Constipation is common among critically ill patients. Risk factors and etiology of constipation in ICU patients have many causes including restricted body movement, side effects of prescribed drugs, fluid and electrolyte imbalances and infections. Therefore, the treatment must rely on treating the possible precipitating factors and regaining the regularity of intestinal movements. The complications of constipation can also cause abdominal distension, vomiting, restlessness, failure to wean from mechanical ventilation, rectal tear/fissure associated with the development or exacerbation of hemorrhoids, gut obstruction, perforation and is occasionally associated with fatal pulmonary embolism [1].

The nurse practitioner plays an important role in prevention and management of constipation through a combination of monitoring fluid intake, psychological integrity, diet, physical activity, utilizing non-pharmacological measures and toileting regimen after identifying an individual at risk for constipation.

Keywords: Constipation; Critically Ill patients; prevention; Risk factors; Management

Abstract

Constipation is common among critically ill patients. Risk factors and etiology of constipation in ICU patients have many causes including restricted body movement, side effects of prescribed drugs, fluid and electrolyte imbalances and infections. Therefore, the treatment must rely on treating the possible precipitating factors and regaining the regularity of intestinal movements. The complications of constipation can also cause abdominal distension, vomiting, restlessness, failure to wean from mechanical ventilation; rectal tears/fissure associated with the development or exacerbation of hemorrhoids, gut obstruction, perforation and is occasionally associated with fatal pulmonary embolism [1].

The nurse practitioner plays an important role in prevention and management of constipation. That management includes a combination of monitoring fluid intake, psychological integrity, and diet, physical activity, utilizing non-pharmacological measures and toileting regimen after identifying an individual at risk for constipation. Constipation is a recurrent complication that happens in critically ill patients but is often unnoticed. So, the health care personnel may respond immediately to diarrhea, which is observable than constipation. Definition of constipation is complex and vague. To diagnose constipation, according to Rome criteria, the frequency of the stool movement is less than 3 per week and usually requires manual maneuvers to evacuate stool. Rome criteria are periodically utilized to assess stool in an objective manner [1]. On the other hand, the subjective assessment of perceived constipation includes straining, the passage of hard stool, and awareness of inadequate bowel movement [2]. Other authors defined constipation as a failure of the bowel to pass stool due to loss of peristaltic movements. So, they proposed that clinical signs of constipation would include no passage of stool for three or more successive days disregarding the bowel sounds. Bowel sounds have been widely used as an accurate indicator of bowel function, but recently have fallen out of favor as part of diagnostic criteria [3].

A peristaltic movement of the alimentary canal is a complex process, which is often changed during critical illness and result in constipation. Constipation can cause abdominal discomfort, decreased duration of enteral feeding and abdominal distension. Constipation also can impair respiratory function, including prolonged mechanical ventilation [4]. Risk factors for constipation in the critically ill include the use of opioids or anticholinergic drugs, immobility, and increased disease severity. Constipation has been associated with feeding intolerance, delirium, prolonged mechanical ventilation, and hospital stay. Many observational studies have defined constipation as the failure to pass stool within 72 hours of admission to the ICU [5].

The standard therapies for constipation, including stool softeners and laxatives, have been extensively studied in ambulatory and palliative care settings. However, bowel care for hospitalized patients, especially those in the ICU, has been a relatively neglected problem. Despite a paucity of evidence, it is common for ICU to develop “in-house” bowel care protocols, using combinations of therapies to treat or prevent constipation. Although some observational studies have suggested that the use of bowel protocols can decrease the incidence of constipation and diarrhea, others have shown little impact. It is also unclear
whether the use of bowel protocols can improve downstream patient outcomes. Furthermore, the use of bowel protocols, as opposed to non-protocolized bowel care, could pose a risk of iatrogenic diarrhea, which has its own potential harms, such as electrolyte imbalance, hypovolemia, and recurrent work-ups for infectious diarrhea [6].

The critically ill patient may become constipated for other reasons, including dehydration, lack of fiber in the diet, and factors such as lack of access to appropriate facilities. In addition, critically ill patients cannot ambulate to the toilet and respond to the urge or strain to defecate [7]. Contributing Factors for Constipation in Critically Ill Patients Many factors can lead to constipation in critically ill patients. Injury of the spinal cord and abdominal surgery are common causes of constipation not due to the surgery alone, but due to the effects of the anesthesia and frequent administration of analgesic drugs [8]. Another significant factor in decreased intestinal motility is immobile, sedated and unconscious patients who are not aware of the urge to defecate. Therefore, early ambulation should be encouraged to promote maintenance of peristalsis and normal elimination [8].

