Medications

Lactated Ringer's solution 125 mL/hr continuous

- Pharmacologic: Crystalloid isotonic solution (Singh et al., 2023).
- Therapeutic: Balanced IV fluid solution (Singh et al., 2023).
- Reason: For electrolyte balance and hydration (Singh et al., 2023).
- Key assessment: Assess IV access for infiltration or blockage and assess for fluid overload (Singh et al., 2023).
- Safe dose

Morphine 2 mg IV push every 4 hours PRN

- Pharmacologic: Opioid (Jones & Bartlett Learning, 2023).
- Therapeutic: Opioid analgesic; Controlled substance schedule II (Jones & Bartlett Learning, 2023).
- Reason: For moderate-severe pain (rating 7-10)
- Key assessment: Pain rating and monitoring for tolerance (Jones & Bartlett Learning, 2023).
- Safe dose

Zosyn (piperacillin-tazobactam) 4.5 mg IV push every 8 hours

- Pharmacologic: Piperacillin – extended-spectrum penicillin and Tazobactam – beta-lactamase inhibitor (Drugs.com, 2024).
- Therapeutic: Antibiotics (Drugs.com, 2024).
- Reason: Cholecystitis
- Key assessment: Assess allergies and potassium levels (can cause hypokalemia) (Drugs.com, 2024). Also, check what fluid is running in IV; Zosyn is incompatible with Lactated Ringer's.
- Safe dose

Demographic Data

Admitting diagnosis: Acute cholecystitis with possible choledocholithiasis

Chief complaint: Abdominal pain

Age of client: 17

Sex: Male

Weight in kgs: 51.3 kg

Allergies: No known allergies

Date of admission: 10/17/2024

Psychosocial Developmental Stage: Identity versus role confusion (Rudd & Kocisko, 2023)

Cognitive Development Stage: Formal operational (Rudd & Kocisko, 2023)

Admission History

Pathophysiology

Disease process:

Cholecystitis is the inflammation of the gallbladder that commonly occurs due to the slowing of the flow of bile and the abnormal formation of gallstones in the gallbladder or bile ducts (Capriotti, 2020). They are formed from bile pigments or cholesterol or can be a combination with calcium salts (Rudd & Kocisko, 2023). When these gallstones become stuck in the cystic duct, it causes the gallbladder to become swollen and inflamed (Capriotti, 2020). This leads to the gallbladder wall nerves becoming irritated, which causes intense pain (Capriotti, 2020). The gallstones may also pass through the cystic duct and into the common bile duct, causing a blockage (Capriotti, 2020). This is known as choledocholithiasis (Capriotti, 2020). This blockage causes bile to back up into the liver, which causes an increase in bilirubin in the blood, causing the patient to become jaundiced (Capriotti, 2020).

S/S of disease:

The most common symptom is right upper quadrant abdominal pain, which is tested using Murphy's sign (Capriotti, 2020). Murphy's sign is assessed by asking the patient to take a quick breath as the right upper quadrant is palpated (Capriotti, 2020). If the patient feels pain, this is a positive Murphy's sign (Capriotti, 2020). Other symptoms the patient may experience are nausea, vomiting, fever, heartburn, and jaundice if the common bile duct is involved (Capriotti, 2020). This patient experienced right upper quadrant pain, nausea, and vomiting. Upon assessment, his right upper quadrant region was still tender. He also appeared slightly jaundiced, with some yellowing of his skin and eyes.

Method of Diagnosis:

Cholecystitis is diagnosed using an abdominal ultrasound which is used to evaluate the gallbladder and the biliary ducts (Capriotti, 2020). In a patient with cholecystitis, the ultrasound will reveal gallstones, a thick gallbladder wall, and dilatation of the ducts (Capriotti, 2020). This patient had an abdominal ultrasound done, and he showed these exact signs: gallstones, thickened gall bladder, and dilation of the biliary tree. A CT scan can also visualize these structures (Capriotti, 2020). This patient initially had a CT scan done, which showed confirmation of cholecystitis with bile duct dilation and possible choledocholithiasis. The patient most likely had choledocholithiasis due to his elevated bilirubin levels, liver enzymes, and jaundice; however, because the CT did not confirm this, the patient was scheduled to have an endoscopic retrograde cholangiopancreatography done to confirm the diagnosis and remove some of the gall stones (Capriotti, 2020). Labs such as WBC count, CBC, liver enzymes, amylase, and bilirubin are also used, which will show abnormalities (Capriotti, 2020). This patient's liver enzymes and bilirubin were extremely elevated.

