



## Administration of a sodium hypochlorite enema: a patient safety incident in nursing practice

*Administración de un enema de hipoclorito de sodio: un incidente de seguridad del paciente en la práctica de enfermería*

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This study will not be published in Spanish.

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**Conflict of interest:**

The authors declare no conflict of interest

**How to cite:**

Molina-Jiménez ME, Ensaldó-Carrasco E, Pineda-Olvera J, Meneses-González F, Lezana-Fernández MÁ. Administration of a sodium hypochlorite enema: a patient safety incident in nursing practice. Rev CONAMED. 2020; 25(4): 188-192. <https://dx.doi.org/10.35366/97339>

**Financing:** This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Received: 02/12/2020.  
Accepted: 08/12/2020.

### ABSTRACT

Adverse events related to flaws in administering enemas are usually related to dosage errors which may cause unintended harm to the patient, and studies documenting incidents and contributing factors are scarce. Therefore, the objective of this study was to analyze a complaint-case, registered at the National Commission of Medical Arbitration, due to the erroneous administration of a sodium hypochlorite enema. We describe the clinical case of a 32-year-old female who was scheduled for laparoscopic surgery in a private hospital. Before this procedure, the treating physician indicated the administration of a soap-based evacuating enema. The enema was administered by a nurse, who mistakenly administered an enema containing sodium hypochlorite which caused periproctitis and toxic colitis. Training, follow-up, and prevention in the application of routine procedures in clinical areas by nursing staff are key to avoiding adverse events.

**Keywords:** Case report, enema, nursing, rectal administration, sodium hypochlorite.

### RESUMEN

Los eventos adversos relacionados con fallas en la administración de enemas generalmente están relacionados con errores de dosificación que pueden causar daño no intencional al paciente, y los estudios que documentan incidentes y factores que contribuyen son alarmantes. Por lo tanto, el objetivo de este estudio fue analizar un caso de queja, registrado en la Comisión Nacional de Arbitraje Médico, debido a la administración errónea de un enema de hipoclorito sódico. Describimos el caso clínico de una mujer de 32 años que fue programada para una cirugía laparoscópica en un hospital privado. Antes de este procedimiento, el médico tratante indicó la administración de un enema de evacuación a base de jabón. El enema fue administrado por una enfermera, quien por error administró un enema que contenía hipoclorito de sodio que causó periproctitis y colitis tóxica. La capacitación, el seguimiento y la prevención en la aplicación de procedimientos rutinarios en áreas clínicas por parte del personal de enfermería son fundamentales para evitar eventos adversos.

**Palabras clave:** Reporte de caso, enema, enfermería, administración rectal, hipoclorito de sodio.

## INTRODUCTION

Adverse events related to flaws in administering enemas are usually related to errors in their dosage.<sup>1</sup> However, global empirical evidence concerning this type of event is scarce and can be attributed to the omission of declaring them in either the medical or nursing records.<sup>2</sup> In this article, we describe a medical complaint which concerned the erroneous administration of a sodium hypochlorite enema and submitted to the National Commission of Medical Arbitration (CONAMED).

## CASE PRESENTATION

A 32-year-old woman was admitted to the Obstetrics and Gynecology Department, in a private hospital, for a laparoscopic surgery due to bilateral ovarian cysts. The mechanical preparation for this surgery, as indicated by the physician and registered in the medical record, required the administration of two soap-based enemas at 21:00 and 5:00 hours. This procedure was assigned to the nurse on duty, who informed the patient of the administration of these enemas, without obtaining her written consent.

As stated within the complaint record, to administer the first enema, the nurse asked the patient to go with her to the lavatory. Although she questioned the appropriateness of administering the enema there, the nurse asked her to «lean» to begin the procedure. The nurse went ahead to insert the probe; however, it was mistakenly placed into the vaginal cavity. The patient notified the nurse about this error, who at once removed the probe and placed it into the anal cavity. Then, during the enema administration, the patient reported pain and a burning sensation. Nonetheless, the nurse went on with the procedure and asked her to remain in the toilet until she had the urge to defecate. At this point, the patient noticed fluid coming out of her vaginal cavity accompanied with a smell of chlorine. She at once raised this concern to the nurse who explained her that the smell of chlorine coming out of her vaginal cavity was «*due to the stress that she had generated from the procedure*».

