

World Journal of *Clinical Cases*

World J Clin Cases 2017 October 16; 5(10): 373-389





MINIREVIEWS

- 373 Adrenal ganglioneuroma: What you need to know
Mylonas KS, Schizas D, Economopoulos KP

CASE REPORT

- 378 Hydrogen peroxide ingestion with injury to upper gastrointestinal tract
Martin JV, Sugawa C
- 381 Juvenile hemochromatosis: *HAMP* mutation and severe iron overload treated with phlebotomies and deferasirox
Lescano MA, Tavares LC, Santos PCJL
- 384 Prosthodontic management of hemimandibulectomy patients to restore form and function - A case series
Lingeshwar D, Appadurai R, Sswedheni U, Padmaja C

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Yuchuan Ding, MD, PhD, Associate Professor, Director, Department of Neurological Surgery, Lande Medicine Research Building, Detroit, MI 48201, United States

AIM AND SCOPE

World Journal of Clinical Cases (*World J Clin Cases*, *WJCC*, online ISSN 2307-8960, DOI: 10.12998) is a peer-reviewed open access academic journal that aims to guide clinical practice and improve diagnostic and therapeutic skills of clinicians.

The primary task of *WJCC* is to rapidly publish high-quality Autobiography, Case Report, Clinical Case Conference (Clinicopathological Conference), Clinical Management, Diagnostic Advances, Editorial, Field of Vision, Frontier, Medical Ethics, Original Articles, Clinical Practice, Meta-Analysis, Minireviews, Review, Therapeutics Advances, and Topic Highlight, in the fields of allergy, anesthesiology, cardiac medicine, clinical genetics, clinical neurology, critical care, dentistry, dermatology, emergency medicine, endocrinology, family medicine, gastroenterology and hepatology, geriatrics and gerontology, hematology, immunology, infectious diseases, internal medicine, obstetrics and gynecology, oncology, ophthalmology, orthopedics, otolaryngology, pathology, pediatrics, peripheral vascular disease, psychiatry, radiology, rehabilitation, respiratory medicine, rheumatology, surgery, toxicology, transplantation, and urology and nephrology.

INDEXING/ABSTRACTING

World Journal of Clinical Cases is now indexed in PubMed, PubMed Central.

FLYLEAF

I-V Editorial Board

EDITORS FOR THIS ISSUE

Responsible Assistant Editor: *Xiang Li*
Responsible Electronic Editor: *Ya-jing Lu*
Proofing Editor-in-Chief: *Lian-Sheng Ma*

Responsible Science Editor: *Li-Jun Cui*
Proofing Editorial Office Director: *Xiu-Xia Song*

NAME OF JOURNAL
World Journal of Clinical Cases

ISSN
ISSN 2307-8960 (online)

LAUNCH DATE
April 16, 2013

FREQUENCY
Monthly

EDITORS-IN-CHIEF
Giuseppe Di Lorenzo, MD, PhD, Professor, Genitourinary Cancer Section and Rare-Cancer Center, University Federico II of Napoli, Via Sergio Pansini, 5 Ed. 1, 80131, Naples, Italy

Jan Jacques Michiels, MD, PhD, Professor, Primary Care, Medical Diagnostic Center Rijnmond Rotterdam, Bloodcoagulation, Internal and Vascular Medicine, Erasmus University Medical Center, Rotterdam, Goodheart Institute and Foundation, Erasmus Tower, Veemnos 13, 3069 AT, Erasmus City, Rotterdam, The Netherlands

Sandro Vento, MD, Department of Internal Medicine, University of Botswana, Private Bag 00713, Gaborone, Botswana

Shuhei Yoshida, MD, PhD, Division of Gastroenterology, Beth Israel Deaconess Medical Center, Dana 509, Harvard Medical School, 330 Brookline Ave, Boston, MA 02215, United States

EDITORIAL BOARD MEMBERS
All editorial board members resources online at <http://www.wjgnet.com/2307-8960/editorialboard.htm>

EDITORIAL OFFICE
Xiu-Xia Song, Director
World Journal of Clinical Cases
Baishideng Publishing Group Inc
7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
Telephone: +1-925-2238242
Fax: +1-925-2238243
E-mail: editorialoffice@wjgnet.com
Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

PUBLISHER
Baishideng Publishing Group Inc
7901 Stoneridge Drive,
Suite 501, Pleasanton, CA 94588, USA
Telephone: +1-925-2238242
Fax: +1-925-2238243
E-mail: bpgoffice@wjgnet.com

Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

PUBLICATION DATE
October 16, 2017

COPYRIGHT
© 2017 Baishideng Publishing Group Inc. Articles published by this Open Access journal are distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, the use is non commercial and is otherwise in compliance with the license.

