



A PROSPECTIVE OBSERVATIONAL STUDY ON PRESCRIBING PATTERN IN LIVER TRANSPLANT RECIPIENTS

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ABSTRACT

The liver transplant is a surgical procedure in which the diseased liver of recipient is replaced with the healthy liver of donor. Our research involved 70 patients who underwent liver transplant and it was single centered. This study's objective was to evaluate the medications used in liver transplantation. In our study we found that most common cause for liver transplantation is cryptogenic and second most cause is alcoholic related.

Immunosuppressants and prophylaxis antimicrobials were primarily prescribed. In immunosuppressants, triple drug regimen was given for 74.28% and Quadruple regimen was prescribed for 18.5%. TDM immunosuppressants were performed during hospital stay. Meropenem is the major antibiotic used as prophylactic therapy, Valganciclovir is regularly prescribed antiviral whereas Fluconazole is usually prescribed antifungal. Immunosuppressants: 74.28% patients were prescribed with tacrolimus + mycophenolate mofetil + prednisolone (Triple therapy); Tacrolimus + Mycophenolate mofetil + prednisolone + Everolimus/Cyclosporine (18.5%). Antibiotics: 78.57% of patients were prescribed with Meropenem. Antiviral: 88.57% of patients were prescribed with Valganciclovir. Antifungal: 94.28% of patients were prescribed with Fluconazole. The length of hospital stay for many patients was 16-20 days.

Keywords: Liver transplant, Cirrhosis, Immunosuppressants, Antimicrobial agents.

1. INTRODUCTION

Cirrhosis and decompensated liver disease were the ninth leading cause of death for males in 2016 in the United States [1]. Liver transplantation (LT) is a lifesaving gift and proven intervention in managing patients with acute and chronic end-stage liver disease. It restores normal health, lifestyle and extends lifespan by 15 years [2]. The advent of liver transplantation came as a safety net to treat various liver diseases when all other medical interventions have failed. According to the Scientific Registry of Transplant Recipients data, overall patient survival is excellent, reaching 90% at 1 year following deceased donor liver transplantation and 77% at 5 years [3]. Since liver transplantation was first attempted in 1963, there have been continuous advances and major improvements in the surgical technique, type of organ donation with the expansion of the organ donation pool, and a major focus on the quality of life of both the recipients and donors [4]. Still, there are important challenges, including the shortage of donor organs, selection of liver transplantation candidates, and organ allocation.

Liver transplantation is indicated in acute and chronic end-stage liver disease where medical therapy has failed. Patients who develop hepatic decompensation, such as hepatic encephalopathy, variceal hemorrhage, or ascites, should receive medical therapy, and a comprehensive liver transplantation evaluation should be initiated in potential liver transplantation candidates [5]. Up to 80% of liver transplantations are due to decompensated cirrhosis [6]. Patients with cirrhosis are usually categorized according to the Child-Turcotte-Pugh score (CTP score). This score was developed based on incorporating biochemical tests and clinical information (serum albumin, serum bilirubin, international normalized ratio (INR), ascites, encephalopathy) to determine prognosis [7].

The Model of End-Stage Liver Disease (MELD score), initially developed to predict survival after transjugular intrahepatic portosystemic shunt (TIPS) procedure, was found to predict survival among patients with cirrhosis. It was well recognized as a tool to prioritize organ allocation for liver transplantation [8, 9]. The MELD score assesses the 3-month mortality rate of patients by

incorporating mathematical calculations of serum levels of creatinine, bilirubin, and INR. In the pediatric population, an edited formula of the MELD score is created that substituted creatinine and added instead age, albumin, and failure to thrive. In 2016, Organ Procurement and Transplantation Network updated their Policy for MELD Score to include serum sodium value as a factor in calculating the MELD score. Hyponatremia is a common problem in patients with cirrhosis, and the severity of the hyponatremia is a marker of the severity of cirrhosis. A strong high indication for liver transplantation evaluation is in cirrhotic patients who have developed ascites, bleeding varices, hepatic encephalopathy, or hepatocellular dysfunction, leading to a MELD higher than 15.

