

Baclofen Induced Dystonic Movement Improved with Lorazepam

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INTRODUCTION

- Baclofen is currently FDA approved for management of Spastic and dystonic movements, such as flexor spasms, clonus and common sequelae of spinal cord lesions and MS.

- In the case of our patient, we encountered an additional side effect of new-onset dystonic movement

Figure 1: Dystonic Movement Illustration



CASE DESCRIPTION

➤ Patient Information

- A 77-year-old female with a past medical history of congestive heart failure, atrial fibrillation, hypertension, chronic obstructive pulmonary disease (COPD), hypothyroidism, and gastroesophageal reflux disease (GERD) presented to the hospital with a chief complaint of muscle restlessness, accompanied by nausea and one episode of emesis
- The patient's primary care provider (PCP) had recently started a low dose of 10 mg baclofen three times a day for her restless legs
- The dystonic movement started soon after the second dose and progressed to involuntary movement of her upper and lower extremities.

➤ Relevant Labs

- K+ 3.1 mEq/L, CPK 192 IU/L, TSH 0.46 mIU/L

➤ Relevant Imaging

- CT Head revealed no abnormalities

➤ Mechanism of Action

- The central GABA-B receptors that baclofen act on also involve several neurotransmitter systems including dopamine, serotonin, norepinephrine, and glutamate. In our patient, baclofen may have also activated these excitatory neurotransmitter systems, leading to her dystonic movements.



Paper + References

Table 1: Baclofen elimination characteristics

After...	Dosage (mg)	Concentration
4 hrs	5.0 mg	50%
8 hrs	2.5 mg	25%
12 hrs	1.3 mg	12.5%
16 hrs	0.6 mg	6.25%
20 hrs	0.3 mg	3.125%
24 hrs	0.2 mg	1.562%
28 hrs	0.1 mg	0%

DISCUSSION

- Lorazepam improves dystonic movement
- The difference between GABA-A receptors and GABA-B receptors lies in the fact that GABA-A receptors mediate **fast inhibitory signals** via hyperpolarization, while **GABA-B receptors mediate slower, and more prolonged inhibitory signals via G protein and second messengers**

Lorazepam = GABA-A Target
Baclofen = GABA-B Target

GABA A vs GABA B		
	GABA A	GABA B
DEFINITION	GABA A is a ligand-gated ion channel that binds with GABA	GABA B is the second type of GABA binding receptor that is a G protein-coupled receptor
TYPE	Ionotropic receptor	Metabotropic receptor
FUNCTION	Postsynaptic inhibition by Cl ⁻ influx	Pre-synaptic inhibition by lowering calcium ion entry while post-synaptic inhibition by increasing potassium ion permeability
MOLECULAR WEIGHT	Approximately 300 kDa	Approximately 80 kDa
DISTRIBUTION	Postsynaptic membrane of CNS	Pre and postsynaptic membranes of central and autonomic division of peripheral nervous system
STRUCTURE	Pentamer - has five subunits	Dimer - has two subunits