*Basrah Journal Of Surgery*

*Original Article*
*Bas J Surg, September, 17, 2011*

# ACUTE APPENDICITIS, A QUALITY OF CARE STUDY IN BASRAH GENERAL HOSPITAL

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## Abstract

This study is designed to evaluate the parameters that indicate the quality of care in acute appendicitis. It is a prospective study in Basrah General Hospital.

One hundred ten patients underwent appendectomy in the period between March and July 2010, were studied according to a data collection sheet.

The mean duration of symptoms was 29.2 hours and 10% of patients visited the hospital twice. Decision to operate depending on clinical diagnosis alone done in 14.54% of patients while blood cell count was the most frequent investigation done in 78.18% of the patients.

The mean waiting period was 6.6 hours. All patients received antibiotics postoperatively while antibiotic prophylaxis used in 74.5%. Rate of perforation of appendix was 12.7%.

Histopathological examination of the removed appendix done in 7.27%. The mean hospital stay was 44.02 hours with 20% of patients developed post operative complications.

Most of our patients were satisfied with hospital services, facilities and staff behavior.

In conclusion, non-utilization of investigations in some patients, long waiting period, high complication rate and extended usage of antibiotics are aspects among others which need to deal with by conducting hospital audits.

## Introduction

High standard quality is the ultimate goal of every health system, as the type of quality of care is what the patient seeks. In addition surgeons must not only ensure the results of their surgical work but also must measure the quality of their department of surgery[1,2]. But what is meant by quality? This is a difficult question to answer because of different viewpoints between doctors, patients and health institutes.

In their attempt to solve this issue, the institute of Medicine in North America proposed six aspects or dimensions within the overall concept of quality which can be summarized as follow[3]:

1- Safety: care provided in a way that avoids harm or exposure to unnecessary risk.

2- Effectiveness: care that produces the optimum outcome for a patient.

3- Patient centeredness: healthcare based on partnership between healthcare professionals, patients and where appropriates their families that is delivered with compassion and responsive to patients, needs, values and preferences.

4- Timeliness: healthcare provided at the time it is needed within an appropriate setting.

5- Efficiency: healthcare which reflects value for money.

6- Equity: healthcare provided on the basis of clinical need, delivered in a way to reduce differences in health status and outcomes across various groups.

In this article we choose patients presented with acute appendicitis as a common surgical condition to evaluate type of care they received in Basra General Hospital.

## Patients and method

This is a prospective study performed in Basrah General Hospital, male and female surgical wards between 15th of March 2010 to 10th of July 2010.

All patients who were admitted successively with a diagnosis of acute

appendicitis included in this study. Information gathered according to a pre written data collection sheet which includes the number of the cellular phone (mobile) of the patient or his/her relative in order to contact the patient after discharge with taking permission in advance for the call (a minimal of two calls done for each patient). Diagnosis depends on history and clinical examination with or without investigation such as urinalysis, total white blood cell count in addition to abdominal ultrasound examination. Added investigations done when needed as HB%, blood urea, random blood sugar, ECG, plain x-ray of abdomen and chest x-ray.

Every patient was asked before discharge about his satisfaction regarding service provided, behavior of staff and availability of facilities.

## Results

A total of 110 patients who underwent emergency appendectomy in Basrah General Hospital were studied (after exclusion of another 13 patients because we couldn't contact them after their discharge from the hospital) in a period of 119 days (from 15th of March 2010 to 10th of July 2010).There were 62(56.36%) males and 48(43.64%) females with age mean of 22.6 year ranging from 7 to 80 years. There were 54(49%) patients with age range from 10 to 19 years and 17(15.4%) patients with age range of 20 to 29 years.

The mean duration of symptoms was 29.2 hours ranging from 1 to 240 hours, 61(55.45%) patients came to the hospital with duration of less than 6 hours, 28(25.45%) patients with duration of 6-12 hours and 21(19.1%) patients with duration more than 12 hours. Those who visited the hospital twice before admission were 11(10%) patients. Decision to operate, depending on history and clinical examination only, without any investigations established in 16(14.54%) patients (15 males and 1 female).The most common investigation done was total white blood cell count which performed in 86(78.18%) patients followed by urinalysis which done in 81(73.63%) patients, abdominal ultra-sound examination done in 39(35.45%) patients, and other investigations done in 16(14.54%) patients see table-I.