Specific indications of liver transplantation are Decompensated cirrhosis due to chronic hepatitis C infection became the third most common indication for liver transplantation since 2016, replaced by alcohol-related liver disease and nonalcoholic steatohepatitis [10]. To prevent re-infection after liver transplantation and graft failure, it was important to eradicate chronic hepatitis C infection prior to liver transplantation [11]. Hepatitis B infection previously resulted in increasing numbers of chronic liver disease, but with the use of Hepatitis B Immunoglobulins (HBIG) and the introduction of antivirals, hepatitis B has resulted in decreased rates of liver transplantation [12]. Liver transplantation is indicated in acute liver failure secondary to autoimmune hepatitis or cases of chronic decompensated cirrhosis due to autoimmune hepatitis [13]. Poor outcomes and the need for liver transplantation can be predicted with the following observations: young age, MELD score higher than 12, multiple relapses, and delayed downward slope of aminotransferase after treatment [14]. Over the years, the need for liver transplantation has decreased with the use of Ursodeoxycholic acid to treat PBC, which slows disease progression [15]. Liver transplantation is considered an effective treatment modality among patients with the decompensated disease or those who develop perihilar cholangiocarcinoma (within certain criteria) or recurrent bouts of bacterial cholangitis [16]. PSC is associated with inflammatory bowel disease (IBD); therefore, frequent colonoscopy is necessary to screen for CRC before and after liver transplantation [17, 18].

Need for study was liver transplantation is a major surgery associated with many complications. Once the liver transplantation is performed, the recipient should receive multiple medications to prevent rejections,

infections. So, there is a need to study the different types of medications used in recipients to understand the efficiency of these medications. To investigate our hospital's preferred immunosuppressive medication regimen, monitor the patients. The main aim of the project is to study the prescribing pattern in Liver transplant recipients. The primary objectives are to evaluate the use of immunosuppressants, antimicrobial agents in liver transplant recipients. The secondary objectives are to evaluate the prescribing pattern in the patients with comorbidities, to investigate our hospital's preferred immunosuppressive medication regimen.

2. MATERIAL AND METHODS

2.1. Study design

This is a prospective observational study.

2.2. Source of data collection

- Patient data collection form.
- Patient case note or prescription (outpatient, in patient).
- Laboratory test reports.
- Patient medication history.

2.3. Inclusion criteria

- Any patient undergone liver transplant.
- Patients who are co-operative and willing to provide informed consent.
- Patients from hepatology department.

2.4. Exclusion criteria

- Pregnant and lactating women.
- Patients who are not co-operative.
- Psychiatric patients.
- Advanced malignancy.
- Patients who are too sick.

Study period was 6 months and sample size was 70. Out of 70 patients, 52 (74.20%) were male and 18 (25.71%) were female.

3. RESULTS

3.1. Gender wise distribution

Table 1: Gender wise distribution

Gender	Total number of patients	Percentage
Male	52	74.20%
Female	18	25.71%

3.2. Age wise distribution of patient

Total age was categorized at the interval of 10. Out of 70 patients, 14 patients (20%) were under the age group of 0-10, 3 patients (4.28%) were under the age group of 11-20, 4 patients (5.71%) were between the age group of 21-30, 9 patients (12.8%) were under the age group of 31-40, 21 (30%) patients were in middle of 41-50, 14 patients (5.71%) were in the amid of 51-60, 5 patients (7.14%) were between the age group of 61-70.

Table 2: Age wise distribution of patients

AGE	TOTAL NUMBER OF PATIENTS
0-10	14
11-20	3
21-30	4
31-40	9
41-50	21
51-60	14
61-70	5

3.3. Distribution of patients based on age (percentage)

Table 3: Distribution of patients based on age (percentage)

AGE	PERCENTAGE
0-10	20%
11-20	4.28%
21-30	5.71%
31-40	12.80%
41-50	30%
51-60	20%
61-70	7.14%

3.4. Age wise distribution of patients based on gender

Out of 52 male patients, 6 patients were in between 0-10 age group, 2 patients were between the age group of 11-20, 7 patients were in between the age group of 31-40, 21 patients were in the amid of 41-50 age group, 13 patients were in the middle of 51-60 age group, 3 patients were in 61-70 age group interval.

