SASKATCHEWAN RN ASSOCIATION

SASKATCHEWAN REGISTERED NURSES' ASSOCIATION

RNs WITH ADDITIONAL AUTHORIZED PRACTICE
CLINICAL DECISION TOOL
AUGUST 2017

CHOLELITHIASIS, BILIARY COLIC, CHOLECYSTITIS AND CHOLANGITIS ADULT & PEDIATRIC

DEFINITION

Cholelithiasis

- Presence of gall stones in the biliary tract.

Biliary Colic

- Right upper quadrant pain due to obstruction of a bile duct by a gallstone.

Cholecystitis

- Inflammation of the gallbladder wall, usually caused by obstruction of the bile ducts by gallstones.

Cholangitis

- Inflammation of the bile ducts.

IMMEDIATE CONSULTATION REQUIRED IN THE FOLLOWING SITUATIONS

- Clients with significant right upper quadrant tenderness and fever
- $\geq$ 75 years of age
- Systemic inflammatory response syndrome or sepsis
- Peritoneal signs on abdominal exam (e.g., pain, distension, guarding, rebound tenderness)

CAUSES

- Cholelithiasis, biliary colic, cholecystitis and cholangitis occur as a result of the formation of gallstones.
- Gallstones can develop if the gallbladder does not empty properly and/or if there is too much cholesterol in the bile.
- Microscopic gallstones in the gallbladder can cause symptoms. These tiny stones can form a type of sediment called biliary sludge.

PREDISPOSING AND RISK FACTORS

- Female
  - Women are twice as likely to develop gallstones as men.
- Certain ethnic groups (e.g., Northern European and Hispanic)
- Diet high in fat and dairy products
- Obesity
- Sudden weight loss

- Prolonged fasting
- Pregnancy
- Crohn's disease
- Cystic fibrosis
- Diabetes
- Liver cirrhosis
- Sickle cell disease
- Thalassemia
- Aging
- Extensive bowel resection
- Use of certain medications (e.g., oral contraceptive pills, chlorproMAZINE [largactil], octreotide, and clofibrate)

HISTORY

- Typical biliary pain due to gallstones is temporary (between 1/2-24 hours), epigastric or right upper abdominal pain following meals.
- Pain:
  - may radiate to the right flank or back and is frequently associated with nausea.
  - is characteristically steady and usually moderate to severe.
  - is not relieved with a bowel movement.
- In some clients, the symptoms are mild and consist of vague indigestion or dyspepsia.
- Biliary colic
  - Acute onset of pain in the right upper quadrant of the abdomen or epigastrium (dermatomes T8/9)
  - Pain:
    - reaches a peak within one hour.
    - tends to resolve gradually over 1-5 hours as the stone dislodges.
    - may radiate to the right scapular region or back.
    - if it lasts longer, suspicion for complications should be considered.
- Cholecystitis

  - Right upper quadrant pain that is steady and lasts longer than 6 hours
  - Nausea, vomiting, and low grade fever is common
  - Client reports having experienced similar episodes in the past that spontaneously resolved
- Cholangitis
  - Recent biliary tract manipulation or history of choledocholithiasis (the presence of at least one gallstone in the common bile duct) associated with fever, right upper quadrant pain, and jaundice (Charcot's triad)

PHYSICAL FINDINGS

- Vital signs parallel the degree of illness
- Abdominal pain (right upper quadrant); guarding may be present
- Fever (may be absent, especially in elderly)
- Icterus (cholangitis)
- Jaundice (cholangitis)
- Positive Murphy's sign

DIFFERENTIAL DIAGNOSIS

- Primary sclerosing cholangitis
- Abdominal aneurysm
- Gastroenteritis
- Hepatitis
- Mesenteric ischemia
- Myocardial infarction
- Small bowel obstruction
- Pancreatitis
- Pregnancy, eclampsia
- Urinary tract infections
- Cholelithiasis
- Renal calculi
- Diverticular and inflammatory bowel disease
- Peptic ulcer disease

