Nancy Jo Bush, RN, MN, MA, AOCN®
Joyce P. Griffin-Sobel, RN, PhD, AOCN®, CS, APNC
Associate Editors

Hiccups

Clinical Highlights: Hiccups

Definition: Hiccups or singultus are sudden involuntary contractions of the diaphragm, terminated by closure of the glottis. Although typically common, transient, and benign, when hiccups fail to resolve spontaneously, patients seek treatment for fatigue and incapacitation. Management consists of the identification and treatment of a serious underlying cause of hiccups.

Risk factors: A lowered pCO_2, alcohol ingestion, smoking, and changes in temperature—particularly of the gastrointestinal tract—commonly cause hiccups. Gastric distention is the most common cause in patients with advanced cancer, which is why hiccups are quite common in dying patients. This symptom commonly is related to upper gastrointestinal disease as well as other conditions that can affect the vagus or phrenic nerve. Central nervous system disorders, renal disease, and hypocalcemia also can result in hiccups. Infections, including herpes zoster and tuberculosis, have been implicated as a cause of hiccups. Some drugs have been linked to hiccups, including barbituates, dexamethasone, and diazepam.

Adverse effects include fatigue, decreased nutritional intake, dehydration, wound dehiscence, and reflux esophagitis. However, the effect on quality of life is the primary reason patients seek treatment.

Nondrug treatment includes advising patients to gargle with ice water or hold their breath, which can produce mild respiratory acidosis, thereby suppressing diaphragmatic action. Pharyngeal stimulation with a cotton swab or vagal stimulation with the Valsalva maneuver or carotid massage also can be effective treatments.

Drug treatment can include chlorpromazine (25–50 mg via IV, orally, or rectally three to four times a day), metoclopramide (10–20 mg via IV, IM, or orally four times a day), carbamazepine (200 mg three times a day), cisapride (10–20 mg four times a day), amitriptyline (10 mg three times a day), and baclofen (10–20 mg three times a day). Metoclopramide is very effective in patients with gastric distention but is contraindicated in those with bowel obstruction.

Bilotta, F., & Rosa, G. (2000). Nefopam for severe hiccups. *New England Journal of Medicine, 343,* 1973–1974.

Camp-Sorrell, D. (2000). Hiccups. In D. Camp-Sorrell & R.A. Hawkins (Eds.), *Clinical manual for the oncology advanced practice nurse* (pp. 13–16). Pittsburgh, PA: Oncology Nursing Society.

Dahlin, C., & Goldsmith, T. (2001). Dysphagia, dry mouth and hiccups. In B. Ferrell & N. Coyle (Eds.), *Textbook of palliative nursing* (pp. 122–138). New York: Oxford Press.

Dunst, M., Margolin, K., & Horak, D. (1993). Lidocaine for severe hiccups. *New England Journal of Medicine, 329,* 890–891.

Kolodzik, P., & Eilers, M. (1991). Hiccups (singultus): Review and approach to management. *Annals of Emergency Medicine, 20,* 565–573.

Prochoda, K., & Seligman, P. (1997). Palliative care. In R. Gates & R. Fink (Eds.), *Oncology nursing secrets* (pp. 416–425). Philadelphia: Hanley and Belfus.

Rousseau, P. (1994). Hiccups in terminal disease. *American Journal of Hospice and Palliative Care, 11*(6), 7–10.

Case Study

L.D. is a 50-year-old man with metastatic colorectal cancer receiving a chemotherapeutic protocol of 5-fluorouracil, leucovorin, and irinotecan. He is on his third cycle of four planned cycles; each cycle consists of four weekly treatments. L.D. complains of hiccups that have been unrelenting over the past four days. He also reports vague abdominal distress, exhaustion, and the inability to eat, which has resulted in the loss of four pounds over a week. During his second cycle of chemotherapy, he suffered with hiccups for two weeks continuously and none of the usual remedies helped to relieve the symptom.

Clinical Problem Solving

Responding to this clinical challenge is Christy H. Dolbey, RN, MSN, FNP, AOCN®. Dolbey is a nurse practitioner in the Hematology/Oncology Clinic at Fletcher Allen Health Care in Burlington, VT.

What are the etiologies of hiccups in a person with advanced cancer?

Hiccups are defined as repetitive, sharp inspiratory sounds that occur because of spasms of the glottis and diaphragm. Anatomically, hiccups originate in the phrenic or vagus nerve pathways. The more common case of hiccups, lasting from a few minutes to hours, may be related to decreased pCO_2 or gastric distention. Persistent hiccups, lasting more than 48 hours, can result from decreased pCO_2, gastric distention, ingestion of alcohol, smoking, sudden excitement, or a change in gastrointestinal temperature (e.g., caused by drinking a hot or cold beverage). Intractable hiccups, lasting more than a month, have multiple causes: structural (e.g., disease affecting the phrenic and vagus nerves), metabolic (e.g., drug-related), infectious, or psychogenic. In a person with advanced cancer, structural and drug-related etiologies are more likely.

What nonpharmacologic therapies should be attempted initially?

Respiratory strategies, such as holding one's breath, are well known in the lay community, and most patients will have attempted them before seeking nursing intervention. Oropharyngeal stimulation, such as ice application in the mouth, pressure on the nose,

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eating soft bread, or stimulating the soft palate with a cotton swab, can be attempted. Other techniques include breathing into a paper bag, swallowing a teaspoon of sugar, and biting a lemon wedge. Physical changes that may promote the cessation of hiccups include pulling the knees to chest, leaning forward to compress the chest, tapping over the fifth cervical vertebra, or applying ice over the phrenic nerve. Vagal stimulation (e.g., carotid massage) has been reported to be effective in some patients. Relief of gastric distention with techniques such as the use of a nasogastric tube, the induction of vomiting, or fasting also can be effective. For intractable cases where quality of life is affected severely, anesthetic disruption of the phrenic nerve should be considered.

What pharmacologic treatments should be considered?

Initial drug treatment should be aimed at relieving gastric distention and increasing gastric emptying. Simethicone (15–30 cc by mouth every four hours), metoclopramide (10–20 mg by mouth every six hours), or baclofen (5–10 mg by mouth every 6–12 hours) is therapeutic. Antacids and antiemetics also have been reported to be effective in some patients. If hiccups persist, chlorpromazine (10–25 mg by mouth or IM every six hours) or haloperidol (1–5 mg orally or subcutaneously every 12 hours) can be attempted. Nefopam (10 mg infusion) and lidocaine (1 mg/kg loading dose, followed by a continuous infusion of 2 mg/minute for six hours) reportedly have been successful. If hiccups persist, amitriptyline, valproic acid, or nifedipine can be considered. However, nurses may refer patients to an anesthesia or pain service.

How else should this patient be managed?

Hiccups are very irritating and often painful for patients. L.D. would require emotional support as various strategies are attempted. Little research has been conducted in this area; therefore, trial and error is the only way to manage this symptom. Of course, symptoms related to his chemotherapeutic regimen can overlap and complicate management of hiccups. Both 5-fluorouracil and irinotecan can cause abdominal distress and changes in gastric emptying. Drugs such as loperamide can contribute to the problem, although metoclopramide was particularly effective in L.D.'s treatment. However, for complex situations such as this, each drug aimed at symptom relief should be added individually.