Out of 18 female patients, 8 patients were in the midst 0-10 age group, 1 patient was between the age group of 11-20, 4 patients were in the age group of 21-30, 2 patients were in between the age group of 31-40, 1 patient was among the age group of 51-60, 2 patients were in the middle of 61-70 interval.

3.5. Distribution of patients based on BMI

Out of 70 patients, 10 patients (14.28%) were categorized as Underweight, 23 patients (32.85%) were

categorized as Normal, 22 patients (31.42%) were categorized as Overweight, 15 patients (21.42%) were categorized as Obese.

Table 4: Age wise distribution of patients based on gender

AGE	MALE	FEMALE
0-10	6	8
11-20	2	1
21-30	0	4
31-40	7	2
41-50	21	0
51-60	13	1
61-70	3	2

Table 5: Distribution of patients based on BMI

BMI	No. of patients	Percentage
Under weight	10	14%
Normal	23	32.85%
Over weight	22	31.42%
Obese	15	21.42%

3.6. Distribution of patients based on co-morbidities

Out of 70 patients, 41 patients had co-morbidities and 29 patients had no co-morbidities.

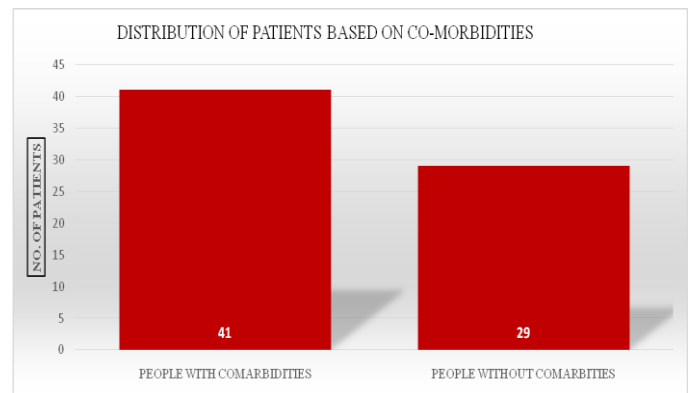


Fig. 1: Distribution of patients based on co-morbidities

3.7. Distribution of patients with co-morbidities based on gender

Out of 41 patients with co-morbidities, 28 patients (68%) were found to be male, and 12 patients (29.26%) were found to be female.

3.8. Distribution of patients with co-morbidities based on gender

Out of 52 male patients, 20 patients had no Co-morbidities, 5 patients were having Diabetes mellitus, 1 patient was having Hypertension, 1 patient was having

DM+HTN, 3 patients were having CAD, 5 patients were having AKI, 3 patients were having Hypothyroidism, 6 patients were having other Co-morbidities.

Out of 18 female, 10 patients had no Co-morbidities, 1 patient was having Hypertension, 5 patients were having DM+HTN, 2 patients were having PCOD, 1 patient was having Hypothyroidism, 7 patients were having other Co-morbidities.

Table 6: Distribution of patients based on co-morbidities

Gender	Total number of patients with co-morbidities based on gender	Percentage
Male	28	68%
Female	12	29.26%

Table 7: Distribution of patients with co-morbidities based on gender

Co-morbidities	Male	Female
Normal	20	10
Diabetes mellitus	5	0
Hypertension	1	1
DM+HTN	1	5
CAD	3	0
PCOD	0	2
AKI	5	0
Hypothyroidism	3	1
Others	6	7

3.9. Distribution of patients based on total co-morbidities

Out of 70 patients, 30 patients had no Co-morbidities, 5 patients were having Diabetes mellitus, 2 patients were having Hypertension, 6 patients were having DM+HTN, 3 patients were having CAD, 2 patients were having PCOD, 5 patients were having AKI, 4 patients were having Hypothyroidism, 13 patients were having other Co-morbidities.