The mean waiting period in the hospital before operation (the total stay in emergency department and/or surgical ward) was 6.6 hours ranging from 1/2 hr to 49 hours. The waiting period was less than 6 hours in 61(55.45%) patients and between 6 to 12 hours in 28(25.45%) patients while it was more than 12 hours in 21(19.1%) patients.

Preoperative antibiotics were administered in 82(74.5%) patients during the waiting period, 59(53.6%) patients received a combination of intravenous Cefotaxime 1gm and Metronidazole 500mg (as single dose in 52 patients and two doses in 7 patients), 19(17.3%) patients received Metronidazole only (as single dose in 17 patients and two doses in 2 patients) and 4(3.6%) patients received single dose of Cefotaxime (table-II).

All the patients had postoperative antibiotics cover during their stay in the hospital as combination of Cefotaxime and Metronidazole in 94(85.5%) patients, or combination of Genatmycin and Metronidazole in 11(10%) patients, or Gentamycin in 5(4.5%) patients. In addition all the patients continued on antibiotics till stitches removal on 7th till 10th postoperative day (Table-II).

Perforation of appendix found in 14(12.7%) patients. Six of them were females and 8 were males they were of different age and had different waiting period (Table-III). Other pathology reported in 4(3.6%) female patients, two with ruptured right ovarian cyst, one with twisted right ovarian cyst and the last had salpingo-oophritis. Histopatho-logical examination of the removed

appendix performed in 8(7.27%) patients. Drainage of the peritoneal cavity by tube drain done in 6(5.45%) patients, three patients with perforated appendicitis, and the other three with non perforated appendicitis. The mean hospital stay was 44.02 hrs (ranging from 10 to 120 hrs). Postoperative complications occurred in 20(18.18%) patients. Eighteen (16.36%) patients had surgical site infection which was superficial in 11(10%) patients and deep in 7(6.36%) patients. Two (1.82%) patients developed paralytic ileus.

Every patient and/or the family was asked to respond to a questionnaire about the services provided, behavior of staff and facilities available. The answers were arranged as very good, good, accepted, bad and very bad (see table-IV) and majority of answers were good 73(66.4%) for provided services, 76(69.1%) for staff behavior and 66(60%) for available facilities.

## Discussion

In order to evaluate the care of our patients in the surgical wards at Basra General Hospital, we chose to study patients with acute appendicitis as they form a good bulk in the daily surgical practice following them in their journey from home to our hospital and after discharge to know how they were dealt with and what happened to them and their feelings toward the hospital.

So in the period of our study, there were 110 patients admitted to the surgical wards in a period of nearly three months. All underwent open appendectomy, through right grid iron incision, forming 60% of the total emergency operations performed within the same period. Nearly two thirds of the patients were in their teens and early twenties with male to female ratio of 1.2:1 which is comparable to other studies[4,5].

The mean duration of symptoms was 37.2 hours; 31.2 hours for patients with non-perforated appendicitis and 44.8 hours for those with perforated appendicitis. The mean duration is longer than that in western countries but shorter from that in other countries[4,6].

Those who discharged from outpatient department and readmitted latter on again as their symptoms persist were 11(10%) patients. Two of them developed perforation in the second admission, this raise the concern of early discharge from emergency department which might have adverse effect on patient care.

Appendectomy depending on clinical suspicion alone performed in 16(14.55%) patients and although diagnosis of acute appendicitis is mainly clinical, the decision to operate without investigation lead to the removal of normal appendix in 15–30% of cases[5]. Investigations were done in 94(85.45%) patients, which include laboratory tests as white blood cell count combined with urinalysis done in 82(74.54%) patients and abdominal sonography done in 39 (35.45%) patients which represents a low percentage as abdominal sonography is known to decrease the percentage of negative exploration for appendectomies and also decreases the time before surgery in addition to diagnose appendicitis in 10% of patients who were believed to have a low likelihood of the disease on physical examination[6]. Special investigations as computed tomography or laparoscopy were not used for diagnosis.

