ORIGINAL ARTICLE

Outcome of Different Regimes of Antibiotics Used in patients with Acute Cholecystitis Secondary to Gall Stones according to severity of disease

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ABSTRACT

Aim: To assess the amendments in surgeons' practice of antibiotics used in the patients with cholecystitis secondary to gall stones according to severity of disease.
Methodology: After the approval of hospital ethical committee of the hospital. This descriptive study was done at Divisional Head Quarter Teaching Hospital, Mirpur Azad Kashmir. It was consisted on 300 hundred patients who presented in 2017 & 2019 and fulfill the inclusion criteria with gall stones. Written informed consent taken from every patients. The major variables included patients' demographics data, antibiotics used for surgical results.
Results: In this study 300 patients were included. The mean age of patients was 48.8±13.2 years. There were 154(51%) female and 146 (49%) patients were male. The mean age was 49.8±13.2 years. The severe cholecystitis patients received (> grade II), 12(41.4%) had ASA level of >2, compared to 12(8.5%) and 41(22.2%) of patients in mild and moderate acute cholecystitis respectively.
Conclusion: It is concluded that Tokyo Guidelines not only greatly influenced but also standardized the choice of antibiotics in patients without compromising the infective and surgical outcomes.
Keywords: Acute cholecystitis, Antibiotics, Gall Stones, Outcomes.

INTRODUCTION

Gall stone disease is a common complication and accounts for about 4-10% of all indoor patients for abdominal pain[1]. It was found that about 6-11% of patients had acute cholecystitis when patients with symptomatic gall stones were followed up to 8-13 years[2]. The severity of the disease may vary. It depends upon that whether some kind of secondary infection is present or not. The obstruction duration of caused by gall stone also plays significant role. If the patient has some co-morbidity like diabetes it also influences the clinical presentation. Patients who are develop acute gangrenous cholecystitis and compared to the patients who have no diabetes[3].

The treatment strategy usually consists of a course of antibiotics followed by surgery. It is always difficult to decide that which antibiotic and how long it should be given. However updated Tokyo Guidelines may be followed which help to decide that how long antibiotics should be given. These guide lines also help the choice of antibiotics. The guidelines divide the patients into three categories depending upon severity of infection[4]. The more sever is the infection the more prolong is the treatment. However, if the patients are having mild or moderate cholecystitis one may immediately perform laparoscopic cholecystectomy.

PATIENTS AND METHODS

After the formal approval of hospital ethical committee, this descriptive study was done in the Surgical Department at Divisional Head Quarter Teaching Hospital, Mirpur Azad Kashmir, who reported in 2017 and 2019. Three hundred patients were included in this study. All patients who were reported with the symptoms of right upper quadrant pain and diagnosed to had acute calculus cholecystitis on the basis of clinical and radiological signs who fulfill the inclusion criteria. A written informed consent was taken from every patient. Patients were divided into grade I, II and III according to severity of disease. Post-operative 30 day infective morbidity was also recorded. The information of patients regarding type of surgical intervention (laparoscopic or open cholecystectomy) and time of surgical intervention (early or delayed cholecystectomy) was also collected.

A four- port laparoscopic cholecystectomy was tried in all patients in 2018 and most of patients in 2017 except for a few (in whom open cholecystectomy was preferred due to increase body mass index (BMI) or previous surgery or surgeon's preference). Quantitative information was accounted for as means standard deviation. Qualitative data were accounted for as proportions and percentages.

RESULTS

In this study a total of 300 patients were admitted during these 2 non-consecutive years. The mean age was 49.8±13.2 years (Table 1). There were 154 (52%) female patients and 146 (49%) were male patients (Table 2). The antibiotics were used in 293(98%) patients and combination therapy in 150(50%) patients, monotherapy in 150(50%) patients underwent cholecystectomy while interval cholecystectomy was done in 37(10.4%). The major part of the patients with extreme acute cholecystitis

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have get combination treatment in mild and moderate acute cholecystitis while monotherapy was frequently used in patients. One hundred seventy four (58%) patients also received antibiotics on discharge, which includes 48 (41%) in grade I, 107(67%) grade II and only 19(83%) grade III (Table 3). 112(95%) patients operated as laparoscopic cholecystectomy, 142(89%) and 14(61%) patients in grades respectively. Overall, 268(89%) undergo cholecystectomy while late cholecystectomy was done in 30(10%), being highest in grade III acute cholecystitis like 4(17%). The conversion rate from laparoscopic to open cholecystectomy was 27 (9%), being most elevated 9(31%) in grade III and lowest 3(3%) in grade I. The complications were noted after 30 days of surgery in 15(5%) patients; infection was very common in 10(3%) patients (Table 4).