Table 8: Distribution of patients based on total co-morbidities

Co-morbidities	Total	Percentage
Normal	30	42.75%
Diabetes mellitus	5	7%
Hypertension	2	2.85%
DM+HTN	6	8.5%
CAD	3	4.28%
PCOD	2	2.85%
AKI	5	7.14%
Hypothyroidism	4	5.71%
Others	13	18.57%
Total	70	100%

3.10. Distribution of males based their social history

Out of 52 males 19 patients were found to be alcoholics and 33 were found to be non- alcoholics.

Table 9: Distribution of males based their social history

Alcoholics	Non- alcoholics	Total males
19 (36.53%)	33 (64.47%)	52

3.11. Distribution based on consanguineous marriage

Out of 70 patients, 6 patients had family history of consanguineous marriage.

Table 10: Distribution based on consanguineous marriage

Total no. of patients	Consanguineous marriage
70	6

3.12. Distribution based on transplant

Out of 70 patients 5 patients cause of transplant was Wilson’s disease (7.14%), 9 patients cause of transplant was Hepatitis (12.85%), 19 patients cause of transplant was Alcoholic liver disease (27.14%), 5 patients cause of transplant was Biliary atresia (7.14%), 2 patients cause of transplant was NAFLD (2.85%), 20 patients cause of transplant was Cryptogenic (28.57%), 10 patients cause of transplant was due to other reasons (14.28%).

Table 11: Distribution based on transplant

Cause	Total	Percentage
Wilson’s disease	5	7.14%
Hepatitis	9	12.85%
Alcoholic liver disease	19	27.14%
Biliary atresia	5	7.14%
NAFLD	2	2.85%
Cryptogenic	20	28.57%
Others	10	14.28%

3.13. Distribution based on gender for cause of transplant

Out of 52 males, 1 patient cause of transplant was Wilson’s disease, 7 patients cause of transplant was hepatitis, 19 patients cause of transplant was alcoholic liver disease, 2 patients cause of transplant was due to Biliary atresia, 2 patients cause of transplant was NAFLD, 16 patients cause of transplant was Cryptogenic, 5 patients cause of transplant was due to other reasons.

Out of 18 female, 4 patient cause of transplant was Wilson’s disease, 2 patients cause of transplant was hepatitis, 3 patients cause of transplant was due to Biliary atresia, 4 patients cause of transplant was Cryptogenic, 5 patients cause of transplant was due to other reasons.

Table 12: Distribution based on gender for cause of transplant

CAUSE	MALE	FEMALE	TOTAL
Wilson's disease	1	4	5
Hepatitis	7	2	9
Alcoholic liver disease	19	0	19
Biliary atresia	2	3	5
NAFLD	2	0	2
Cryptogenic	16	4	20
Others	5	5	10

3.14. Distribution based on type of transplant

Out of 70 patients, 60 patients have undergone Live donor liver transplant (85.71%), 10 patients have undergone Deceased donor liver transplant (14.29%).

Table 13: Distribution based on type of transplant

Type of Transplantation Procedure	Total	Percentage
LDLT	60	85.71%
DDLT	10	14.29%

3.15. Distribution of risk in patients based on MELD score

MELD score was done in 40 patients. 7.50% patients had - 1.90% risk of Mortality, 52.50% patients had - 6.00% risk of Mortality, 35% patients had - 20% risk of Mortality, 5% patients had - 52% risk of Mortality.

Table 14: Distribution of risk in patients based on meld score

MELD Score	Total	Percentage	Risk of Mortality
<9	3	7.50%	1.90%
10-19	21	52.50%	6.00%
20-29	14	35%	20%
30-39	2	5%	52%
>40	0	0%	71.10%

3.16. Distribution of risk in patients based on peld score

PELD score was done in 9 children. 22.22% children had - 1.90% risk of mortality, 11.11% children had - 6% risk of mortality, 44.44% children had

- 20% risk of mortality, 11.11% children had 52% - risk of mortality, 11.11% children had - 71.10% risk of mortality.

