Choreoathetosis Secondary to Neuropathic Pain Modulation

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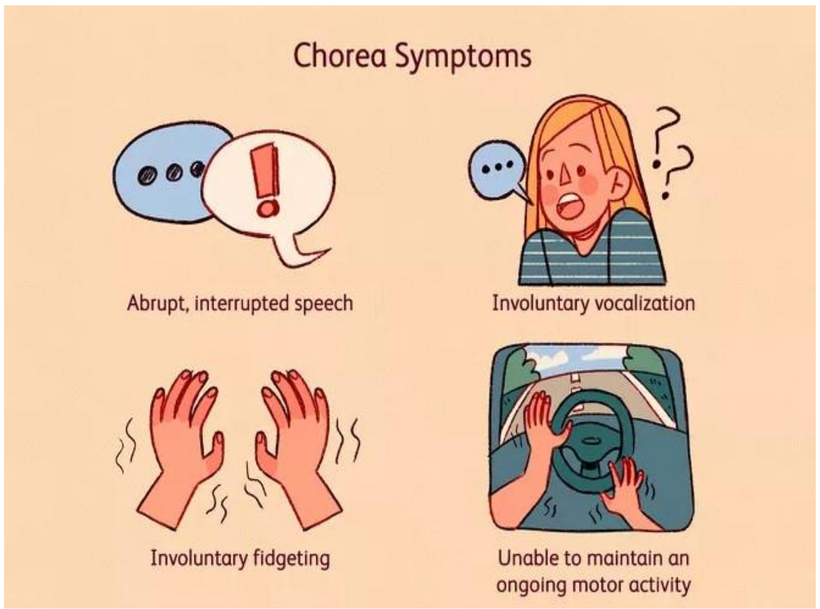
Introduction

- Gabapentin causes numerous side effects, including ataxia, diplopia, fatigue, and dysarthria. Although these are the most common side effects, the literature has not effectively documented choreoathetosis as a potential side effect of gabapentin.
- Through inhibiting the alpha 2-delta subunit of voltage-gated calcium channels, gabapentin acts as a derivative of GABA and reduces calcium influx[4].
- Souzdalnitski et al. report that previous case reports have associated chorea with substantial gabapentin doses ranging from 900 to 2,100 mg[4]. Although limited studies document gabapentin's potential to cause choreatic complications, none have acknowledged choreoathetosis as a side effect of gabapentin at the minimal dosage of 200 mg daily.

Choreathetosis Presentation



Case Presentation

We present a case of a 77-year-old Hispanic male with a past medical history of hypertension and end-stage renal disease who was prescribed gabapentin for neuropathic pain secondary to diabetes mellitus. His chief complaint was generalized weakness, described as constant and exacerbated with movement and exertion. Upon presentation to the emergency department, lorazepam was administered due to agitation, causing somnolence and masking the choreoathetosis of the patient. On admission, the patient's blood pressure was 100/58 mmHg, and his respiratory rate was 18 bpm. On primary examination, his airway was patent. Upon auscultation, he presented with irregular rhythm and regular rate with no murmurs, rubs, or gallops. The patient presented with an AV fistula in the right upper extremity with a palpable thrill. On pulmonary examination, the patient had coarse breath sounds diffusely with no rales, rhonchi, or wheezes. On abdominal examination, the abdomen was soft, non-tender, and non-distended. Clinically, the patient appeared disoriented and hemodynamically stable. The patient was neither alert nor oriented to person, place, and time on a neurological exam. The patient had all cranial nerves intact and followed commands with 5/5 muscle strength bilaterally in the upper and lower extremities. The patient was agitated and exhibited continuous jerking choreoathetosis of the body, accompanied by a rhythmic back-and-forth swaying posture and constant bilateral upper extremity rhythmic motion. The patient's history indicated myelodysplastic syndrome after a negative bone marrow biopsy. However, the patient did have end-stage renal disease and macrocytic anemia with normal cobalamin and folate levels. Upon further evaluation, the patient's wife mentioned that he has a history of restlessness, but he has developed these unique, rhythmic motions over the last month. The patient's wife recounted the patient taking gabapentin at 100 mg PO BID for two months for his neuropathic pain secondary to diabetes mellitus. After discontinuing gabapentin, the patient's affect and energy returned to baseline within two days. The patient had no focal neurologic deficits at discharge.

Primary chorea	Secondary chorea	Others
Huntington's disease	Sydenham's chorea	Metabolic disorders
Neuroacanthocytosis	Drug induced chorea	Vitamin deficiency: vitamin B1 and B12
Dentatorubralpallidoluysian atrophy	Immune mediated chorea	Exposure to toxins
Benign hereditary chorea	Infectious chorea	Paraneoplastic syndromes
Wilson's disease	Vascular chorea	Postpump choreoathetosis
Pantothenate kinase associated neurodegeneration (PKAN or formerly Hallervorden-Spatz syndrome)	Hormonal disorders	
Paroxysmal choreoathetosis		
Senile chorea		

Image 1: Differential Diagnosis of Choreathetosis.

Discussion

- This mechanism of action decreases the release of glutamate and substance P from primary nociceptive afferents to modulate nociceptive transmission in the basal ganglia[4].
- Although this mechanism efficiently reduces the shooting and burning sensation associated with neuropathic pain, prolonged use of this medication can lead to choreatic side effects.
- Unlike GABA, gabapentin readily crosses the blood-brain barrier. This inherent property can potentially account for the interaction gabapentin has with dopamine to cause choreoathetosis.
- Tonic GABA inhibits dopamine release through the activation of $GABA_B$ receptors[4], gabapentin interferes with GABA's inhibitory properties in the motor pathway.
- Basal ganglia deregulation produces chorea. Therefore, gabapentin's interference with GABA could cause chronic gabapentin exposure to increase striatal dopamine and induce choreoathetosis.

Conclusion

This case emphasizes the importance of identifying choreoathetosis secondary to low-dose, chronic gabapentin toxicity. Although limited studies document gabapentin's potential to cause choreatic complications, it is imperative to consider this side effect at the minimal dosage of 200 mg daily. This case emphasizes considering choreoathetosis as a side effect of chronic gabapentin use in patients taking minimal dosages. Early recognition and prompt medication discontinuation are critical in avoiding gabapentin's side effect profile.

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