Table 1: Age distribution of patients (n=300)

Age (years)	No.	%
25-50	180	60%
51-75	120	40%
Mean±SD	49.8±13.2	

Table 2: Sex distribution of patients (n=300)

Gender	No.	%
Male	146	49%
Female	154	51%
M:F ratio	1:1.05	

Table 3: Demographic data of patients (n=300)

Data	Grade-I (n=117)	Grade-II (n=160)	Grade-III (n=23)
Co-morbid	47 (40%)	84 (52%)	11 (49%)
DM-II	18 (15%)	36 (23%)	7 (30%)
Hypertension	37 (32%)	31 (19%)	4 (17%)
IHD	5 (4%)	9 (6%)	1 (4%)
ASA Level			
II or less	108 (92%)	127 (79%)	14 (61%)
> II	9 (8%)	33 (21%)	9 (39%)
Hospital Stay			
48 hours or less	89 (76%)	93 (58%)	5 (22%)
> 48 hours	28 (24%)	67 (42%)	18 (78%)

Table 4: Data of empiric antibiotic used of patients (n=300)

Data	Grade-I (n=117)	Grade-II (n=160)	Grade-III (n=23)
Yes	112 (96%)	158 (99%)	23 (100%)
No	5(4%)	2 (1%)	0 (0%)
Combination therapy	45(30%)	93 (58%)	20 (87%)
Monotherapy	71 (61%)	67 (42%)	3 (13%)
Combination Therapy			
Ceftriaxone + Metronidazole	19(16%)	53 (33%)	11(48%)
Ceftriasone + Metronidazole + Ampicillin	13(11%)	21 (13%)	3 (13%)
Others	8 (7%)	16 (10%)	6 (26%)
Monotherapy or no antibiotic	77 (66%)	70 (44%)	3 (13%)
Monotherapy			
Ceftriaxone	29 (25%)	47 (29%)	3 (13%)
Cefazolin	43 (37%)	22 (14%)	0 (0%)
Ciprofloxacin	0 (0%)	2 (1%)	0 (0%)
Combination therapy or no antibiotic	51 (44%)	89 (56%)	20 (87%)
Metronidazole use	43 (37%)	83 (52%)	14 (61%)
Discharge on antibiotic	48 (41%)	107 (67%)	19 (83%)

Table 5: Surgical data of patients (n=300)

Data	Grade-I (n=117)	Grade-II (n=160)	Grade-III (n=23)
Lap. Chlecystectomy	112(95%)	142(89%)	14(61%)
Lap. Converted to open chole.	3 (3%)	16 (10%)	8(35)
Open cholecystectomy	2 (2%)	2 (1%)	1(4%)
Time of Cholecystectomy			
Early cholecystectomy	109 (93%)	139 (87%)	19(83%)
Late cholecystectomy	5(4%)	21 (13%)	4 (17%)
Postoperative Morbidity			
Wound infection	3(3%)	5(3%)	2(9%)
Intra-abdominal abscess	0	3(2%)	1(4%)
Chest infection	0	0	1(4%)

DISCUSSION

The act of utilizing of ceftriaxone in grade III acute cholecystitis might be partly credited to the significant expense of other alternative medications. The very common dosage of Ceftriaxone utilized in our study is 2 grams QID though the dose of Piperacillin/Tazobactam is 4.5 grams TID. Similarly, single drug use produces good results resulting in frequent use of single antibiotic. The combination of antibiotics were used which significantly reduced dropping from 73% to 48.5%.

It is suggested that it should just be utilized in patients who have biliary-enteric anastomosis or if the anerobic cover of different antibiotics is inadequate.6 In our study the Metronidazole was not only used in grade III (61%) patients but it also utilized in (37%) and (52%) patients in grade I and II respectively. The use of Metronidazole was significantly diminished when in grade I (62.5% in 2017 to 23.5% in 2019) and grade II acute cholecystitis (70% in 2017 to 44.4% in 2019).

In grade I and II, strongly recommends that early operative intervention.[5] Early cholecystectomy was done effectively in 95.1% and 87% patients with grade I and II cholecystitis. In grade III acute cholecystitis as irritation is a obstacle for early intervention so the TG13 suggests delayed cholecystectomy. The local inflammation may be controlled by doing gall bladder drainage. In this study practically 79.3% patients with grade III acute cholecystitis have undergone early cholecystectomy. We ended up in open cholecystectomy in 31% patients in grade III when contrasted with grade I and II consolidated (7%). Various recent literature and trials are in favor of early cholecystectomy in patients with grade III acute cholecystitis or in critically sick patients have demonstrated it safe and effective[7-9]. Similarly a recent review recommended early emergency cholecystectomy even in critically sick patients instead of percutaneous drainage of gall bladder. The rate of mortality after percutaneous cholecystostomy tube drainage (15.4%) is higher as compared to after early cholecystectomy (4.5%).10 Hence as the experience accumulated in our set up early cholecystectomy increased significantly in all grades (83.3% in 2017 to 91.9% in 2019, p 0.03).

The significant reduction was noted for the use of combination therapy, but related morbidity rate of infection remains unchanged over the years (6.3% in 2017 to 4.6%

in 2019). This clearly showed that antibiotics have limited role for infection preventing at surgical site as well as at distant site. There were multiple trials suggesting that antibiotics used perioperatively for different grades of severity of cholecystitis proved ineffective in infection prevention.[11] The use of antibiotics is still recommended in Tokyo Guidelines in these situations[3].

However, it is clear that inadvertent use of antibiotics results in bacterial resistance. Injudicious use of antibiotics is again not a cost-effective approach[12]. If surgeries are carried out without perioperative antibiotics, it will be beneficial for patients and whole will reduce the chance of bacterial resistance. The other side effects of antibiotics like allergic reactions, gastrointestinal side effects and anaphylactic reaction will be no longer[13,14]. The other studies reported that there is evidence of bacterial growth in samples and tissue cultures in those cased where intraoperative bile spillage occurred[15,16].

CONCLUSION

It is concluded that has positive impact and simplified the approach to the treatment of cholecystitis and it has positive impact on surgical outcome. The perioperative infective morbidity is significantly reduced. But further considerations are required to prevent bacterial resistance and to make surgical procedures more cost effective.

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