Table 15: Distribution of risk in patients based on PELD score

PELD	Total	Percentage	Risk of Mortality
<9	2	22.22%	1.90%
10-19	1	11.11%	6%
20-29	4	44.44%	20%
30-39	1	11.11%	52%
>40	1	11.11%	71.10%

3.17. Distribution of disease severity based on CTP score

CTP score was done in 35 patients. 8.57% patients had - Mild disease severity, 42.85% patients had - Moderate disease severity, 48.57% patients had - Severe disease severity.

Table 16: Distribution of disease severity based on CTP

CTP	Total	Percentage	Disease severity
5-6(Class- A)	3	8.57%	Mild
7-9 (Class-B)	15	42.85%	Moderate
10-15 (Class-C)	17	48.57%	Severe

3.18. Distribution based on commonly prescribed regimen

Out of 70 patients, Tacrolimus was prescribed to 15 patients (21.42%), Tacrolimus + Mycophenolate mofetil was prescribed to 52 patients (74.28%), Tacrolimus + Mycophenolate mofetil + Cyclosporine was prescribed to 7 patients (10%), Tacrolimus + Mycophenolate mofetil + Everolimus was prescribed to 6 patients (8.5%), Meropenem was prescribed to 55 patients (78.57%), piperacillin was prescribed to 41 patients (58.57%), Amoxicillin was prescribed to 31 patients (44.28%), Teicoplanin was prescribed to 34 patients (48.28%), Fluconazole was prescribed to 66 patients (94.28%), Valganciclovir was prescribed to 62 patients (88.57%), Tenofovir was prescribed to 8 patients (11.42%), Entecavir was prescribed to 3 patients (4.28%), Colistin was prescribed to 5 patients (0.71%), Polymyxin was prescribed to 2 patients (2.85%), Amphotericin-B was prescribed to 4 patients (5.7%), Prednisolone was prescribed to 70 patients (100%), Methyl Prednisolone was prescribed to 27 Patients (38.57%).

Table 17: Distribution based on commonly prescribed regimen

Drugs	No. of patients	percentage
Tacrolimus	15	21.42%
Tacrolimus + MFM	52	74.28%
Tacrolimus+ Mycophenolate Mofetil + Cyclosporine	7	10%
Tacrolimus + MFM + Everolimus	6	8.5%
Meropenem	55	78.57%
Piperacillin	41	58.57%
Amoxicillin	31	44.28%
Teicoplanin	34	48.57%
Fluconazole	66	94.28%
Valganciclovir	62	88.57%
Tenofovir	8	11.42%
Entecavir	3	4.28%
Colistin	5	0.71%
Polymyxin	2	2.85%
Amphotericin- B	4	5.7%
Prednisolone	70	100%
Methylprednisolone	27	38.57%

3.19. Distribution based on length of stay in hospital

Out of 70 patients, 27 patients (38.57%) length of hospital stay was 10-15days, 28 patients (40%) length of hospital stay was 16-20 days, 7 patients (10%) length of hospitals stay was 21-25 days, 2 patients (2.85%) length of hospital stay was 26-30 days, 3 patients (4.2%) length of hospital stay was 31-35 days, 3 patients (2.85%) length of hospital stay was more than 35 days.

Table 18: Distribution based on length of stay in hospital

Length of stay in hospital (days)	No. of patients	Percentage
10 -15	27	38.57%
16-20	28	40%
21-25	7	10%
26-30	2	2.85%
31-35	3	4.2%
>35	3	2.85%

3.20. Distribution based on length of stay in hospital due to different parameters

The average length of hospital stays due to comorbidities was 19.8, the average length of hospital stays due to BMI

- Overweight was 17.16, the average length of hospital stay due to Alcoholism was 18.75%, the average length of hospital stay due to Colistin was 29, the average length of hospital stay due to other Causes was 22.

Table 19: Distribution based on length of stay in hospital due to different parameters

Parameters	Length of stay in Hospital (Average)
Comorbidities	19.8
BMI- Overweight	17.16
Alcoholism	18.75
Colistin	29
Other Causes	22

3.21. Distribution based on tacrolimus levels

Out of 70 patients 60 patients were prescribed with Tacrolimus.