Other factors that can lead to constipation are the effects of opioids on intestinal motility and decreasing intestinal secretions. Moreover, ICU medications can also cause a decrease in intestinal motility, such as; dopamine, diltiazem, phenothiazines, and verapamil, and anticholinergic drugs [9]. Sepsis in ICU settings may also induce the occurrence of constipation in critically ill patients and may potentiate the inhibitory effects of opioids on the motility of the colon through Toll-like receptor 4, a key molecule in signaling sepsis pathogenesis [10]. Other factors that can lead to constipation in critically ill patients are electrolyte imbalances such as hypokalemia, hypomagnesemia, and hypercalcemia. These imbalances decrease the gastrointestinal motility and impair the smooth muscle contractions that result in constipation. Furthermore, decreased fluid intake or inappropriate use of diuretics leads to dehydration that may potentiate constipation, but, conversely, over-hydration can lead to splanchic edema that impairs the gut motility [11].

Psychological factors also have a serious effect on different body systems. The function of almost body systems can be impaired by prolonged emotional stress when a person becomes depressed; the autonomic nervous system slows impulses and peristalsis resulting in constipation. Also, voluntary withholding of stool due to fear of pain, fear of odor and noise causing embarrassment to lead to constipation [10]. Pain is another factor affecting the defeaction. Normally, the process of defeaction is painless. However, a number of conditions, including hemorrhoids and rectal surgery can result in pain and discomfort. In this instance, the critically ill patient often withholds the urge to defecate to avoid pain, and constipation may develop [12].

Other factors contribute to the occurrence of constipation. Colonic examination often requires emptying of the bowel contents; a period of nothing by mouth (NPO) is followed by bowel evacuation to clean the bowel before an examination. These factors interfere with normal elimination and may lead to constipation [13]. Complications of Constipation in Critically Ill Patients:- Constipation could be associated with increased intra-abdominal pressure, reduced nutritional intake, bacterial proliferation, injury of the intestinal mucosa, and bacterial translocation through the injured mucosa. Patients who develop constipation often have gastroparesis and paresis of the ileum. These conditions hinder the progression of nutritional support [14].

Constipation can also cause abdominal distension, vomiting, restlessness, Failure to wean from mechanical ventilation, rectal tear/fissure associated with the development or exacerbation of hemorrhoids, intestinal obstruction, and perforation. It is associated with fatal pulmonary embolism [15]. Critically ill patients with sustained constipation may develop dilation of the rectum, colon, or both. This can cause large amounts of feces to accumulate in the rectum causing fecal impaction. The liquid stool will often pass around the impaction and leak out of the anus. That patient may complain of abdominal pain, nausea, cramping, abdominal distention, fever, and rectal pain [16], an impaction can occur in any age group but is more common in patients who are less active. Fecal impaction may also result from disease, tumors, neurogenic disorders, chronic use of antacids or bulk laxatives, a low residue diet, medications or prolonged bed rest. In cases where fecal impaction is suspected, a digital examination of the rectum is done to assess for fecal mass. This is typically done by the nurse or physician [17].

Medical and nursing management of ICU patient with constipation

Assessment of the bowel function should be done when the patient is admitted to hospital. So, any concerns about constipation should be discussed and a plan of care devised to manage these concerns. If a patient suffers constipation, a comprehensive detailed history of symptoms should be obtained. The preferred outcome of management should be considered. This needs an individualized care protocol along with appropriate treatment. So, the nurse may face challenges as the case may result from various factors [18]. An abdominal and rectal examination should be performed by nurses to look for a palpable colon, piles, rectal prolapse, abdominal masses, and liver enlargement. The nurse practitioner should also be alert for signs of anemia and weight loss. As well, the perineum should be examined for skin fissures or anal warts. Moreover, the nurse should ask the patient to strain to look for leakage of stool due to fecal impaction in case of having a bowel movement.

The next step of the examination is to test the anal wink reflex. This is done by utilizing a piece of cotton pad to wipe around the anus. The absence of an anal contraction may indicate sacral nerve affection [18]. The examination should be completed with digital rectal palpation and should not cause pain. The elicited pain with slight palpation predicts the presence of an anal fissure. Further palpation should assess the resting sphincter tone before assessing all walls of the rectum for the masses and fecal impaction, especially in patients older than 40 years. To look for pelvic floor dysfunction, the nurse should ask the patient to strain to expel the nurse’s finger. A normal response is anal sphincter relaxation and puborectalis muscle with a descent of
the perineum approximately 1- to 3.5-cm. The absence of these findings suggests pelvic floor dysfunction [19].

Prevention of constipation would be ideal if it is recommended through a combination of fluid intake; diet, physical activity, and toileting regimen after identifying individuals at risk for constipation [20]. Non-pharmacological approaches in managing constipation are often underestimated and underused in the ICU, where prescribed drugs are often administered to fix the immediate problem. However, simple non-pharmacological measures may aid the defecation process [21]. In addition, the environment should be assessed for privacy. Loss of privacy may contribute to constipation or delay the patients’ decisions to defecate. Moreover, some patients may feel with physical discomfort if they are given a bedpan or commode behind a curtain or fear of odor and noise causing embarrassment. The problem can be overcome by transferring the immobile patients to the toilet if allowed to ensure that they sit correctly and comfortably on the toilet to raise their intra-abdominal pressure during defecation. Proximity to the toilet is also essential for patients with reduced ambulation as they may feel restless about asking for help to walk to the toilet [22].

