

Diverticular disease

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This case study will focus on Joan a 60 year old woman who is suspected by her General Practitioner of suffering from Diverticular Disease. The case study will discuss the causes of Diverticular Disease and the symptoms presented and also the different diagnostic modalities used and image appearance. The prognosis, management and treatment of the disease in Joan's case are also considered.

Background

There are two forms of diverticular disease. Diverticulosis indicates asymptomatic diverticular disease, and diverticulitis indicates the presence of associated inflammation (Jones 1999). As stated in World Gastroenterology Organisation (2007) diverticular disease accounts for 75% of cases and has no complications. Complicated diverticular disease accounts for 25% of cases and associated pathologies are abscesses, fistula, peritonitis and sepsis. Only a small percentage of patients with diverticulosis develop symptomatic diverticular disease.

In this case Joan had made an appointment with her GP as she had been experiencing intermittent episodes of abdominal pain in the left iliac fossa for over 4 weeks. The pain and bloated feeling she experienced happened normally after meal times. She advised her doctor that the pain was coupled with a cramping sensation and alternating periods of constipation and diarrhea. She was not experiencing any nausea or vomiting and had no weight loss or gain during this time. As Joan has a history of follicular large cell lymphoma she is concerned that the symptoms are a return of the lymphoma.

Aetiology

A diverticulum is a single sac-like pouch of mucous membrane which projects through the colon wall. The protrusion occurs in weak areas of the bowel wall through which blood vessels can penetrate. There are normally multiple diverticula present. They can vary in size with a typical diameter of 5-10mm but they may reach a larger 20mm. (World Gastroenterology Organisation 2007) Diverticula occur when an area of weakness exists in the colon wall and is accompanied by increased pressure in the lumen (Crawford 1999). Dietary fibre intake can have an impact on lumen pressure, if there are low amounts of fibre in the diet this increases peristalsis which increases lumen pressure and results in herniation in the colon wall. (Salzman & Lillie 2005).

The presence of Diverticular Disease increases uniformly with age.

Approximately 50% of all people have diverticula by the time they are 50 years of age and nearly 70% of all people have diverticula by the time they are 80 years of age. 75% of people with diverticula are asymptomatic (Janes et al, 2006).

Predisposing factors for the formation of diverticula include a low-fibre diet and physical inactivity (Salzman & Lillie 2005). As Diverticular Disease is mostly asymptomatic people who have it are not aware of it and it is often found when the patient is undergoing investigation for another problem.

Many symptoms experienced are similar to Irritable Bowel Syndrome.

Patients may complain of bloating and have an area of tenderness in the left lower-abdominal quadrant. Patients report constipation more often than

diarrhea. Stool consistency may change and become flat or ribbon-like (Meyer 2003).

A small number of patients suffer with a perforated bowel and peritonitis and arrive in the A&E department in a shocked and distressed state. These patients present with severe

abdominal pain and a high-grade fever with nausea and vomiting (Hyde 2000).

Diverticular disease is the most common cause of lower gastrointestinal bleeding, which can occur because of the thinning of colon walls. The bleeding typically is painless, starts abruptly, and involves large volumes of blood (Kang et al 2004; Salzman & Lillie, 2005; Stollman & Raskin, 1999).

Diagnosis

Various imaging modalities can be used in the diagnosis and management of Diverticular Disease. Traditionally, diverticula are identified by barium enema, and additional investigations are performed to rule out other potential causes of symptoms in individual patients, eg (Crohn's disease or ulcerative colitis). Barium studies superbly depict diverticula, the colonic mucosa and lumen, spasm, and muscle hypertrophy (Joffe 2008). (Figure 1).

Initial assessment of patients with suspected acute diverticulitis comprises a thorough history and physical examination including abdominal, rectal, and pelvic examinations. Useful initial examinations may include complete blood cell count, urinalysis, and flat and upright abdominal radiographs. If the

clinical picture is clear enough to diagnose diverticulitis, no other tests are indicated (Aydin & Remzi 2004).

Figure 1: This radiographic barium study of the large bowel demonstrates diverticular disease. A well-defined diverticulum, an outpouching of mucosa through the colonic wall, is seen in the centre of the image.

When further diagnosis is required CT scanning with contrast is an alternative to colonoscopy or barium enema and is the recommended diagnostic test for diverticulitis (Kang et al 2004). CT offers a rapid, non-invasive, accurate method of diagnosing diverticulitis. It is more sensitive than a contrast enema for diagnosing diverticulitis, and allows demonstration of an abscess if present, which may require surgical or percutaneous drainage (Rao 1999). The possibility of the Barium contrast passing into the peritoneum if a perforation is present is another reason why CT scanning is the preferred modality when diverticulitis is suspected. CT can demonstrate extracolonic diseases (eg, genitourinary and gynaecologic abnormalities) that have a similar clinical presentation. (Levine et al 2005). At CT, diverticulitis appears as segmental wall thickening and hyperemia with inflammatory changes in the pericolic fat. Figure 2).

Figure 2: Diverticulitis. CT scan obtained with oral and intravenous contrast material shows wall thickening in the sigmoid colon (arrows) with adjacent inflammatory changes in the pericolic fat.