- Gastroenteritis
- Appendicitis

COMPLICATIONS

- Obstructive cholangitis secondary to choledocholithiasis
- Gangrenous cholecystitis
- Emphysematous cholecystitis
- Gallbladder torsion
- Cancer of the gallbladder
- Sepsis
- Pancreatitis
- Hepatitis
- Choledocholithiasis
- Gallbladder perforation

INVESTIGATIONS AND DIAGNOSTIC TESTS

- There are no specific blood tests for making a diagnosis of cholelithiasis, biliary colic, cholecystitis and cholangitis. Lab work that may be ordered includes:
  - complete blood count;
  - liver enzymes (AST; ALT; ALP; GGT);
  - lipase;
  - amylase;
  - high-sensitivity C-reactive protein (hs-CRP); and
  - total bilirubin.
- The diagnosis is supported if the following findings are present:
  - General inflammatory findings (e.g., abnormal WBC count, elevated CRP level)
    - An increase in WBC count of more than 10,000 mm^3/dL
    - An increase in CRP level of more than 3 mg/dL
    - An increase of serum enzymes in the hepato-biliary-pancreatic system and elevated bilirubin
- Referral to a physician/RN(NP) may lead to following tests:

  - Ultrasound
  - HIDA (hydroxyl iminodiacetic acid) scan (also referred to as cholescintigraphy and hepatobiliary scintigraphy) or computerized tomography (CT) may be considered if the ultrasound findings are not diagnostic.

MAKING THE DIAGNOSIS

- History and physical exam will support cholelithiasis, biliary colic, cholecystitis and cholangitis as part of the differential but the definitive diagnosis is usually established by ultrasound.

MANAGEMENT AND INTERVENTIONS

Goals of Treatment

- Relieve pain, nausea and vomiting
- Prevent complications

Appropriate Consultation

- Consultation with a physician/RN(NP) should be made when client:
  - does not respond to first line treatment.
  - has recurrent symptoms typical of biliary pain, but without gallstones on ultrasound.
  - is suspected of having cholecystitis or cholangitis.
- Has symptoms included in the Immediate Consultation Required in the Following Situations section.

Non-Pharmacological Interventions

- Bedrest
- Nothing by mouth
- One large-bore IV line and administration of isotonic IV fluids (Normal Saline or Ringers Lactate). Consider two large-bore IV's for unstable clients.
  - Consult a physician/RN(NP) to confirm solution and hourly rate.
- Consult with a physician/RN(NP) to determine need for nasogastric tube insertion.

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Pharmacological Interventions

- Oxygen, if client is unstable on presentation
- Analgesia
  - Several recent studies have shown that early pain control in clients with abdominal pain does not hinder the diagnosis. Therefore, pain control should be given early, without waiting for the diagnosis or surgical consult.
    - Ketorolac (Toradol) 30 mg IM/IV q6h prn (maximum 120 mg per day)
  - If client does not respond to non-narcotic analgesics, has renal impairment or allergy/intolerance, consult a physician/RN(NP) for orders.
- Antiemetics
  - DimenhyDRINATE (Gravol) 25-50 mg IM/IV q4-6h prn
  - Buscopan (hyoscine) 10-20 mg IM/IV q6h prn (maximum 60 mg per day) for a maximum of 3 days
  - Clients who are stable can be provided with a prescription for oral gravol or buscopan in the doses listed above pending diagnostic testing.
- Antibiotics
  - If the client is febrile, antibiotic therapy with more broad-spectrum coverage is usually initiated. Consult a physician/RN(NP) for orders.

Client and Caregiver Education

- Counsel client/caregiver about appropriate use of medications (dose, frequency, compliance, etc.).
- Dietary restrictions (low fat diet)

Monitoring and Follow-Up

- Monitor vital signs and intake and output. If pain resolves the client may be discharged home with referral for diagnostic tests on an outpatient basis.
- If client's pain does not resolve and/or condition deteriorates, immediate consultation is required.
  - Severe cholecystitis can evolve into sepsis, cholangitis or death, especially in diabetic or elderly clients in whom the diagnosis may be delayed.

Referral

- Client should be seen within a few weeks of an attack if the acute episode has resolved or symptoms are mild.
- Consider referral to registered dietician regarding dietary changes.

DOCUMENTATION

- As per employer policy

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