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Case Report

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Neurontin-Induced Elevation of Lipase Levels in an Alcoholic Patient with Chronic Pancreatitis



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ABSTRACT

Neurontin is an analog of GABA that works by inhibiting voltage-gated calcium channels via the alpha2-delta subunit. D.H. a 50-year-old patient with a history of chronic pancreatitis and alcohol use disorder admitted for nausea, vomiting, constant epigastric pain radiating to his back. Examination revealed a tender epigastric area. The implication of the case report is to bring awareness to physicians that prescribing drugs such as Neurontin to alcoholic patients who are already susceptible to pancreatitis may increase their risk for an acute pancreatitis exacerbation.



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INTRODUCTION:

Neurontin is an analog of GABA that works by inhibiting voltage-gated calcium channels via the alpha2-delta subunit [1]. It may also act on NMDA receptors, protein kinase C and certain inflammatory markers [6]. The FDA has approved it for seizures, and neuropathic pain however off-label uses include treatment of anxiety disorders, insomnia and bipolar disorder. The most common known adverse effects of Neurontin include dizziness, fatigue, drowsiness, ataxia, edema, nystagmus and tremor [8]. These side effects are thought to occur due to GABA's inhibitory effect on the body. To our knowledge, there is no documentation of pancreatitis as a known adverse effect. The use of Neurontin in patients who abuse alcohol and the possible effects on the pancreas will be discussed here.

CASE PRESENTATION:

D.H. a 50-year-old patient with a history of chronic pancreatitis and alcohol use disorder admitted for nausea, vomiting, constant epigastric pain radiating to his back. Examination revealed a tender epigastric area. He was placed on NPO, commenced on CIWA protocol, a multivitamin including B1 and IVF hydration. At admission, lipase and amylase were 1396 U/L and 208 U/L respectively. Liver enzymes were elevated but the hepatitis panel was negative. MR MRCP showed acute exacerbation of chronic pancreatitis, pancreatic pseudocyst and hepatic steatosis. No pancreatic duct occlusion was evident. While on NPO lipase began to trend down and on day 2-3 it was 1052 U/L. This rose to 2151 when patient attempted oral fluids so he was again placed back on NPO. Lipase went down to 1462 U/L the next couple of days. He was seen by the psychiatry team because depression and alcohol use disorder. He was continued on his home Lexapro and Neurontin at 300 mg TID was added for the first time for anxiety, pain, and seizure prevention during the withdrawal period. The following day after commencing Neurontin, lipase rose from 1462 U/L to 2577 U/L with worsening abdominal pain. Our patient was still on NPO at this time except for his home medications. Team decided to discontinue the Neurontin but continued his other medications and noticed a drop in lipase to 2168 U/L and continued to trend down with less and less abdominal pain.

DISCUSSION:

Neurontin has been shown to be safe in alcoholics and even helpful in reducing alcoholic cravings and decreases the side effects of alcohol withdrawal such as insomnia, dysphoria,

and anxiety [3,4]. The mechanism of action may be related to increasing or decreasing the effects of GABA and glutamate in the CNS system, thus changing alcohol's effect on reward [5]. One study concluded a dosage of 1800mg was sufficient to reduce cravings (discovered using the Alcohol craving questionnaire), the number of drinks per week, and the number of drinking days per week [4]. It is also a potential treatment of pancreatitis induced visceral pain, although this was only observed in a rat model. When gabapentin is injected numerous times into the spinal cords, the $\alpha_2\delta-1$ calcium channel subunits were found to be downregulated, which may be how Neurontin exerts its analgesic effect [2]. However, additional studies involving human subjects are still needed to ensure the efficacy and safety of using Neurontin in alcoholism treatment. To our knowledge, this is the first case report of potential Neurontin-induced worsening pancreatitis in a patient using Neurontin for alcohol withdrawal symptoms. Our patient had a history of chronic pancreatitis, however, it had been stable until he began taking the Neurontin. We suspected Neurontin as the cause since his lipase levels rose acutely after his first 300 mg dose and trended down with the discontinuation of Neurontin. In addition, no change in lipase levels occurred with continuation of his home medications. Although at this time, the mechanism of how gabapentin could increase pancreatic lipase is unknown, it is known that alcohol may have an additive effect with other substances or drugs. Perhaps this is what occurred when Neurontin was given to someone already susceptible to pancreatitis from alcohol, however, this is yet to be determined. Alcohol predisposes the pancreas to damage and further episodes of pancreatitis and that sometimes a second insult, such as a drug, is required to cause acute pancreatitis [7]. It is proposed that ethanol consumption and its metabolites damage acinar cells, which are responsible for releasing lipase. Affected properties of acinar cells include calcium signaling, release of zymogens, mitochondrial membrane stability, release of zymogens and autophagy [7]. The implication of the case report is to bring awareness to physicians that prescribing drugs such as Neurontin to alcoholic patients who are already susceptible to pancreatitis may increase their risk for an acute pancreatitis exacerbation.

Potential conflicts of interest:

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