

# Hiccup due to Gastroesophageal Reflux Disease



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## ABSTRACT

*Hiccup is a spasmodic, involuntary contraction of the inspiratory muscles, associated with delayed, abrupt glottic closure, causing a peculiar sound. There are numerous causes of hiccup, including diseases of the gastrointestinal tract. Hiccup is reported to represent an atypical manifestation of the gastroesophageal reflux disease (GERD).*

*We report two cases with hiccup due to GERD. Endoscopic examinations showed esophagitis, Los Angeles class grade A and B, in two cases whose hiccups were improved by proton pump inhibitors (PPI).*

*Hiccup is atypical symptom of GERD. If hiccup is due to GERD, then it may be improved with ppi therapy.*

**Key words:** *Hiccup, gastroesophageal reflux disease, esophagitis, proton pump inhibitor.*

## INTRODUCTION

Hiccup, or singultus, is a spasmodic, involuntary contraction of the inspiratory muscles, associated with delayed, abrupt glottic closure, causing a peculiar sound (1). Hiccup is believed to be caused mainly by irritation of either the phrenic or vagus nerves anywhere along their paths. Central nervous system diseases, toxins, drugs and metabolic abnormalities may also lead to hiccup (2). Hiccup is reported to represent an atypical manifestation of the gastroesophageal reflux disease (GERD) (3). We report two cases of hiccup.

## CASE 1

A 74 years-old man with history of hypertension was admitted to our department because of intermittent hiccups for fifteen years. He reported retrosternal burning and regurgitation for one year.

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He was using doxazosin mesylate and non-steroidal anti-inflammatory drugs. On admission, temperature was 36.5°C, blood pressure was 150/80 mmHg, and pulse rate was 84/min. He had not obesity and respiratory distress. Physical examination except mild epigastric tenderness was normal. Findings on chest X ray and ECG were also normal. Complete blood count and biochemical tests were within normal limits. His complaint had been continued during hospitalization. Abdominal ultrasonography and computerized tomography (CT) scan of the brain were normal. Esophagogastroduodenoscopy (EGD) showed grade B esophagitis according to Los Angeles classification (4), pangastritis and erosive bulbitis.

Biopsies from esophagus and stomach were performed. Omeprazol 20 mg bid and sucralfate 1 g qid were initiated. Hiccup was resolved after third day of the treatment. Gastric and esophageal biopsy showed Barrett esophagus and chronic activated gastritis. *Helicobacter pylori* (HP) infection was determined. Clarithromicine 500 mg/day and amoxiciline-clavulonic acid 2 g/day, per oral were initiated for eradication of HP. At the follow up, hiccup was not repeated in last two years.

## CASE 2

A 40 years-old man was admitted to our department with complaints of hiccup for 6 days. Largactyl was initiated. He reported retrosternal burning and regurgitation for two years. Lansoprazol 30 mg bid and sucralfate 1 g qid were initiated for GERD. He only took once the drugs. He stopped drug treatment. In history, he had infertile for two months. He used gonodotropin (Pregnyl) and FSH, LH preperates (Pergonal). On admission, temperature was 36.5°C, blood pressure was 160/90 mmHg, and pulse rate was 82/minute. Pulmonary, neurologic and cardiovascular system exam were normal. His abdominal exam was notable for mild epigastric tenderness. Complete blood count and biochemical tests were within normal limits. Chest x-ray and electrocardiogram were normal. Abdominal ultrasonography was normal. CT scan of the brain was normal for etiology of hiccup. EGD showed Los Angeles class grade A esophagitis. PPI such as lansaprazol 30 mg/day and sucralfat treatment were initiated. Hiccup was resolved after fifth day of the treatment. At the follow up, hiccup was not repeated during last one year.

## DISCUSSION

Hiccup is an involuntary, reflex-like activity that begins with contraction of the diaphragm shortly terminated by the abrupt closure of the glottis (5). Hiccup although a common annoyance of life, has been linked with significant morbidity and even death. Causes of intractable hiccup include central nervous system (CNS) lesions (neoplasms, hydrocephalus, multiple sclerosis, syringomyelia, trauma, ischemia, hemorrhage, infectious diseases, etc), toxic-metabolic disorders (uremia, diabetes mellitus, alcohol, hyponatremia, gout, hypokalemia, etc), irritation of the diaphragm or of the vagus nerve at several levels, drugs ([alpha]-methyl-dopa, short-acting barbiturates, dexamethasone, diazepam, chlordiazepoxide, CNS stimulants, sulfonamides, and antiepileptic agents), general anesthesia, postoperative causes, and psychogenic causes and may also be idiopathic (6).

Gastrointestinal stimuli can cause the reflex excitation of the neurons responsible for hiccup. It has proposed that there are receptors in the esophagus which when excited, send impulses through the vagus nerve to the CNS, resulting in net excitation of the respiratory motor neurons and hiccup (7). Esophageal disorder during hiccup has significance, in view of the recent reported association between hiccup and GERD (8).

Pooran et al reported four cases of hiccup due to severe erosive esophagitis. These cases presented various complaints such as epigatric pain, water brash, regurgitation and retrosternal burning. Their patient's complaint, hiccup had improved with PPI therapy (9). Shay et al reported a 67 years old man with heart-burn, water brash and hiccups (10).

Dore et al evaluated the prevalence of atypical symptoms in a population of GERD patients. They found that the prevalence of hiccup in GERD was 4.5%. After PPI therapy, they showed that 0% for prevalence of hiccup (11). Bor et al. reported prevalence of GERD symptoms in Turkey and found that prevalence of hiccup was 9.5% (12).

Our cases excluded other diseases in etiology of hiccups such as CNS disease, uremia, diabetes mellitus, hyponatremia, gout and hypokalemia. They had not consumed alcohol. They were not use drugs that cause of hiccups. Our cases presented retrosternal burning and regurgitation. An EGD showed esophagitis in the two cases. We conclude that GERD may be

underestimated as a cause of hiccups in two patients. PPI therapy was initiated. Hiccups did not be after the treatment. However, two our cases were male. Hiccup occurs more frequently at male than woman in GERD, and is probably related to hormonal differences (9).

In conclusion, Hiccup is atypical symptom of GERD. If a patient turn to with hiccup, he/she must be evaluated for GERD.

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