

Evaluating the Treatment of Patients with Appendicitis, Perspectives on Challenges Professional Work

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Abstract

The acute appendix is one of the most common acute illnesses encountered in "Abdominal Surgery" and Emergency Disorders in Health Institutions in Kosovo. The most important implication of the appendix is acute appendicitis, which is the most common surgical emergency worldwide. The inflammation of the appendix is generally secondary to obstruction of the lumen of the appendix. Most commonly lymphoid hyperplasia, fecoliths, foreign bodies, tumors or parasites cause it. The disease is present at all ages, but mostly between the ages of 10 to 30 years rarely before the age of 2 and the elderly.

Purpose of the study is to present in a more comprehensive, detailed way a pathology very frequent, and often create severe situations during the daily professional work that nurses develop in health care. Also, the presentation of quantitative and qualitative data regarding the treatment of appendectomies in the "Abdominal Surgery Clinic" -in the University Clinical Center of Kosovo (UCCK), the number of treated patients and the methods used.

The study included 134 patients in the Department of "Abdominal Surgery B" at the University Clinical Center of Kosovo (UCCK) in January-December 2019. The database included in this study consists of data obtained from the operation register as well as contacting the medical staff. Also, all patients after the diagnosis are treated surgically. The scenes are divided by sex, age, and place of residence.

From the patient protocol book at Abdominal B Surgery Department, data for 134 diagnosed patients with pronounced accumulation during January-December 2019 were collected. Activities: Acute Appendix remains the most common type of surgical interventions in the "Surgery Clinic".

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Introduction

Appendicitis is inflammation of the appendix. Symptoms commonly include right lower abdominal pain, nausea, vomiting, and decreased appetite. However, approximately 40% of people do not have these typical symptoms.^{1,2} Severe complications of a ruptured appendix include widespread, painful inflammation of the inner lining of the abdominal wall and sepsis.³ Appendicitis caused by a

blockage of the hollow portion of the appendix.¹⁰ This is most commonly due to a calcified "stone" made of feces. Inflamed lymphoid tissue from a viral infection, parasites, gallstone, or tumors may also cause the blockage. This blockage leads to increased pressures in the appendix, decreased blood flow to the tissues of the appendix, and bacterial growth inside the appendix causing inflammation¹¹. The combination of inflammation, reduced blood flow to the appendix and distention of the appendix causes tissue injury and tissue death. If this process is left untreated, the appendix may burst, releasing bacteria into the abdominal cavity, leading to increased complications.^{12,13}

The diagnosis of appendicitis is largely based on the person's signs and symptoms.¹¹ In cases where the diagnosis is unclear, close

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observation, medical imaging, and laboratory tests can be helpful. The two most common imaging tests used are an ultrasound and computed tomography (CT scan).^{4,5} CT scan has been shown to be more accurate than ultrasound in detecting acute appendicitis¹⁴. However, ultrasound may be preferred as the first imaging test in children and pregnant women because of the risks associated with radiation exposure from CT scans.⁴

The standard treatment for acute appendicitis is surgical removal of the appendix.^{6,11} This may be done by an open incision in the abdomen (laparotomy) or through a few smaller incisions with the help of cameras (laparoscopy). Surgery decreases the risk of side effects or death associated with rupture of the appendix.³ Antibiotics may be equally effective in certain cases of non-ruptured appendicitis.⁷ It is one of the most common and significant causes of severe abdominal pain that comes on quickly. In 2015 about 11.6 million cases of appendicitis occurred which resulted in about 50,100 deaths.^{8,9} In the United States, appendicitis is the most common cause of sudden abdominal pain requiring surgery.² Each year in the United States, more than 300,000 people with appendicitis have their appendix surgically removed.¹⁵ Reginald Fitz is credited with being the first person to describe the condition in 1886.¹⁶

Signs and symptoms

The presentation of acute appendicitis includes abdominal, nausea, vomiting and fever. When the appendix becomes inflated and inflamed, it begins to irritate the adjacent abdominal wall. This leads to localization of the pain in the lower right quadrant. This classic migration of pain cannot be noticed in children under the age of three.

Signs include localized findings in the right iliac fossa. The abdominal wall becomes very sensitive to palpation. There are severe pain with sudden lower backpressure relief (rebound sensitivity). If the appendix is retrocecal (localized behind the cecum), even deep pressure in the lower right quadrant cannot cause tenderness (silent appendix).