SPECIAL STATEMENT
All articles published in journals owned by the Baishideng Publishing Group (BPG) represent the views and opinions of their authors, and not the views, opinions or policies of the BPG, except where otherwise explicitly indicated.

INSTRUCTIONS TO AUTHORS
<http://www.wjgnet.com/bpg/gerinfo/204>

ONLINE SUBMISSION
<http://www.f6publishing.com>

Hydrogen peroxide ingestion with injury to upper gastrointestinal tract

Jonathan V Martin, Choichi Sugawa

Jonathan V Martin, Choichi Sugawa, Michael and Marian Ilitch Department of Surgery, 6-C University Health Center, Detroit, MI 48201, United States

Author contributions: Martin JV and Sugawa C contributed to the initial drafting and editing of manuscript; Sugawa C obtained clinical data.

Institutional review board statement: This case report was exempt from the Institutional Review Board standards at Wayne State University.

Informed consent statement: Formal consent not required for case reports that have all 18 protected health information de-identified.

Conflict-of-interest statement: The authors have no conflicts of interest to disclose.

Open-Access: This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Correspondence to: Choichi Sugawa, MD, Professor, Michael and Marian Ilitch Department of Surgery, 6-C University Health Center, 4201 Saint Antoine St., Detroit, MI 48201, United States. csugawa@med.wayne.edu
Telephone: +1-313-5775001
Fax: +1-313-5775310

Received: March 28, 2017

Peer-review started: March 31, 2017

First decision: June 16, 2017

Revised: July 6, 2017

Accepted: August 2, 2017

Article in press: August 3, 2017

Published online: October 16, 2017

Abstract

Hydrogen peroxide is a common over-the-counter solution that has developed a growing body of literature regarding toxic ingestion. Intentional ingestion of high concentration hydrogen peroxide for health purposes has gained popularity in certain patient populations; purported benefits are due to the increased oxygen released into the blood stream. We present for evaluation one such case with associated imaging that presented to our urban medical center. A brief review of the literature was also performed noting current recommendations regarding both outcomes and indications for endoscopy as well as hyperbaric oxygen therapy following ingestion of hydrogen peroxide. Our patient was a 51-year-old white female who presented with foamy hematemesis after ingesting 10 drops of 35% hydrogen peroxide as part of a home remedy to cleanse her colon and improve blood oxygenation. In addition to hematemesis, she also reported diffuse abdominal pain with sore throat and hoarse voice. Her imaging demonstrated portal venous gas and gastric edema. She was admitted for hyperbaric oxygen therapy and underwent upper endoscopy demonstrating diffuse esophagitis and gastritis with white exudate and multiple petechiae. She was later discharged home in stable condition and was lost to follow-up.

Key words: Hydrogen peroxide; Caustic injury; Hyperbaric oxygen therapy; Ingestion of hydrogen peroxide; Arterial gas emboli

© The Author(s) 2017. Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: In patients presenting with unresolving epigastric and hematemesis following ingestion of hydrogen peroxide, evaluation with endoscopy is indicated. Computed tomography and/or magnetic resonance imaging are also indicated to evaluate for formation of arterial gas emboli. Therapy is primarily supportive, ± hyperbaric oxygen therapy depending on presence of neurological symptoms, presence of gas emboli, and

availability of resources.

Martin JV, Sugawa C. Hydrogen peroxide ingestion with injury to upper gastrointestinal tract. *World J Clin Cases* 2017; 5(10): 378-380 Available from: URL: <http://www.wjgnet.com/2307-8960/full/v5/i10/378.htm> DOI: <http://dx.doi.org/10.12998/wjcc.v5.i10.378>

INTRODUCTION

Hydrogen peroxide is a common over-the-counter solution that has developed a growing body of literature regarding toxic ingestion^[1-5]. The main mechanisms for toxicity include direct lipid peroxidation, oxygen gas production, and corrosive injury^[1]. Reported toxicities and fatalities tend to involve higher concentrations (> 35%) and pediatric patients^[1].

Intentional ingestion of high concentration hydrogen peroxide for health purposes has gained popularity in certain patient populations; purported benefits are due to the increased oxygen released into the blood stream. We present for evaluation one such case with associated imaging.

CASE REPORT

A 51-year-old white female presented to our urban medical center with foamy hematemesis after ingesting 10 drops of 35% hydrogen peroxide as part of a home remedy to cleanse her colon and improve blood oxygenation. In addition to hematemesis, she also reported diffuse abdominal pain with sore throat and hoarse voice.

At the time of presentation, vitals were normal and stable. Her initial abdominal exam was benign and she was neurologically intact. Labs were within normal limits save for a leukocytosis of 12.6 thousand/mm³. CT imaging obtained at admission demonstrated portal venous gas, gastric pneumatosis, and gastric edema (Figure 1). She was given a proton-pump inhibitor and admitted for hyperbaric oxygen therapy (HBT) to be followed by upper endoscopy evaluation.