Another common finding is an "arrowhead sign". The arrowhead sign consists of focal thickening of the colonic wall with an arrowhead-shaped lumen pointing to the inflamed diverticula (Salzman & Lillie 2005).

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The major limitation of CT scanning is the potential difficulty in differentiating diverticulitis from colon carcinoma. Other limitations of CT are the high cost of the examination and its limited availability in certain regions of the world (Joffe 2008).

Colonoscopy is desirable in patients with chronic bleeding or an insidious change in bowel habit; these symptoms may be caused by cancer of the sigmoid colon, which is readily overlooked on barium enema in the presence of diverticular disease (Kriel & Probert 2007).

Prognosis

Asymptomatic diverticular disease comprises the majority of cases of diverticula. Symptoms only occur if obstruction develops, which is uncommon.

Symptomatic uncomplicated diverticular disease usually has non-specific symptoms of abdominal discomfort/tenderness and no systemic signs of inflammation (Kriel 2007).

Complicated diverticular disease may include the formation of an abscess, fistula's, perforation and bleeding. An abscess is more likely in a patient who has had previous episodes of diverticulitis. Ultrasound, barium enema or CT scanning detects the majority of diverticular abscesses. Many will resolve with antibiotic treatment and resting the bowel by not allowing the patient to eat or drink. Drainage of an unresolved abscess would be required or if this was unsuccessful surgery.

As stated in Salzman & Lillie (2005) peridiverticular abscesses can progress to form fistulas between the colon and surrounding structures in up to 10 percent of patients. Colovesical fistulas are the most common variety and require surgery for treatment. Fistulas involving the bladder are more common in men than in women (2: 1), in patients with previous abdominal surgery and in immunocompromised patients. They are best shown by Barium enema (Kriel & Probert 2007).

Perforation is another dangerous possibility. If the diverticulum perforates, it becomes an acute surgical emergency requiring immediate attention to reduce the extent and degree of faecal contamination in the abdominal cavity. The mortality rate can be as high as 35 per cent (Porrett & Daniel 1999).

Diverticular disease remains the most common cause of massive lower gastrointestinal bleeding, accounting for 30-50% of cases. It is estimated that 15% of patients with diverticulosis will bleed at some time in their lives. The bleeding is usually abrupt, painless, and large in volume, with 33% being massive, requiring emergency transfusion. Despite this, bleeding stops spontaneously in 70-80% of cases (World Gastroenterology Organisation 2007).

About one-third of those who develop diverticulitis have a second episode, and of this group, half generally have a third attack. Twenty percent of patients develop complications after the first attack and 60% after a second attack (Ehrlich 2006).

Although there is no cure for diverticular disease a change in dietary habits can alleviate the symptoms.

Treatment

Diverticular disease is treated, in the first instance, by increasing the amount of fibre in the patient's diet. Fibre helps some sufferers by stimulating the digestive tract, while for others it may make the symptoms worse. People should drink two to three litres of fluid each day, preferably water to increase their fluid intake. Fibre causes stools to become larger, softer and therefore easier to pass. This helps to prevent constipation, pressure on the bowel wall and diverticular pockets becoming inflamed and infected. It will not cure diverticula already present, but it might help prevent further manifestation (Hyde 2000). Patient education is important and the patient should be given information on dietary intake, fluid intake, regular exercise and encouragement to report any recurrence of abdominal pain, fever or chills and rectal bleeding.

Patients with mild symptoms of bloating or abdominal pain may benefit from anti-spasmodic drugs. Oral antibiotics are sufficient when symptoms are mild but when severe diverticulitis occurs presenting with high fever and pain, patients are hospitalized and given intravenous antibiotics. Surgery is needed for those with persistent bowel obstruction or abscess not responding to antibiotics. About 15-25% of patients presenting with a first episode of acute diverticulitis have complicated disease that requires surgery. Common surgical indications are free-air perforation with fecal peritonitis, uncontrolled sepsis, fistula formation and intestinal obstruction.

A 2-stage surgical approach is the most common surgical procedure performed today for the emergency treatment of acute diverticulitis. A traditional Hartmann procedure is commonly performed, which involves removing the diseased part of the intestine and then reconnecting the healthy segments (called anastomosis). The patient can then have normal bowel movements (Nguyen 2008). When the colon becomes very inflamed it is not safe to rejoin the colon and rectum, a colostomy procedure is then carried out. This can be temporary until the inflammation clears but is mainly carried out only when the patient experiences life-threatening infection.

Conclusion

Since Joan's appointment with her GP she was referred for a barium enema as her history of lymphoma was a cause for concern. Mild diverticulosis was observed in the sigmoid colon. A further Colonoscopy investigation was carried out to exclude any underlying pathologies. These images returned negative. Joan was referred to a Dietician for information and support in changing her eating habits. She is now eating a high fibre, low fat diet containing plenty of fruit and vegetables, wholemeal bread and cereals. Her fibre intake was increased over a period of six to eight weeks to allow her body to adjust to the amounts. She is drinking 8 glasses of water a day to prevent constipation. Daily exercise is helping reduce the frequency of painful episodes that she was experiencing previously. Joan will always have diverticular disease but she can control the symptoms and lead a normal life by continuing with her new lifestyle.