Three hours later, the patient experienced severe abdominal pain, a burning sensation around

the anorectal and vaginal regions, presence of fecal matter with blood-tinged mucus, accompanied with nausea and vomiting. By that time, the nurse from the next shift checked the contents of the container used for the enema and detected sodium hypochlorite.

The clinical assessment that followed this event showed no signs of peritoneal irritation. However, the patient reported mild pain upon deep abdominal palpation around the left flank and iliac fossa. Therapeutic management consisted on the intravenous administration of hydrocortisone (100 mg) every 8 hours and intravenous metoclopramide (10 mg) every 8 hours. Oral administration of ranitidine (150 mg) every 12 hours and mesalazine (500 mg) every 8 hours was also prescribed. The patient was asked to fast and to receive a water-based enema in preparation for a colonoscopy.

Despite having identified the erroneous administration of a sodium hypochlorite enema, the patient was informed of the incident on the following day. The nurse, in her apology, admitted mistakenly using a container with sodium hypochlorite. Due to this incident, the initial scheduled surgery was suspended and priority was given in treating the consequences which were classified in the clinical record as an adverse event.

The patient also was also examined by the Coloproctology Department and received a rectal examination which detected an edema in the perianal region without evidence of bleeding. No evidence of intestinal perforation or damage to vaginal cavity were detected. An additional assessment by the Gastroenterology Department stated, in the clinical record, the impossibility of issuing a prognosis given the scarcity of scientific literature for treating this adverse event. Therefore, therapeutic approach consisted on extrapolating the approach for treating lesions of the upper gastrointestinal tract caused by acids and caustic substances. As a result, it was determined to continue with the initial treatment suggested by the coloproctology department. A colonoscopy was also performed to find any damage to the anal cavity, which revealed edema within the first 20 cm of the colon with slight bleeding and no ulcerations.

Three days after the adverse event, the only data recorded in the file were: slight abdominal pain and light bowel movement with few clots. Four days later, a computerized axial tomography (CAT) showed no alterations caused by the sodium hypochlorite enema. Although the patient presented febrile symptoms, these subsided within 24 hours after an antimicrobial prophylaxis was prescribed, which consisted on the intravenous administration of metronidazole (500 mg) every 8 hours and ceftriaxone (1 g) every 12 hours. The frequency of bloody stools decreased and signs of peritoneal irritation were absent. Finally, twelve days after hospital admission, the patient's progress continued without evidence of perforation or stenosis, which is the patient was discharged, granting medical consultation in all the specialties involved in her case. An examination carried out by the Gastroenterology Department, fourteen days following medical discharge, revealed no compromise of the patient's general condition and symptomatic treatment was continued. In addition, the patient was prescribed with mesalazine enemas every 24 hours, oral omeprazole (40 mg) every 24 hours, and given an appointment for a colonoscopy, which reported normal parameters. A rigid sigmoidoscopy revealed edema in the mucosa at the level of the rectum. Proctitis and toxic colitis due to the administration of a sodium hypochlorite enema was made. Later appointments were scheduled to monitor the patient's recovery.

## DISCUSSION

We described an atypical case of nursing malpractice which resulted in proctitis and toxic colitis due to the erroneous administration of a sodium hypochlorite enema. When compared with other reported adverse events in the literature, we found that errors in the administration of enemas are commonly related to errors in their dosage, mainly with sodium phosphate,<sup>1</sup> resulting in metabolic alterations and death.<sup>3</sup> Sodium hypochlorite enemas have been referred as antiseptic enemas to reduce the concentration of bacteria and other germs within the rectal mucosa<sup>4,5</sup> and suggested for mechanical preparation prior colorectal surgery.<sup>5</sup> However, in a study conducted by Valverde et.

al. which compared 5% povidone-iodine and 0.03% sodium hypochlorite enemas, the authors recommended the use povidone-iodine enemas due to a better tolerance from the patient and the avoidance of necrotic ulcerative colitis.<sup>6</sup>

