jaundiced again. She was, however, unable to tell if she had any recent fever or related GIT symptomatology. The patient reported to have experienced similar episodes after using nitrofurantoin but none were as severe as the current one. She also denied any history of alcohol or recreational drug use.

The patient was unable to give further detailed history but her examination was normal except for jaundice and tenderness on palpation in the epigastrium. She was promptly admitted and her initial investigations **[Table 1]** showed deranged LFTs, elevated levels of lipase, and mild leukocytosis. The urine examination was normal. Blood and urinary cultures were negative. An abdominal CT and MRCP were done on the second day after admission and they showed no acute intra-abdominal process, normal bile ducts, and no suspicious pancreatic/ampullary mass. The only abnormal finding was that the patient’s right kidney was found to be atrophic but there was compensatory hypertrophy of the contralateral kidney.

The initial differential diagnosis included nitrofurantoin-induced cholestatic hepatitis and on admission, nitrofurantoin therapy was stopped. The patient improved rapidly on the second day of admission and her symptoms subsided.

Comments

Nitrofurantoin-induced pancreatitis is very rare, and few cases have been documented in the past **[4,5,6,7]**. The first reported case was of a 79-year-old female patient who had cholestatic jaundice following the obstruction of the bile duct by an inflamed pancreatic head. She presented to the hospital with fever, abdominal pain, and hyperamylasaemia five days after she had started treatment with nitrofurantoin. Her symptoms rapidly resolved after discontinuation of the drug and the role of the drug was confirmed by single dose rechallenge **[4]**.

Table 1: Laboratory results during hospitalization

Hospitalization Day	**1**	**2**
WBC	11.6	11.9
Bilirubin	6.0	6.1
AP	229	119
AST	47	39
ALT	72	57
Lipase	2700	1424
Ca	8.7	8.0
BUN	24	18
Serum Creatinine	1.14	0.91

Normal values: White blood cell count (WBC) 4.5 – 11.0 x 10^9 cells/L, Lipase 24 – 151 U/L, alkaline phosphatase (AP) 30 – 115 u/L, aspartate aminotransferase (AST) 0 – 40 u/L, alanine aminotransferase (ALT) 7 – 55 u/L, calcium 8.5– 10.5 mg/dl, BUN 6 – 24 mg/dl, serum creatinine 0.59–1.04 mg/dl

The second reported case was of a 26-year-old female who suffered severe epigastric pain and anorexia three days after treatment with nitrofurantoin. Her initial laboratory examination revealed elevated levels of pancreatic lipase and amylase. Her symptoms rapidly abated after discontinuation of the drug. Eight months later, she was treated with nitrofurantoin again and all the symptoms reappeared but this time around they were accompanied by myalgia and arthralgia. As in the former case, the symptoms resolved rapidly after discontinuation **[5].**

The final case was of a 76-year-old female with dementia who developed fever and abdominal pain one day after taking nitrofurantoin for the treatment of an uncomplicated UTI. Her lab results demonstrated elevated levels of amylase and lipase together with deranged LFTs. No abnormalities were demonstrated on abdominal ultrasonography and her symptoms rapidly improved after stopping treatment with nitrofurantoin. She was discharged four days later and experienced no recurrent bouts of pancreatitis **[6]**.

Our case is quite similar to those reported previously. The patient experienced a bout of acute pancreatitis following the ingestion of nitrofurantoin. She complained of severe abdominal pain and was noted to be severely jaundiced, a sign of cholestasis. Her lab results showed elevated levels of pancreatic lipase and deranged LFTs. Her symptoms also rapidly abated after discontinuation of the drug. All other causes for pancreatitis were excluded and no biliary disease, metabolic disorder, alcohol consumption, or other drugs causing pancreatitis were found. The absence of evidence for obstructive jaundice and no evidence for acute pancreatitis despite the modest elevation of lipase led us to strongly believe that nitrofurantoin was not only responsible for the cholestasis but also caused the episode of pancreatitis. One notable challenge was that the patient was a poor historian and although she tied most of the episodes of her pancreatitis flare-ups to nitrofurantoin use, she could not recall the episodes with accuracy and this made it difficult to establish a clear temporal relationship between the two.

The authors of the different reports have suggested that the presence of fever and the rapid reappearance of signs and symptoms following the ingestion of low-dose nitrofurantoin are suggestive that the adverse reaction has an allergic rather than toxic etiology **[4,5]**. One notable pattern is that, in all the reports, the affected individuals were all female.

Although only four cases of nitrofurantoin-induced pancreatitis have been described so far, more studies are needed to describe the pathophysiology of this rare adverse drug reaction and explore the possible causal relationship and associated risk factors. However, our report suggests that a diagnosis of nitrofurantoin-induced pancreatitis should be considered in a patient who develops a fever, abdominal pain, and jaundice a short while after taking the drug. In these cases, the drug should be promptly discontinued as this leads to a rapid resolution of the disease.

Conclusion

In conclusion, we have reported a rare drug-induced pancreatitis clinical case. To decrease morbidity, longer hospital stays, and mortality, it is vital to suspect drug-induced pancreatitis in a patient presenting with acute pancreatitis when all other likely causes are ruled out. It can be difficult because of the challenges existing in establishing the mechanisms involved in the pathogenesis. Further research is needed in that aspect. Moving forward, clinicians should be aware of this potential side effect of the drug. It is key to have comprehensive history taking and detailed medication reconciliation to make the diagnosis. The patient's condition can be resolved by withdrawing Nitrofurantoin and by providing supportive care.

References

1. Squadrito FJ, del Portal D (2022) Nitrofurantoin. in StatPearls, Treasure Island (FL): StatPearls Publishing.
2. Huttner A, Verhaegh EM, Harbarth S, Muller AE, Theuretzbacher U, et al. (2015) Nitrofurantoin revisited: a systematic review and meta-analysis of controlled trials', Journal of Antimicrobial Chemotherapy. 70(9): 2456–2464.
3. Rego LL, Glazer CS, Zimmern PE (2016) Risks of long-term use of nitrofurantoin for urinary tract prophylaxis in the older patient', Urological Science. 27(4): 193-198.
4. Nelis GF (1983) Nitrofurantoin-induced pancreatitis: report of a case. Gastroenterology. 84(5 Pt 1): 1032–1034.
5. Christophe JL (1994) Pancreatitis induced by nitrofurantoin. Gut. 35(5): 712–713.
6. Mouallem M, Sirotin T, Farfel Z (2003) Nitrofurantoin-induced pancreatitis. Isr Med Assoc J. 5(10): 754–755.
7. Clark BG, Vestal RE (1984) Adverse drug reactions in the elderly: case studies. Geriatrics. 39(12): 53–54, 60–63, 66.