Regarding fluid intake, older critically ill patients may receive inadequate amounts of fluids that can lead them to constipation. Fluid administration of at least 1.5 liters per day is advised to prevent constipation [23]. A high-fiber diet has been found to increase bowel frequency and to be effective in the treatment of constipation. As fiber moves through the colon and acts as a sponge by absorbing water. This action makes the stool to be softer and allowing easier and more regular bowel movements. Dietary fiber intake is recommended and may vary from 20 to 35 grams daily when fluid intake is at least 1,500 ml per day [24].

Physical activity in ICU must be tailored to the patient’s physical abilities and health condition. Ambulation for 15 to 20 minutes once or twice per day, or more than tolerated, is recommended for those who are fully mobile. Ambulating at least 50 feet twice per day is recommended for patients with restricted movement. For patients who are unable to walk or are restricted to bed rest, bed exercises such as pelvic tilt, low trunk rotation, and single-leg lifts are recommended. The exercises should be performed for 15 to 20 minutes at least twice per day [25].

Initiating a routine toileting pattern has been evidenced to be beneficial in the management of constipation. Toileting is advised five to fifteen minutes following meals, particularly after breakfast when the gastrocolic reflex is strong and as needed. Getting the patient in an upright position for toileting facilitates bowel evacuation [26]. If non-pharmacologic measures are inadequate, laxatives may be added to the treatment regimen. Laxatives are classified into five groups. First; Bulk-forming laxatives, such as psyllium seed and methylcellulose, these laxatives absorb water and increase the size of the fecal mass. Psyllium, one type of bulk-forming laxative, has also been used along with a proper diet to treat high cholesterol. This medication may also be used to relieve the symptoms of irritable bowel syndrome Second; Osmotic laxatives, such as low-dose polyethylene glycol and saline laxatives, these laxatives aren’t absorbed in the intestine; but rather they pull water into the fecal mass to create more watery stool. The laxative effect of these agents depends on the extent to which they remain in the lumen. Absorption by the intestinal mucosa, precipitation by other chemicals, and metabolism by luminal bacteria will reduce the effect of poorly absorbed osmotic laxatives. For example, lactulose is not absorbed by the intact small intestine, but is delivered to the colon where it can be metabolized by colonic bacteria to short chain fatty acids. The short chain fatty acids may be absorbed or may remain in the lumen, exerting their own osmotic activity [27]. Third; Stimulant laxatives, such as senna and bisacodyl, they stimulate the bowel to increase peristaltic movement. This medication is used to treat constipation caused by conditions such as slowing of the intestines such as diabetic autonomic neuropathy, prolonged bed rest, use, narcotics, irritable bowel syndrome. Both types of laxatives help to increase the activity of the intestines to move stool out faster. Fourth; Stool softeners, such as docusate that cause more water and fat to be absorbed into the stool. Docusate is often used when straining to have a bowel movement should be avoided (e.g., after a heart attack or surgery). Finally Miscellaneous agents; they include mineral oils that act by lubricating the stool and colon mucosa [28]. Suppositories and enemas are preferred first-line therapy when fecal impaction is identified. Suppositories and enemas may be perceived as a more invasive choice. Enemas are used only if oral treatment fails after several days and to prevent fecal impaction. Both suppositories and enemas increase water content and stimulate peristalsis to aid in the expulsion and work more quickly than oral laxatives [29].

Summary

Constipation is a recurrent complications that happen in critically ill patients. To diagnose constipation, according to Rome criteria, the stool frequency is less than 3 stool movements per week. The clinical signs of constipation would include no passage of stool for three or more successive days disregarding the bowel sounds. Risk factors and contributing factors for constipation include the use of opioids or anticholinergic drugs, immobility, disease severity, feeding intolerance, delirium, prolonged mechanical ventilation, injury of the spinal cord, abdominal surgery, Psychological factors, and pain. Complications of constipation in ICU patients include increased intra-abdominal pressure, reduced nutritional intake, bacterial proliferation, injury of the intestinal mucosa and bacterial translocation through the injured mucosa. Prevention is the initial management of constipation through a combination of fluid intake, diet, physical activity, and toileting regimen after identifying an individual’s at risk for constipation. Simple non-pharmacological measures should be recommended to aid in defecation process. If non-pharmacologic measures are inadequate, laxatives may be added to the treatment regimen taken into consideration their mode of actions, indications, and nursing management consideration.

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