This is because the cecum protects the pressure-inflamed appendix. When the appendix lies entirely within the pelvis, abdominal rigidity is usually complete. In such cases, a digital colon

examination resembles sensitivity in the rectovesian pocket. Coughing causes tenderness in this area (McBurneys point), called dubbed Dunphy's historically.

Causes

Acute appendicitis seems to be the end result of a primary obstruction of the appendix.^{17,10} Once this obstruction occurs, the appendix becomes filled with mucus and swells. This continued production of mucus leads to increased pressures within the lumen and the walls of the appendix. The increased pressure results in thrombosis and occlusion of the small vessels, and stasis of lymphatic flow. At this point spontaneous recovery rarely occurs. As the occlusion of blood vessels progresses, the appendix becomes ischemic and then necrotic. As bacteria begin to leak out through the dying walls, pus forms within and around the appendix (suppuration). The end result is appendiceal rupture (a 'burst appendix') causing peritonitis, which may lead to sepsis and eventually death. These events are responsible for the slowly evolving abdominal pain and other commonly associated symptoms.¹²

The causative agents include bezoars, foreign bodies, trauma, intestinal worms, lymphadenitis and, most commonly, calcified fecal deposits that are known as appendicoliths or fecoliths.^{18,19} The occurrence of obstructing fecoliths has attracted attention since their presence in people with appendicitis is higher in developed than in developing countries.²⁰ In addition, an appendiceal fecolith is commonly associated with complicated appendicitis.²¹ Fecal stasis and arrest may play a role, as demonstrated by people with acute appendicitis having fewer bowel movements per week compared with healthy controls.^{19,22}

The occurrence of a fecolith in the appendix was thought to be attributed to a right-sided fecal retention reservoir in the colon and a prolonged transit time. However, a prolonged transit time was not observed in subsequent studies.²³ From epidemiological data, it has been stated that diverticular disease and adenomatous polyps were unknown and colon cancer exceedingly rare in communities exempt from appendicitis.^{24,25} And acute appendicitis has been shown to occur antecedent to cancer in the colon and rectum.^{26,27,28} Several studies offer evidence that a low fiber intake is involved in the

pathogenesis of appendicitis.^{29,30} This low intake of dietary fiber is in accordance with the occurrence of a right-sided fecal reservoir and the fact that dietary fiber reduces transit time.^{33,34}

Diagnosis

The diagnosis is based on a medical history (symptoms) and physical examination which may be supported by a rise in white blood cell neutrophils and image studies if needed. (Neutrophils are the main white blood cells that respond to a bacterial infection.) The stories fall into two categories, typical and atypical. The typical appendicitis involves several hours of generalized abdominal pain that begins in the umbilical region with associated anorexia, nausea or vomiting. The pain then "localizes" in the lower right quadrant where sensitivity increases intensely. It is possible that the pain can be localized in the lower left quadrant in people with situs inversus totalis. Combination of pain, anorexia, leukocytosis and fever is classical.

Atypical histories lack this typical progression and may include pain in the right lower quadrant as an initial symptom. Irritation of the peritoneum (inside lining of the abdominal wall) can lead to increased pain on movement, or jolting, for example going over speedbumps. Atypical histories often require imaging with ultrasound or CT scanning.^{31,32}

Management

Acute appendicitis is typically managed by surgery. However, in uncomplicated cases, antibiotics are effective and safe. While antibiotics are effective for treating uncomplicated appendicitis, 26% of people had a recurrence within a year and required eventual appendectomy. They work less well if an appendicolith is present. Cost effectiveness of surgery versus antibiotics is unclear.⁷

Pain medications (such as morphine) do not appear to affect the accuracy of the clinical diagnosis of appendicitis and therefore should be given early in the patient's care. Historically there were concerns among some general surgeons that analgesics would affect the clinical exam in children, and some recommended that they not be given until the surgeon was able to examine the person.⁷

Appendectomy

The surgical procedure for the removal of the appendix is called an appendectomy.

Appendectomy can be performed through open or laparoscopic surgery. Laparoscopic appendectomy has several advantages over open appendectomy as an intervention for acute appendicitis.⁷

Open appendectomy

For over a century, laparotomy (open appendectomy) was the standard treatment for acute appendicitis. This procedure consists of the removal of the infected appendix through a single large incision in the lower right area of the abdomen. The incision in a laparotomy is usually 2 to 3 inches (51 to 76 mm) long.

During an open appendectomy, the person through suspected appendicitis is placed under general anesthesia to keep the muscles completely relaxed and keep the person unconscious. The cut is two to three inches (76 mm) long and is made in the lower right abdomen, a few inches on the hip bone.