Esophagogastroduodenoscopy performed the following morning revealed a small hiatal hernia, diffuse esophagitis and gastritis with white exudate and multiple petechiae, and two areas of duodenitis (Figures 2 and 3). Gastric biopsies later demonstrated only active, chronic gastritis with marked congestion and extravasated blood. Following her endoscopy and hyperbaric oxygen therapy, patient tolerated a liquid diet and was deemed stable for discharge home later that day. Patient was lost to follow-up.

DISCUSSION

Mortality associated with hydrogen peroxide ingestion

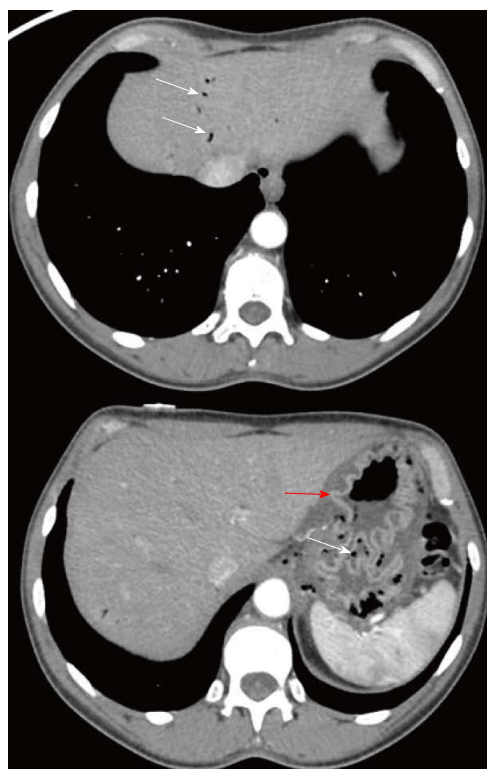


Figure 1 Computed tomography abdomen demonstrating portal venous gas as well as gastric pneumatosis and edema (portal venous gas and gastric pneumatosis noted with white arrows, gastric edema noted with red arrow).

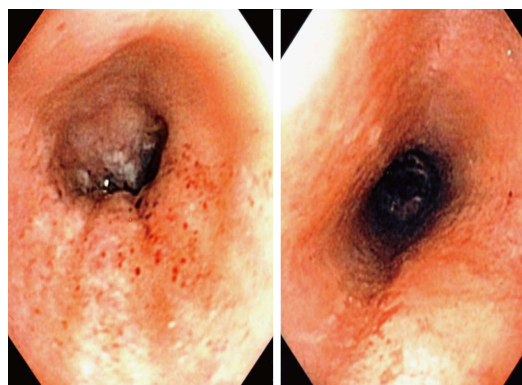


Figure 2 Esophagogastroduodenoscopy demonstrating esophagitis with multiple petechiae and white exudate.

usually involves the formation of arterial gas emboli (AGE) and the development of cerebral embolism^[1-3]. Perforation may occur, but is not as commonly described as AGE. The most common injury noted on upper endoscopy following ingestion is a Grade I caustic mucosal injury which tends to resolve spontaneously without further sequelae^[6]. The "snow-white" sign may be visualized, an area of mucosa that has a blanched appearance secondary to blood being driven away by rapid oxygen production; this is demonstrated on our endoscopic image (Figure 2 left panel)^[1].

Management of hydrogen peroxide ingestion consists

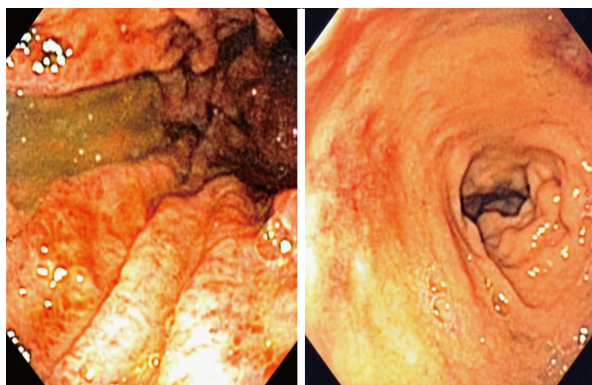


Figure 3 Esophagogastroduodenoscopy demonstrating diffuse gastritis (Left) and areas of duodenitis (Right).

mainly of supportive care and endoscopic evaluation if hematemesis or unresolving epigastric pain develops, typically in association with concentrated doses^[1]. CT/MRI imaging is indicated to evaluate for formation of AGE, especially with the development of neurological symptoms. HBT has been shown to be helpful in such cases and is generally associated with complete resolution of symptoms; delayed therapy may contribute to mortality^[2-4].