There were 61% of patients underwent surgery within 6 hours, 28% between 6 and 12 hours, and 21% had a delay more than 12 hours. In comparing our results with others, a study from Nigeria shows that only 9.6% underwent surgery within 6 hours[7], while a large study from United States shows , there were 75% of patients underwent operations within 6 hours, 15% between 6 to 12 hours and only 10% of patients faced a delay of more than 12 hours[8]. Approximately 75% of patients received antibiotics

preoperatively during the waiting period as multiple drugs in 71.9% and as monotherapy in 28.1%, in single dose in 89% and in two doses in 11%. While all patients were kept on antibiotics postoperatively during their stay and continued on antibiotics after discharge till stitches were removed at 7th to 10th day.

It is known that preoperative antibiotics given at induction of anaesthesia is effective in reducing wound complications after appendectomy but prolonged use of antibiotics is not justified as it is cost-ineffective and may cause unnecessary complications[9]. In our study it is impossible to determine the incidence of negative appendectomies because appendix subjected to histopathological examination in only 7(6.35%) patients.

Perforation of appendix found in 14(12.7%) patients, different rates of perforation ranging between 10% to 39% mentioned in different articles[6,10-14]. The usage of drain is usually unnecessary if adequate toilet has been done[7], but it is still used in our patients although on small scale (5.45%).The mean hospital stay was 44 hours, 36.4 hours for those with nonperforated appendicitis and longer than 84 hours for those with perforated appendicitis or with complications. Complications occurred in 20(18.18%) patients which is higher than what recorded in advanced countries.

Most of our patient's replies to the inquiries about services, facilities and staff behavior were positive. This may not reflect the real situation as our patients feel satisfied when the problem is over.

## Conclusion

The delay in visiting the hospital, non-utilization of investigations in some patients, low usage of abdominal ultrasonography, long waiting period, high perforation rate, less usage of histological diagnosis, high complication rate and extended use of antibiotics, all raises the concern about quality of surgical care.

The initial step to improve the quality of care is to start local/hospital audits.

Although most of our patients express their satisfaction regarding promptness of service, behavior of the staff and the facilities available in the hospital, we think other studies are needed to clarify this issue.

Table I: Type of investigations done

| Investigation | | WBC | Urinalysis | U/S |
|---|---|---|---|---|
| No.of pats. | M | 45 | 44 | 16 |
| | F | 41 | 37 | 23 |
| Total (%) | 86 | 81 | 39 | |

| B. Sugar | HB% | ECG | B.Urea | Abd.X- ray | CBP |
|---|---|---|---|---|---|
| 1 | 1 | 0 | 0 | 0 | 0 |
| 4 | 3 | 2 | 2 | 1 | 1 |
| 5 | 4 | 2 | 2 | 1 | 1 |

Table II: Types of Pre and Postoperative antibiotics used

| Antibiotics | pts. receiving 1 dose | pts. receiving 2 doses | Total |
|---|---|---|---|
| C+M | 52 | 7 | 59(53.6%) |
| M | 17 | 2 | 19(17.3%) |
| C | 4 | 0 | 4(3.6%) |
| Total | 73 | 9 | 82(74.5%) |

C = Cefotaxime
M = Metronidazole
G = Gentamycin

| Antibiotics | No. of pts | % |
|---|---|---|
| C+M | 94 | 85.5 |
| G+M | 11 | 10 |
| G | 5 | 4.5 |
| Total | 110 | 100 |

Table III: Patients with perforated appendix

| Patients | Waiting period | | |
|---|---|---|---|
| | < 6 hrs | 6 - 12 hrs | > 12 hrs |
| M | 2 | 4 | 0 |
| F | 3 | 3 | 2 |
| Total | 5 | 7 | 2 |

Table IV: Results of Questionnaire

| Item | Very good | Good | Accepted | Bad | Very bad |
|---|---|---|---|---|---|
| Services provided | 15 | 73 | 11 | 10 | 1 |
| Behavior of staff | 14 | 76 | 12 | 8 | 0 |
| Facilities available | 9 | 66 | 21 | 14 | 0 |

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