Treatment of disease:

Cholecystitis is typically treated with surgical intervention (Capriotti, 2020). A cholecystectomy would be performed laparoscopically to remove the gallbladder (Capriotti, 2020). A laparoscopic approach is generally used because it is the most minimally invasive; however, there is always the risk of it converting to an open procedure (Capriotti, 2020). A cholangiography and choledochoscopy may be performed in surgery if the common bile duct is involved (Capriotti, 2020). This patient is scheduled to have a cholecystectomy in two days.
When the patient initially presents with cholecystitis and surgery has not been scheduled for the same day, the patient will be placed on NPO restrictions and have IV fluids started (Rudd & Kocisko, 2023). They will have orders for analgesic medications to be given as needed for pain relief (Rudd & Kocisko, 2023). They will also have orders for antiemetic medications and antibiotics (Rudd & Kocisko, 2023). This patient was placed on NPO restrictions and was being given a continuous infusion of Lactated Ringer's solution. He also had orders for Morphine and Tylenol as needed for pain. The patient was also receiving Zosyn, an antibiotic, every eight hours.

The patient was taken to the emergency room by his mother on 10/17/2024 for worsening abdominal pain that started on Wednesday. The patient stated that the pain was on the right side of his abdomen and around his umbilicus. He also stated that he was having nausea and vomiting as well. The patient states the pain was constant and felt "like a cramp." The pain worsened when he moved and felt better when resting. He stated he tried taking Tylenol and Advil for the pain, but these did not help. The patient's mother stated that he had had this abdominal pain and intermittent nausea/vomiting since July, and she has taken him multiple times to the pediatrician. They performed an EGD/colonoscopy but found nothing, and he was eventually diagnosed with GERD. The patient stated that the medications they gave him "didn't do anything," and the pain was still present until it got worse this past Wednesday.

Relevant Lab Values/Diagnostics

CT abdomen/pelvis

- A computed tomography (CT) scan can help diagnose conditions of the abdominal organs such as cholecystitis (Pagana et al., 2023). For this patient, the CT scan showed cholecystitis with dilation of the bile ducts and possible choledocholithiasis.

Ultrasound

- An ultrasound visualizes the gallbladder and bile ducts (Pagana et al., 2023). It can help confirm gallstones and diagnosis of cholecystitis (Pagana et al., 2023). For this patient, it showed a thickened gallbladder and gallstones. It also showed a dilated biliary tree and fluid around the gallbladder. Mild right hydronephrosis was also found.

Labs

- CMP
  - Albumin 3.3 g/dL (3.5-5 g/dL) – Slightly decreased due to acute infection and malnourishment (Pagana et al., 2023).
  - Total bilirubin 4.1 mg/dL (0.3-1 mg/dL) – Elevated due to cholecystitis and the presence of gallstones (Pagana et al., 2023).
  - AST 80 u/L (10-40 u/L) – Elevated due to cholecystitis and possible gallstone blockage (Pagana et al., 2023).
  - ALT 243 u/L (4-36 u/L) – Elevated due to cholecystitis and possible gallstone blockage (Pagana et al., 2023).
  - Alkaline Phosphatase 303 u/L (30-200 u/L) – Elevated due to possible biliary obstruction (Pagana et al., 2023).
  - Sodium 134 mmol/L (136-145 mmol/L) – Slightly decreased due to vomiting (Pagana et al., 2023).

Medical History

Previous Medical History:
Attention-deficit/Hyperactivity Disorder, Anxiety, Gastroesophageal reflux disorder

Prior Hospitalizations: N/A

Past Surgical History: Upper and lower esophagogastroduodenoscopy, Colonoscopy

Social needs: N/A

Active Orders

NPO, medication with sips – Patient is possibly going to surgery

Oral care every 4 hours – The patient is NPO and will have a dry mouth

Vital signs every 4 hours – Monitor patient's status

Activity: up as tolerated – Patient pain is aggravated with movement, so if he is not in pain, he can be up and moving

I&O – Monitor fluid and output of those fluids since he is NPO and strictly getting IV fluids; don't want patient to become dehydrated or have fluid overload

Pulse ox: Keep oxygen saturation at >92% - Ensure the patient does not become hypoxic

Consult gastroenterology – Consultation to perform an ERCP for the possible choledocholithiasis