While neurological symptoms are definitive indications for HBT, its role in the presence of portal venous gas is still being evaluated^[2,3]. Several centers with ready access to HBT have suggested that the mere presence of portal venous gas indicates need for HBT. While it would seem a prudent measure to prevent further progression of gas emboli, a case report does exist of conservatively managed portal venous gas without HBT and without subsequent negative sequelae^[7].

COMMENTS

Case characteristics

The patient presented with epigastric pain, foamy hematemesis, sore throat, and hoarseness.

Clinical diagnosis

Physical exam demonstrated a benign abdomen and no neurological deficits.

Differential diagnosis

Presentation concerning for perforation of gastrointestinal tract with possible arterial gas emboli, evaluated by computed tomography and esophagogastroduodenoscopy (EGD).

Laboratory diagnosis

Electrolytes and complete blood count obtained demonstrating only leukocytosis of 12.6 thousand/mm³.

Imaging diagnosis

Computed tomography abdomen demonstrated portal venous gas, gastric pneumatosis, and gastric edema.

Pathological diagnosis

Gastric biopsy demonstrated active, chronic gastritis with marked congestion and extravasated blood.

Treatment

Patient was kept NPO; treated with IV fluids, a proton-pump inhibitor, and hyperbaric oxygen therapy; and evaluated by EGD.

Related reports

EGD demonstrated a small hiatal hernia, diffuse esophagitis and gastritis with white exudate and multiple petechiae, and two areas of duodenitis.

Experiences and lessons

Hydrogen peroxide ingestion generally requires conservative management and may benefit from hyperbaric oxygen therapy.

Peer-review

The authors demonstrated a case of 51-year-old white female presented to our urban medical center with foamy hematemesis after ingesting 10 drops of 35% hydrogen peroxide. The present study was well investigated and will give us an important information in the field of clinical gastroenterology.

REFERENCES

- 1 **Watt BE**, Proudfoot AT, Vale JA. Hydrogen peroxide poisoning. *Toxicol Rev* 2004; **23**: 51-57 [PMID: 15298493]
- 2 **Byrne B**, Sherwin R, Courage C, Baylor A, Dolcourt B, Brudzewski JR, Mosteller J, Wilson RF. Hyperbaric oxygen therapy for systemic gas embolism after hydrogen peroxide ingestion. *J Emerg Med* 2014; **46**: 171-175 [PMID: 24268898 DOI: 10.1016/j.jemermed.2013.08.091]
- 3 **Hendriksen SM**, Menth NL, Westgard BC, Cole JB, Walter JW, Masters TC, Logue CJ. Hyperbaric oxygen therapy for the prevention of arterial gas embolism in food grade hydrogen peroxide ingestion. *Am J Emerg Med* 2017; **35**: 809.e5-809.e8 [PMID: 28069419 DOI: 10.1016/j.ajem.2016.12.027]
- 4 **Ikiz MA**, Yakut HI, Kurt F, Sahin S, Yalçin HN, Baştemur M, Kalkan G. Hydrogen peroxide solution ingestion caused brain death of a 3-year-old girl. *Pediatr Emerg Care* 2013; **29**: 502-503 [PMID: 23558268 DOI: 10.1097/PEC.0b013e31828a387b]
- 5 **Indorato F**, Raffino C, Tropea FM, Barbera N, Grieco A, Bartoloni G. Fatal accidental ingestion of 35 % hydrogen peroxide by a 2-year-old female: case report and literature review. *Forensic Sci Med Pathol* 2014; **10**: 443-447 [PMID: 24692088 DOI: 10.1007/s12024-014-9560-9]
- 6 **Tohda G**, Sugawa C, Gayer C, Chino A, McGuire TW, Lucas CE. Clinical evaluation and management of caustic injury in the upper gastrointestinal tract in 95 adult patients in an urban medical center. *Surg Endosc* 2008; **22**: 1119-1125 [PMID: 17965918 DOI: 10.1007/s00464-007-9620-2]
- 7 **Zengin S**, Al B, Genç S, Yarbil P, Yilmaz DA, Gulsen MT. A rare case of portal vein gas: accidental hydrogen peroxide ingestion. *BMJ Case Rep* 2012; **2012**: bcr0120125602 [PMID: 22669852 DOI: 10.1136/bcr.01.2012.5602]

P- Reviewer: Naito Y S- Editor: Qi Y L- Editor: A
E- Editor: Lu YJ





Published by **Baishideng Publishing Group Inc**
7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
Telephone: +1-925-223-8242
Fax: +1-925-223-8243
E-mail: bpgoffice@wjgnet.com
Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

