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Diverticulitis
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Introduction
Diverticulitis is the inflammation of the diverticulum and can cause perforations, micro-perforations, or abscesses to form (Wilkins, Embry, & George, 2013). Diverticulitis disease affects approximately 2.5 million people in the United States and it accounts for more than 280,000 hospitalizations per year (Mulligan, 2015). In 2014, the treatment cost for diverticular disease, diverticulitis usually, was approximately 1.6 billion dollars, this is a huge expense for health care in this country (Scheppke et al., 2015). “Diverticulitis is the presence of diverticula in the absence of inflammation” (Wilkins, Embry, & George, 2013). In a study United States one study found that those with diverticulosis have a twenty-five percent chance of developing diverticulitis in their lifetime (Wilkins, Embry, & George, 2013). The number of patient in the United States admitted to the hospital for diverticulitis has steadily increased since 2002, with an increase in the occurrence of admissions of women with diverticulitis and the populations with diverticulitis continues to get younger (Tenter et al., 2017). The increase in diverse patient under 40 years of age is predominantly white males, after 40 years of age the demographics are more widespread (Sachitawat, Nuirak, & Rakvit, 2015). With such a large number of people in our population living with diverticular disease, diverticulitis being diagnosed that a Family Nurse Practitioner will need to be familiar with diagnosing and treating.

Signs & Symptoms
The signs and symptoms for Diverticulitis are typically gradual onset with left lower quadrant pain, can also be right upper quadrant pain. If the right side of the colon is affected, worsening over hours or days, this is usually alleviated by remaining still and is exacerbated by movement; the pain quality is cramping or aching, severity of the pain will be the beginning and increasing in intensity (Scheppe & Bryan, 2014). Other symptoms include changed in bowel habits could be diarrhea or constipation, nausea and vomiting, fever, chills, elevated white blood cell count, tachycardias and widening pulse pressure (Scheppe & Bryan, 2014). Common comorbidities of diverticulitis are smoking, coronary artery disease, diabetes, and obesity (Philip, Kaushik, & Mittal 2017). Obesity has been found to be a major risk factor for developing diverticulitis and also, puts the patient at risk for complications and even failure of treatment of diverticulitis (Philip, Kaushik & Mittal, 2017).

Risk Factors for Diverticulitis
• Low fiber diet
• Obesity
• High intake of red or processed meats
• Low serum 25-hydroxyvitamin D
• Smoking
• Alcohol use
• Sedentary lifestyle
• Greater than 7 bowel movements per week
First degree relative with diverticulosis

Underlying Pathophysiology
Diverticulitis is a structural alteration in the colonic wall with a herniation of the mucosa and the submucosa this is due to defects in the muscular layer of the colon (Scialli, Colechia, Marsaro, Schiumerini, & Festi, 2016). These herniations are usually in the descending and sigmoid colon (Moorman, 2015). Diverticulitis in the ascending colon, however, are common in Asian populations (Wilkins, Embry, & George, 2013). Diverticulitis is a chronic condition where multiple diverticula are present, and are asymptomatic and do not require treatment, they are typically found during a routine colonoscopy (Moorman, 2012). It is currently thought that these diverticulitis form due to low fiber content in the western diet, the diverticulitis usually form at the weakest point in the colon wall where penetration of the blood vessels occur (Mulligan, 2015). The low fiber diet with decreased internal contents results in a decrease in the size of the lumen, this causes the pressure exerted by the muscle contractions to be placed on the colon wall instead of the lumen (Scialli, Colechia, Marsaro, Schiumerini, & Festi, 2016). This misplaced pressure causes the wall of the colon to form the diverticula at the weakest points as mentioned above.

Significance of Pathophysiology
The pathophysiology of how the diverticula are formed also play a role in how they become inflamed. The formation of the diverticula leads to less grade chronic inflammation that is localized within the mucosa of the colon (Scialli, Colechia, Marsaro, Schiumerini, & Festi, 2016). Acute diverticulitis is an extension of this inflammation of the mucosa that leads to micro-perforations, and at times macro-perforations, in the wall of the diverticula (Scialli, Colechia, Marsaro, Schiumerini, & Festi, 2016). The inflammation of the diverticulum that invades the mast cells that are present there and this is believed to lead to the inflammatory pain (Scialli, Colechia, Marsaro, Schiumerini, & Festi, 2016). The diverticulum can become blocked off at the lumen to the colon with fecal contents, due to the slow mobility with a low fiber diet (Sutamtewagul et al., 2015).

Implications for Nursing Care
Initial nursing care to be provided by the Advanced Practice Nurse (APN) should include an abdominal computed tomography imaging or CT scan to evaluate the degree of inflammation of the diverticulitis and rule out any perforation or abscess formation (Sartelli et al., 2016). Blood specimens should be collected and evaluated for leukocytosis and amensia as a perforation could be resulting in free fluid in the peritoneal space (Sartelli et al., 2016). Treatment of diverticulitis also include resting the bowel with a clear liquid diet, to prevent an abscess in more severe case surgery (Moorman, 2012). Nursing care should include patient education about increase fiber intake, frequent abdominal assessments, especially bowel movements for blood and changes (Moorman, 2012). Recent studies are showing evidence that in cases of uncomplicated diverticulitis antibiotic therapy can be avoided, however a majority of practitioners continue to prescribe antibiotics (Centor, 2015). Surgical interventions for diverticulitis are becoming less common as it has been found that up to 25% or post-operative patients continue to have recurrent or unresolved abdominal symptoms, therefore surgery is being avoided whenever possible for these patients (Morris, Regenborgen, Hardiman, & Hendron, 2014).

Conclusion
Diverticulitis can have some very serious complications. A perforation of the bowel can lead to peritonitis and even death. With such a large population of this country living with diverticulitis it is highly likely that Advanced Practice Nurse (APN) will be responsible for diagnosing and treating diverticulitis. It is important that the APN be well informed of the pathophysiology of diverticulitis and the up to date recommended treatment for this disease. The APN will need to provide proper education to clients, such as maintaining a high fiber diet and avoiding smoking and alcohol. Evaluation of the clinical diagnosis and management of diverticulitis can decrease healthcare costs and improve patient outcomes.

References
Wilkins, T., Embry, K., & George, R. (2013). Diagnosis and management of acute diverticulitis. American Family Physician, 87(9), 612-620.