Based on the information contained within the complaint record, that included the narrative of the events experienced by the patient and which was compared against the medical record and nursing notes, we identified a series of patient safety incidents that included errors of commission and potential organizational failures. Considering proctitis and toxic colitis as adverse events, we identified the erroneous administration of a sodium hypochlorite enema as an error of commission.<sup>7</sup> From this, we infer that distraction was a probable contributing factor as the nurse failed to conduct a correctly indicated procedure. We also identified the lack of compliance with a standardized procedure as the enema should have been administered in bed and having the patient secured in left lateral position. In administering the enema at the toilet, two issues emerged. Firstly, the incorrect position of the patient might have contributed to the incorrect insertion of the probe into the vaginal cavity. We believe additional contributory factors were inadequate technical competence and insufficient knowledge from the nurse.<sup>8</sup> Secondly, for an unknown reason, the container with sodium hypochlorite was found inside the lavatory. Based on clinical experience at hospitals, we believe a container with chlorine used for cleaning, and similar to the container used to administer the enema, was mistakenly used. Therefore, the erroneous administration of the sodium hypochlorite enema could have been prevented if the nurse had complied with standardized nursing procedures and administered the enema at the patient's bed. Moreover, the presence of this container with chlorine inside the lavatory suggests a lack of adherence to standardized hospital procedures for safeguarding patients from hazardous cleaning material.

Errors in medical care are either negligent acts or fortuitous events in the provision of medical care that may or may not cause injury to patients.<sup>7</sup> In clinical nursing activities, particularly in this case report, skill-based errors represent a risk to harm the patient as these usually occur while performing

common activities where clinical thinking is automated, rapid, and effortless, and which can be preceded by distraction.<sup>7</sup> Adverse events due to skill-based errors can occur during any nursing procedure regardless of their level of complexity.<sup>7</sup> Therefore, we recommend continuing education and training to ensure professional competence for reducing patient safety incidents at work, as well as fostering a better organizational climate, and better patient outcomes.<sup>9</sup> This should be supported by a periodical assessment of nursing activities. One approach to achieve this is auditing the clinical nursing records since they serve as quality indicators as well as a medical-legal requirement for nursing practice<sup>10</sup> and should, therefore, be integrated into the patient's medical history.<sup>11</sup> Clear and accurate nursing records are needed for assessing the quality of nursing care.<sup>12</sup> However, the nursing records, in our described case were poorly registered as they lacked preoperative, intraoperative, and postoperative data. Although surprising, poorly registered nursing records is prevalent issue<sup>2</sup> and therefore, should be considered a priority to tackle quality and patient safety in nursing care<sup>13</sup> and should be aligned with the International Patient Safety Goals proposed by the Joint Commission International.<sup>14</sup> Moreover, any patient-safety-oriented strategy should be supported by norms, policies, techniques, procedures, and nursing practice standards to prevent deviations from providing quality nursing care services so the patient can have confidence in the safety of the received care.<sup>13</sup>

Although the nurse involved in this case reported having twenty-six years of experience, no evidence showing her competencies, knowledge skills or abilities were provided to demonstrate her fitness to practice. Therefore, it is important for nursing practitioners to confirm this through certification by either colleges or associations as well pursuing academic degrees and other professional credentials. Moreover, the nursing staff should be distributed across the different areas within a hospital in accordance with their competencies, knowledge, and skills. It is also necessary to point out the need to design sustainable strategies focused on promoting a just culture of patient safety across hospitals and institutions as it is considered a fundamental

element in reducing incidents and adverse events.<sup>14</sup> In this case report, the adverse event was notified by another nurse until the next shift. Therefore, a working environment with a just patient safety culture and an incident reporting system, both supported by patient safety advocates and clear institutional policies play a crucial role in the prevention of unnecessary and avoidable harm.

## CONCLUSIONS

In conclusion, the contribution of the nursing profession to ensure patient safety across different areas of the healthcare system is substantial. They maintain a direct link with the patient during their care. If quality nursing care is not provided, the patient can be unintentionally harmed. To ensure the quality and safety of these services, nursing care should be delivered with adequate competencies, knowledge, and skills. Any system-based strategy to reduce the frequency of adverse incidents and events must also be supported by policies and a just culture of patient safety.

## ACKNOWLEDGEMENTS

The main author of this case study (MEMJ) would like to thank Ana María Hernández Martínez for her support in exploring the complaint database stored at the National Commission for Medical Arbitration and selecting the complaint case employed to development of this manuscript.

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