Consult dietician – Patient has had a 60 lbs. weight loss in the past year

Assessment	
General	The patient is alert and oriented x4 to person, place, time, and reason. He does not appear to be in acute distress and his appearance is appropriate.
Integument	The patient's skin was slightly jaundiced but appeared intact, and no apparent lesions were noted. His skin was warm and dry. He appeared to be thin and bony due to significant weight loss, 60 lbs., over the last year. Skin turgor return noted. 22g IV located in the left forearm.
HEENT	Head and neck are symmetrical, and no lesions noted. The trachea is midline, and carotid pulses are palpable +2. No tenderness upon lymph node and sinus palpation. No neck vein distention. Bilateral sclera are slightly yellow. Bilateral corneas are clear and conjunctiva are pink. EOMS and PERRLA intact bilaterally. Ears are symmetrical and no lesions noted. Hearing is intact. Septum is midline and no lesions or drainage noted. Lips are slightly pale and oral mucosa is slightly dry but no lesions are noted. Teeth are intact.
Cardiovascular	Clear S1 and S2 noted. Normal rhythm but slightly bradycardic. No murmurs or gallops noted. Pulses palpable +2 in all extremities bilaterally. No edema noted. Capillary refill less than 3 seconds bilaterally.
Respiratory	Normal rate and rhythm. All lung fields are clear anteriorly and posteriorly. No wheezing, rhonchi, or crackles noted.
Genitourinary	The character of urine was unable to be assessed at the time of assessment. The patient denies pain, difficulty starting, hematuria, or intermittent stopping in the stream.
Gastrointestinal	Bowel sounds are hypoactive. Tenderness is noted in the right upper quadrant area. The abdomen is soft and flat. The patient states he has not had a bowel movement today but hasn't had any pain or difficulty trying. The patient states he has intermittent nausea and vomiting but has not experienced any today.
Musculoskeletal	Full ROM in all extremities. Hand grips equal in strength bilaterally. Pedal pushes and pulls equal in strength bilaterally. Fall score: low
Neurological	Patient alert and oriented x4. He has normal cognition and no impairments.
Most recent VS (highlight if abnormal)	**Time:** 1133 **Temperature:** 98.1 F (36.7 C) **Route:** Axillary **RR:** 16 **HR:** 52 **BP and MAP:** Not assessed at this time (at 0716: 111/56 & 80) **Oxygen saturation:** 99% **Oxygen needs:** N/A, Room air
Pain and Pain Scale Used	Numeric pain scale used: 2

Nursing Diagnosis 1 Acute pain related to inflammation and obstruction of the gallbladder as evidenced by right upper quadrant tenderness (Phelps, 2023).	**Nursing Diagnosis 2** Risk for infection related to inflamed gallbladder and gallstone obstruction (Phelps, 2023).	**Nursing Diagnosis 3** Imbalanced nutrition related to possible inadequate knowledge of nutrient requirements and intermittent episodes of nausea/vomiting as evidenced by 60 lbs. weight loss in the past year (Phelps, 2023).
Rationale I chose this diagnosis because the patient had constant tenderness in his abdomen.	**Rationale** I chose this diagnosis because if cholecystitis worsens, it can cause the gallbladder tissue to die and cause sepsis, or it can perforate and cause an abdominal infection (Capriotti, 2020).	**Rationale** I chose this diagnosis because the patient has lost a significant amount of weight over the last year and is malnourished.
Interventions **Intervention 1:** Assess pain level and monitor pain medication effectiveness (Phelps, 2023). **Intervention 2:** Encourage relaxation techniques and provide distraction activities (Phelps, 2023).	**Interventions** **Intervention 1:** Monitor vital signs and pain (Phelps, 2023). **Intervention 2:** Monitor WBCs (Phelps, 2023).	**Interventions** **Intervention 1:** Assess the patient's weight daily (Phelps, 2023). **Intervention 2:** Monitor intake and output (Phelps, 2023).
Evaluation of Interventions The nurse assessed the patient's pain level and reassessed it an hour after the medication was administered. The patient was also watching television and playing games with his visitors.	**Evaluation of Interventions** The patient's vitals were monitored every four hours, and his WBC was normal. The nurse should monitor the patient's pain, as sudden pain followed by relief is a sign of possible perforation (Capriotti, 2020).	**Evaluation of Interventions** Since the patient is currently NPO due to possible surgical intervention, his I&Os are being monitored, but he is getting strictly IV fluids to help maintain his hydration and electrolyte levels. His weight was not being monitored daily, but if it were, it would be every day at the same time (Phelps, 2023).

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