The attained plasma drug concentration in 5 patients (8.33%) was below normal range, and 55 patients (91.66%) were having desired plasma levels.

Table 20: Distribution based on tacrolimus levels

Tacrolimus Levels	Total No. of Patients	Percentage
0-5 ng/ml (Below Normal)	5	8.33%
5-20 ng/ml(Normal)	55	91.66%

3.22. Distribution based on cyclosporine levels

Out of 70 patients 6 patients were treated with Cyclosporine.

Among them 5 patients attained desired plasma concentration, and 1 patient to achieve desired plasma concentration.

Table 21: Distribution based on cyclosporine levels

Cyclosporine levels	Total No. of Patients	Percentage
0-100ng/ml (Below Normal)	1	16.66%
100-200ng/ml (Normal)	5	83.33%

3.23. Distribution based on everolimus

Out of 70 patients, 4 patients were given Everolimus and all of them achieved desired plasma drug concentration.

Table 22: Distribution based on everolimus

Everolimus	Total No. of Patients	Percentage
0-6ng/ml (Below Normal)	0	0%
6-8 (Normal)	4	100%

3.24. Distribution based on isolated organisms

Out of 70 patients, 26 patients showed culture positive. 8 patients showed positive culture for Klebsiella Pneumonia, 5 patients showed positive culture for CMV, 3 patients showed positive culture for MRSA, 2 patients showed positive culture for Pseudomonas Aeruginosa, 2 patients showed positive culture for Enterobacter, 1 patient showed positive culture for Acinetobacter septicemia, 3 patients showed positive culture for Aspergillus Niger, 2 patients showed positive culture for Clostridium difficile.

Table 23: Distribution based on isolated organisms

Isolated Organism	Total No. of Patients	Percentage
Klebsiella Pneumonia	8	11.42%
CMV	5	7.14%
MRSA	3	4.28%
Pseudomonas Aeruginosa	2	2.85%
Enterobacter	2	2.85%
Acinetobacter septicemia	1	1.42%
Aspergillus Niger	3	4.28%
Clostridium difficile	2	2.85%

4. DISCUSSION

We conducted our research to evaluate the prescription pattern of liver transplant recipients during the hospital stay in a tertiary care hospital. 70 participants were included in this prospective observational study.

52 (74.20%) of the patients out of the total of 70 were identified to be men, while 18 (25.71%) were determined to be women. Over all age groups were divided at the interval of 10, male patients were more compared to female. More number of patients (30%) were found in between age range 41-50, and a smaller number of patients (4.28%) were found in between age range 11-20. Moreover, there were significant number (20%) of patients between age group 0-10.

BMI was recorded and divided into four categories - underweight, normal, overweight, obese. 32.85%

patients were falling in normal range of BMI and just a slightly less (31.42%) patients were overweight. More male patients (68%) were found to be with comorbidities. We found that less than half (42.75%) patients had no comorbidities, among men a greater number of patients were non-alcoholic (64.47%).

Consanguineous marriages: 6 Patients were progeny of consanguineous marriage.

The cause for the patient undergone transplantation is mostly cryptogenic (28.57%) and second most occurring cause was alcohol. The least cause for transplantation was NAFLD.

More (85.71%) number of patients were undergone Live liver donor transplantation and a smaller number of patients (14.29%) were undergone Deceased liver donor transplantation

There are a few scores, such as MELD, PELD, and CTP scores, which indicate how quickly a liver transplant should be performed. One of such scores is the MELD score. Your MELD score might help determine how quickly you could require a transplant. A MELD score is a number that varies from 6 to 40. The greater the number, the more critical the situation is. Patients with score less than 9 has a risk of mortality of 1.90%, patients with score ranging between 10-19 has a risk of mortality 6%, patients with score ranging between 20-29 has a risk of mortality 20%, patients with score ranging between 30-39 has a risk of mortality 52%, patients with score 40 has 71.10% risk of mortality. It was performed in 40 patients among 70 patients. In our study 52.50% of patients (more patients) has 6% risk of mortality. Only 5% of patients has 52% risk of mortality (high risk)

PELD is used for patients below 12 years. It was performed for 9 patients of age below 12. It has same scores and corresponding risk of mortality as MELD. 44.44% of patients had 20% risk of mortality.