Once the abdominal cavity and the uterus are discovered, the surgeon removes the infected tissue and reduces the appendage from the surrounding tissue. After careful and close inspection of the infected area, and by ensuring that there are no signs that the surrounding tissues are damaged or infected, the surgeon will begin to close the cut. This means sewing muscle and using surgical caps or seams to close the skin. To prevent infections, the cut is covered with a sterile bandage.

Laparoscopic appendectomy has become an increasingly prevalent intervention for acute appendicitis since its introduction in 1983.⁷ This surgical procedure consists of making three to four incisions in the abdomen, each 0.25 to 0.5 inches (6.4 to 12.7 mm) long. This type of appendectomy is made by inserting a special surgical tool called laparoscope into one of the incisions. The laparoscope is connected to a monitor outside the person's body and it is designed to help the surgeon to inspect the infected area in the abdomen. The other two incisions are made for the specific removal of the appendix by using surgical instruments. Laparoscopic surgery requires general anesthesia, and it can last up to two hours. Laparoscopic appendectomy has several advantages over open appendectomy, including a shorter post-operative recovery, less post-operative pain, and lower superficial surgical site infection rate. However, the occurrence of intra-

abdominal abscess is almost three times more prevalent in laparoscopic appendectomy than open appendectomy.⁷

Prepare the operation

Treatment begins by advising the person who will have a food-related operation for a certain period, usually overnight before surgery. Intravenous infusion is used to hydrate the person who will have surgery. In addition, intravenous antibiotics such as cefuroxime and metronidazole are applied, can be administered early to give the right action, and thus reduce the spread of abdominal infections and postoperative complications in the abdomen or wound. If the person has respected the recommended diet of food and finds that his stomach is empty (without food in the last six hours) then a general anesthetic procedure may be applied. Otherwise, spinal anesthesia may also be applied in other cases.

Once the decision to perform an appendectomy has been made, the preparation procedure takes approximately one to two hours. Meanwhile, the surgeon will explain the surgery procedure and will present the risks that must be considered when performing an appendectomy. (With all surgeries there are risks that must be evaluated before performing the procedures) The risks are different depending on the state of the appendix. If the appendix has not ruptured, the complication rate is only about 3% but if the appendix has ruptured, the complication rate rises to almost 59%.⁷ The most usual complications that can occur are pneumonia, hernia of the incision, thrombophlebitis, bleeding or adhesions. Recent evidence indicates that a delay in obtaining surgery after admission results in no measurable difference in outcomes to the person with appendicitis.⁷

The professional surgeon is obliged to explain to the patient how long the healing process should take place. Abdominal hairs are also removed to avoid complications that may occur with regard to the cut. In most cases, patients who are being prepared for operation may have miscellaneous complications associated with different phobias, so they may experience mixed or vomiting, requiring treatment with medication prior to surgery. Antibiotics along with pain medications can be administered before appendectomies.

After surgery

Hospital lengths of stay typically range from a few hours to a few days but can be a few weeks if complications occur. The recovery process may vary depending on the severity of the condition: if the appendix had ruptured or not before surgery. Appendix surgery recovery is generally a lot faster if the appendix did not rupture.⁷ It is important that people undergoing surgery respect their doctor's advice and limit their physical activity so the tissues can heal faster. Recovery after an appendectomy may not require diet changes or a lifestyle change.

Length of hospital stays for appendicitis varies on the severity of the condition. A study from the United States found that in 2010, the average appendicitis hospital stay was 1.8 days. For stays where the person's appendix had ruptured, the average length of stay was 5.2 days.¹³

After the operation, the patient will be transferred to a post-anesthetic care unit, so his vital signs can be monitored closely to detect complications from anesthesia or operation. Pain management can be administered if necessary. Once the patients are completely awake, they move to a hospital room to be healed. Most individuals will be offered light juices a day after surgery, then progress to a regular diet when the intestines begin to function properly. Patients are recommended to sit on the edge of the bed and walk short distances several times a day. Movement is mandatory and pain medication can be given if necessary. Full recovery from appendectomies takes about four to six weeks but can be extended up to eight weeks if the operation is followed by a complication.

Prognosis

Most people with appendicitis recover easily after surgical treatment, but complications may occur if treatment is delayed or if peritonitis occurs. Recovery time depends on age, condition, complications and other circumstances, excluding alcohol-consuming persons depending on the amount of alcohol consumption, but is usually between 10 and 28 days. For young children (about 10 years old), the healing takes three weeks. An unusual complication of an appendectomy is "stump appendicitis": inflammation occurs in the remnant appendiceal stump left after a prior incomplete appendectomy.⁷ Stump appendicitis can occur

months to years after initial appendectomy and can be identified with imaging modalities like ultrasound.

