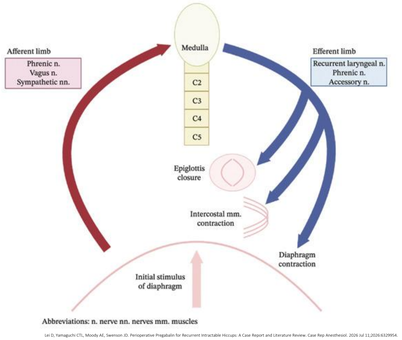
Persistent hiccups after lumbar epidural steroid injection (ESI):

a review of its pathophysiology

PRESENTER:
Ayodamola Otun, MD

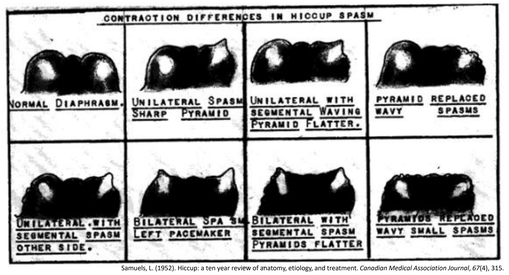
Hiccups are a rare but well document complication of cervical, thoracic, and lumbar ESIs



Lin D, Yamaguchi CTI, Moody AE, Swenson JD. Perioperative Pregabalin for Recurrent Intractable Hiccups: A Case Report and Literature Review. Case Rep Anesthesiol. 2026 Jul 11;2026:6329954.

Anatomical studies demonstrate

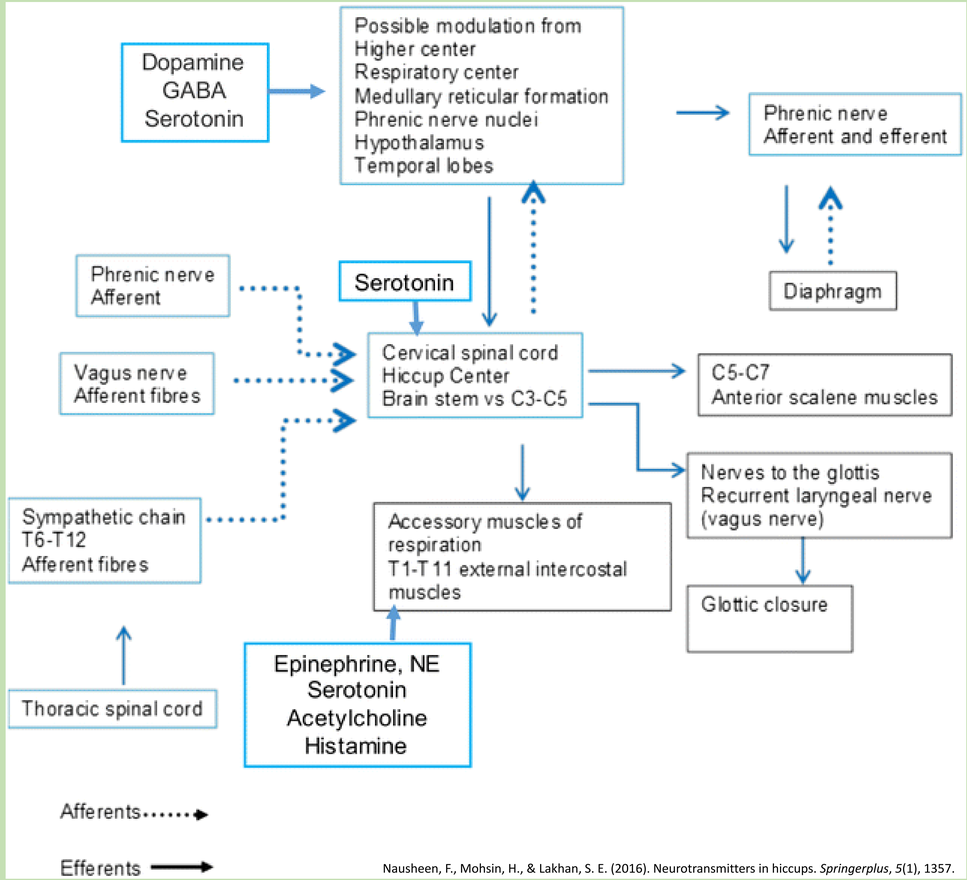
- The diaphragm is innervated distinctly by two systems
- Extensive connections exist among the phrenic/vagus nerves, and sympathetic chain



Samuels, L. (1952). Hiccup: a ten year review of anatomy, etiology, and treatment. *Canadian Medical Association Journal*, *67*(4), 315.

ESI-induced hiccups likely result from a multifactorial mechanism involving:

- **Altered CSF dynamics/biochemistry**
- **Neurotransmitter modulation**
- **Corticosteroid effects**
- **Individual anatomical variation within the hiccup reflex arc**



Nausheen, F., Mohsin, H., & Lakhan, S. E. (2016). Neurotransmitters in hiccups. *Springerplus*, *5*(1), 1357.

CASE

50M with obesity (BMI 34 kg/m²), moderate OSA, lumbar spondylosis, and a right paracentral lumbar disc herniation with grade 1 spondylolisthesis who presented with chronic low back pain and left-sided lumbar radiculopathy refractory to medications and physical therapy.

Neuro exam demonstrated left thigh paresthesia, preserved bilateral motor strength, 1+ patellar reflex, positive straight-leg raise test, and a negative Hoffmann sign.

He underwent L4–L5 interlaminar ESI with 1 mL of 1% lidocaine, 10 mg dexamethasone (1 mL), and 2 mL preservative-free normal saline.

He developed persistent hiccups within 24hrs s/p ESI that resolved with baclofen 10 mg TID PRN.

At follow-up, he reported approximately 40% improvement in low back pain without improvement in radicular symptoms.

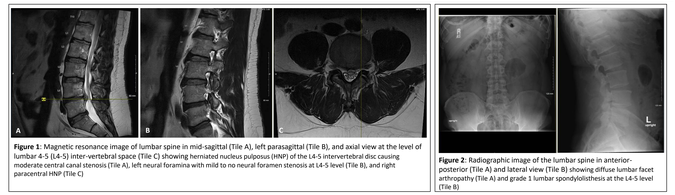


Figure 1: Magnetic resonance image of lumbar spine in mid-sagittal (Tile A), left parasagittal (Tile B), and axial view at the level of lumbar 4-5 (L4-5) inter-vertebral space (Tile C) showing herniated nucleus pulposus (HNP) of the L4-5 intervertebral disc causing moderate central canal stenosis (Tile A), left neural foramina with mild to no neural foramen stenosis at L4-5 level (Tile B), and right paracentral HNP (Tile C)

Figure 2: Radiographic image of the lumbar spine in anterior-posterior (Tile A) and lateral view (Tile B) showing diffuse lumbar facet arthropathy (Tile A) and grade 1 lumbar spondylolisthesis at the L4-5 level (Tile B)

Pharmacotherapies target neurotransmitters in the reflex arc

No adequately powered study has demonstrated the superiority of any pharmacologic agent

- **Baclofen, a GABA agonist, has the strongest evidence, with a RCT of 30 pts.**
- **Gabapentin has demonstrated efficacy in patients with neurologic injury**
- **Metoclopramide and haloperidol have also shown benefit in limited studies**

Vagal maneuvers and vagal nerve stimulation may be beneficial

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