

# [Acute inflammation, appendicitis in young adult](https://assignbuster.com/acute-inflammation-appendicitis-in-young-adult/)

## Case

Thomas is a 23-year-old graduate student that has been admitted to the emergency room with severe abdominal pain in his lower right abdomen. He has been experiencing the pain the last 2 days. Initially he experienced moderate tenderness in a general area around his lower abdomen. He has also been experiencing low appetite and nausea.

Etiology

The cause of appendicitis usually occurs as a result of the blockage of the opening of the appendix into the cecum. The blockage of the opening can lead to build up of mucus that may cause a variety of problems within the appendix such as swelling of the lymphatic tissue, thrombosis of vessels and increased internal pressure of the walls of the appendix. Bacteria that are normally found in the appendix may start to leak out of the appendix due to blockage. The bacteria can trigger a response from the body known as acute inflammation.

Pathogenesis

The obstruction of the appendix leads to increased intraluminal pressure. This causes constriction of surrounding vessels which results in decreased blood and oxygen supply to the appendix. This may result in necrosis of the appendix. The combination of increased intraluminal pressure and weakening of the walls of the appendix may cause may cause leakage of bacteria that is normally found within the appendix. The bacteria will trigger an acute inflammatory response of the body.

The inflammatory response starts with the release of chemical mediators and emigration of neutrophils to the site of infection. Chemical mediators such as histamine, prostaglandin, leukotrienes, bradykinin, interleukin are released to mediate the inflammatory process. Histamine and bradykinin promotes vasodilation and increased permeability. Prostaglandins and leukotrienes can result in spasm and edema. This leads to swelling and pain of the appendix found in the right lower quadrant of the abdomen. Interleukin-1 is also released to increase the number of white blood cells. Neutrophils will attempt to recognize the infection and destroy it by ingestion. Ingested and destroyed bacteria will lead to pus formation (exudate). If not resolved, appendicitis can lead to further complications such as rupture of the appendix, which may lead to peritonitis (spread of infection to lining of abdomen and pelvis). Infection may also enter the blood and travel throughout the body which can be life threatening.

Diagnosis

Patients with appendicitis often have elevated body temperatures and pain and tenderness when palpated in the lower right abdomen. These symptoms can be found through physical examination. Further tests must then be done to verify any findings. An X-ray of the abdomen can be done to detect any obstruction that may be causing appendicitis. A swollen or enlarged appendix can be seen through ultrasound, however the absence of the appendix through ultrasound does not omit the diagnosis of appendicitis because it may not be revealed. CT scan can also be used when available and is usually more accurate in diagnosing appendicitis than ultrasound.

Clinical Manifestations

In early cases, decreased bowel function, decreased appetite may be an indication of appendicitis. Abdominal pain may not be localized and is dispersed throughout the lower abdomen. As appendicitis progresses it usually manifests in abdominal pain in the right lower quadrant. Nausea and vomiting may also occur due to obstruction.

Treatment

Surgical removal of the appendix (appendicetomy) is usually done. Antiobiotics may be given to reduce the spread of infection and pain medication may be used to manage pain.

Prognosis

Recovery from surgical removal is usually between 10 to 28 days. Appendicitis may also resolve spontaneously from inflammatory response.

## References

G. B. Ryan, G. Majno. Acute inflammation. A review. Am J Pathol. 1977 January; 86(1): 183-276.

J R Johnson. Pathogenesis of acute appendicitis. Br Med J. 1978 February 4; 1(6108): 305.

Chronic Inflammation – Rheumatoid Arthritis

Case

Betty is a 46-year-old woman who has been experiencing increasing pain in the joints of her wrists and fingers over the past year. Her symptoms have worsened and increased in frequency. She now experiences stiffness and swelling of the joints in her hand and also in her knees. She has since been diagnosed with early rheumatoid arthritis.

Etiology

Rheumatoid arthritis is a chronic inflammatory disorder that mainly affects synovial joints. The cause of RA is unknown. However it is known to be some form of autoimmunity in which unknown factors trigger the immune system of the body to attack it’s own tissues through inflammatory response.

Pathogenesis

There are many cell mediators that are activated in the body in a patient with RA. Changes initially occur at the synovial lining of joints. Symptoms arise mononuclear cells increase in number and accumulate around the synovium. This causes swelling of the joint. As RA progresses, it’s characteristics develop similarly to an acute inflammatory process. Many inflammatory mediators are found in the synovial fluid and progressively cause the destruction of the cartilage. A large number of neutrophils can be found which are mainly responsible for acute inflammatory response. Histamine, Cytokines and chemokines can also be found aiding in the inflammatory response. T lymphocytes also play an important role in RA by increasing production of antibodies that damage the synovium. These antibodies activate the body’s complement system which plays an important role in immunity and inflammation by destroying cells in ways such as cell membrane destruction, leukocyte activate, adhesion and phagocytosis. Because the disease is autoimmune, inflammatory response occurs intermittently through life with no resolution (chronic).

Diagnosis

Diagnosis of RA is dependent on a set of criteria. At least 4 of the following criteria must be present: Morning stiffness that last about 1 hour, Arthritis of 3 or more joint areas (finger, wrist, elbow, knee, ankle, toes), symmetric arthritis, rheumatoid nodules, erosion of bone and reduced calcium in bones, and positive rheumatoid factor blood test.

Clinical Manifestations

RA generally manifests in symptoms involving the joints such as pain, swelling, tenderness, and stiffness. Rheumatoid nodules can also occur near the joints. RA can progressively lead to deformities of the joints such as the fingers and toes.

Treatment

Currently there is no cure for RA. Treatment is aimed at decreasing pain and inflammation and protecting the joints from further degradation and maintain function. Treatments can vary greatly due to the complex nature of the disease. This can involve rest to prevent inflammation and exercise to strengthen the joints and muscles. Medical treatments for RA are also available and include NSAIDs (non-steroidal anti-inflammatory drugs), steroids, DMARDs (disease modifying anti-rheumatic drugs), biological agents, immunosuppressive drugs and supplements. NSAIDs and steroids are mainly used as anti-inflammatory drugs and do not affect the progression of the disease. DMARDs are used to reduce the progression of RA but are not able to halt it’s progression. Biological agents are used to reduce destruction of the joints.

Prognosis

Progression of RA can vary from patient to patient. In most, the disease has a life long progression which eventually leads to some level of functional disability.