Epidemiology

Appendicitis is most common between the ages of 5 and 40, the median age is 28. It tends to affect males, those in lower income groups and, for unknown reasons, people living in rural areas. In 2013 it resulted in 72,000 deaths globally down from 88,000 in 1990.⁸

In the United States, there were nearly 293,000 hospitalizations involving appendicitis in 2010.¹³ Appendicitis is one of the most frequent diagnoses for emergency department visits resulting in hospitalization among children ages 5-17 years in the United States.⁸

Materials and methods

The study was accomplished with helped the application of literature and information resources related to the subject, the analysis of the materials and the data provided, the creation of a nursing plan for patients with acute appendicitis, the outcomes, and conclusions. The data obtained from the literature and the statistical analysis of the materials are presented in descriptive and tabular terms, including some diagrams in which the graphical presentation of data is considered as the most appropriate and comprehensible form, also this paper concludes the evaluation, measuring the performance (quality) of nursing care in patients with acute appendicitis in the "Abdominal Surgery Clinic" at UCCK, Kosovo. The research was conducted on the basis of anamnestic data, age, gender and place of residence. In this study, 134 patients diagnosed with acute appendicitis in the Department of "Abdominal Surgery B" in UCCK were included in the period January-December 2019.

Results

Gender	Nr. of patients with acute appendicitis	% of patients with acute appendicitis
Men	83	61.94%
Females	51	38.06%
Total	134	100%

Table1. Male-female ratio.

From the patient protocol book in the Abdominal Clinic, collected data for 134 patients with acute appendicitis for 2019 were collected. Table 1 and Figure 1 show the number of patients with acute appendicitis, of 134 patients 83 is males or 61.94% and 51 are women or 38.06%. Masculine gender dominates with the highest % of patients than female gender (Table 1. Male-female ratio).

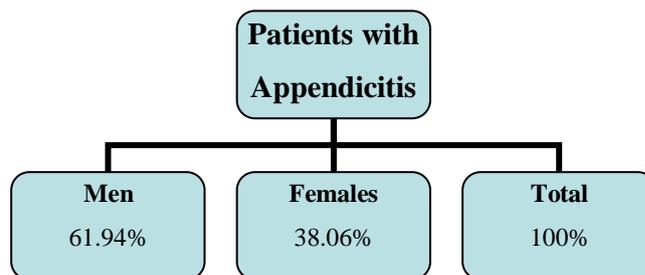


Figure 1. The acute appendicitis in this study was found to be most commonly reported in the ages of 15-31, presenting both genders.

Age group	Nr. of patients	Percentage (%)
15 - 31	86	64.18%
32 - 45	28	20.90%
Over 45	20	14.92%
Total	134	100%

Table 2. Presentation of cases by age group.

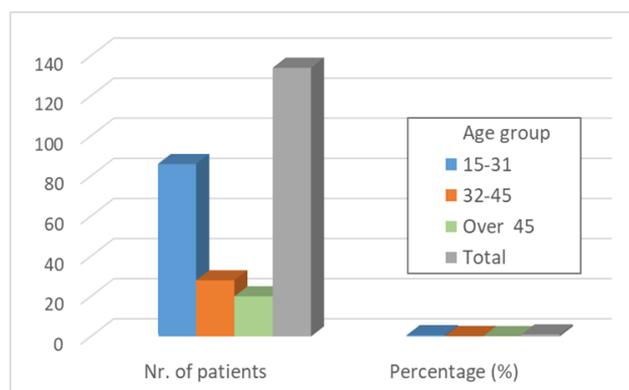


Figure 2. Presentation of cases by age group.

One of the most common differences in the structure of the disease within the framework of a population is that of the country where they live. (Table 2. Presentation of cases by age group). According to this study, the capital of Kosovo, Pristina, dominates as a place of

residence, with patients with acute appendicitis represented by 21.64%, respectively 29 patients (Table 3. Presentation of cases by settlements).