11.11 % patients had 71.10% of mortality risk (high risk) Child Pugh Turcotte score is used to assess the severity of liver disease same as the above scores there are three classes, class A, B, C respectively; Class A (5-6 points) - Mild, Class B (7-9)-Moderate, Class C (10-15)-Severe. CTP was performed for 35 patients out of 70, 48.57% patients were falling in class c (severe), 42.85% patients in class B (moderate), 8.57% patients in class A (mild).

Out of 70 Patients, different immunosuppressants like tacrolimus, cyclosporine, mycophenolate mofetil, everolimus, prednisolone, methyl prednisolone and prophylactic antimicrobial regimen were prescribed. In which 52(74.28%) patients were prescribed with tacrolimus, mycophenolate mofetil and prednisolone

(mostly prescribed drugs). 7(10%) patients were given tacrolimus, cyclosporine, mycophenolate mofetil and prednisolone. 6 (8.5%) patients were treated with tacrolimus, everolimus, mycophenolate mofetil and prednisolone.

Triple drug regimen is more commonly prescribed than dual therapy. The normal Tac levels in plasma is in between 5-20 ng/ml, in total 60 patients prescribed with tacrolimus, 55(91.66%) patients had normal Tac levels in plasma and 5(8.33%) patients has below normal levels. 6 patients were given cyclosporine- Normal range of cyclosporin is 100-200ng/ml, 5 (83.33%) patients had normal levels, 1(16.66%) patient had below normal levels.

Normal levels of Everolimus 6-8 ng/ml. 4 patients were given everolimus and 100% patients attained normal plasma levels. Out of 70 patients, 78.57% patients were prescribed with meropenem which is mostly prescribed antibiotic. Colistin was the least prescribed antibiotic (0.71%), Fluconazole was the mostly prescribed antifungal (94.28%) while Polymyxin-B was the least prescribed antifungal (2.85%). Valganciclovir was the mostly prescribed antiviral (88.57%) while the least prescribed antiviral was Entecavir (4.28%).

We have observed the length of stay in the hospital, the greatest number of patients (40%) stayed in hospital between 16-20 days. Only 2.85% patients stayed for more than 35 days. We observed different length of stay based upon the various criterias.

Patients with comorbidities stayed for an avg. of 19.8 days. Patients prescribed with Colistin stayed for the long time i.e., 29 days. 26 (37.14%) patients showed culture positive out of 70. More (11.42%) patients were positive for klebsiella pneumonia. Only 1.42% patients were positive for Acinetobacter septicemia which is least.

5. CONCLUSION

The study was carried out in the Hepatology department for a period of 6 months. The numbers of samples collected were 70. Among 70 patients, 74.20% are Male, and Female were 25.71%. The transplant typical cause was Cryptogenic. Diabetes and hypertension are the two most frequent comorbidities identified in these patients. Several Transplantation are observed in 41-50 age range.

Live liver transplants were performed on 85% of the patients. Immunosuppressants and antibacterial prophylaxis were administered for patients who underwent liver transplants for the duration of their hospital stay.

Overall, 18.5% of patients were given a quadrupled drug regimen and 74.28% of patients were prescribed a triple drug regimen. During the hospital stay, Tdms for immunosuppressants were monitored.

Compared to other antibiotics meropenem is the highest prescribed drug: (78.57%) and colistin the least prescribed, 94.17 % patients were given fluconazole, 88.57% patients were given valganciclovir.

The average hospital stay for many individuals was between 16 and 20 days. 2.8% patients stayed for more than 35 days, in people with comorbidities average length of stay was 19.8 days.

Conflict of interest

None declared

Source of funding

None declared

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