Name of residence	No. of patients with acute appendicitis	% of patients with acute appendicitis
Prishtine	29	21.64%
Fushe Kosove	7	5.22%
Vushtrri	3	2.24%
Ferizaj	8	5.97%
Deçan	1	0.75%
Gjilan	4	2.98%
Kaçanik	3	2.24%
Obiliq	4	2.98%
Viti	1	0.75%
Podujeve	19	14.18%
Kamenice	1	0.75%
Mitrovice	2	1.49%
Peje	1	0.75%
Gjakove	1	0.75%
Prizren	2	1.49%
Lipjan	12	10.45%
Drenas	19	14.18%
Skenderaj	3	2.24%
Shtime	4	2.98%
Malisheve	8	5.97%
Total	134	100%

Table 3. Presentation of cases by settlements.

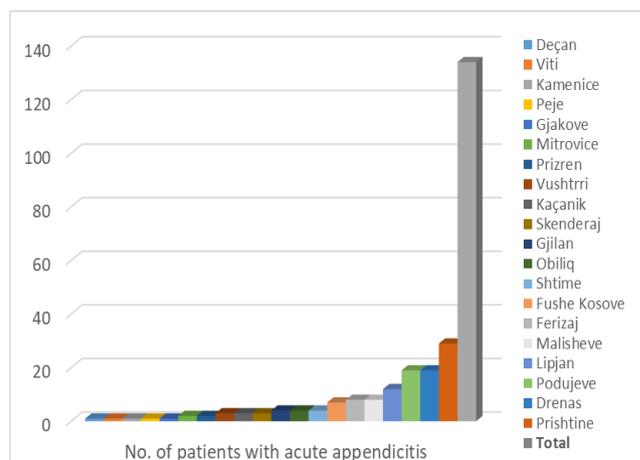


Figure 3. Presentation of cases by settlements.

Discussion

Based on the data presented in this paper related to the different indicators of services in the UCCK "Clinic of Abdominal Surgery" results that the number of cases of acute appendicitis is great. Moreover, it represents the highest urgency of the surgical treatments performed in this clinic. The results obtained in the study show a greater distribution of the masculine gender (61.94% / M, 38.06% F). Most affected are citizens from Prishtina with 21.64% of cases (29/134). Patient history and physical examination are the basis for the diagnosis of acute appendicitis. The auxiliary role during diagnosis is leukocytosis and radiological examinations. It is noteworthy that the neglect and delay of patients for medical treatment leads to a delayed diagnosis and this affects the growth of cases of complicated appendicitis. After the diagnosis and the termin of the patient's operation, the important moment is their urgent treatment, which depends on the phases of developing appendicitis and the accompanying disease of the patient. In every patient hospitalized, the antibiotic therapy separation is important as prophylaxis in uncomplicated appendicitis, which reduces the incidence of postoperative infection, or both curative and complicated. Post-operative preparation and antibiotic therapy reduce post-operative complication and mortality.

Based a professional care and a team of qualified specialists and the care of the nursing team, the success of clinic cases is very large, as well as the satisfaction with the services provided there.

Conclusions

The diagnosis of appendicitis is determined depending on the history and examination objective. Leukocytosis is significant when it is present. The most commonly used treatment is appendectomy. From this data in this analytical study, we could conclude that the first diagnosis is the most effective way of preventing the disease and patient's operation. Acute appendicitis as a medical emergency requires close attention to the clinic, timely response, and serious approach to preventing complications that may have. The identification of this pathology should take into account any Doctor who work to the Department of Emergency or at the "Clinic of Abdominal Surgery". Traditional or open appendectomy remains in the most common form of acute apistocritic surgical treatment, while consideration should be given to the application of laparoscopes for the fact that it enables faster recovery of the patient. Also important is nursing care for providing timely therapy and patient observation during the first 24 hours, with vital importance is being the provision of educational-health programs aimed at reducing morbidity and preventing infections during the operation of patients. The role of nurses is extremely important in managing cases of appendicitis, including preoperative, intra-operator and post-operative phases. All this requires a permanent process of increasing professional skills, enriching the knowledge and developing a closer and more effective communication with the patient and family. It is very important to continue helping and influence the establishment of a positive and trusted relationship nursing and patient, provides advanced care (nursing care) to provide comfort or relieve the pain. Monitoring respiratory and hemodynamic parameters, early intervention to prevent further injury (prevention) is the best mechanism for success after surgery and a quick rehabilitation of health and patients.

Recommendations

Awareness of nursing staff to show proper care in managing acute apnea patients. Nursing personnel should have no negligence in any treatment procedures for the disease. The nursing staff takes special care in preventing nosocomial infections during the management of patients with acute apnea.

Confidentiality among colleagues, patients, family members, and other health care staff should be of particular importance.

Declaration of Interest

The authors report no conflict of interest.

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