Study Of Diabetes and Hypertension in Liver Transplant Recipients

Thesis

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Of internal medicine

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ABSTRACT

Background: A lot of complications occur after liver transplantation including diabetes and hypertension.

Aim: Evaluation of the overall prevalence of the diabetes and hypertension and identification of the predictors for posttransplant diabetes and hypertension.

Methods: Our study is retrospective. We collected the data of the patients from the database of the patients in the liver transplant unit.

Results: Incidence of new onset diabetes after transplant (NODAT) was 25% and incidence posttransplantation hypertension was 20%. No predictors were found for NODAT. Predictors of posttransplantation hypertension were BMI and using Cyclosporine.

Conclusion: DM and HTN are common after liver transplantation. Predictors of posttransplant hypertension are high BMI and using cyclosporine.

Keywords: Liver transplant – New onset diabetes after transplant (NODAT) – Posttransplant hypertension

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LIST OF ABBREVIATIONS

ACEI	Angiotensin-converting enzyme inhibitor
ADA	American diabetes association
AHA	American heart association
Alb	Albumin
ALT	Alanine transaminase
Anti-CD25 mAb	Anti-CD 25 monoclonal antibody
ARB	Angiotensin receptor blocker
AST	Aspartate Transaminase
AZA	Azathioprine
Bil.D	Direct bilirubin
Bil.T	Total bilirubin
BMI	Body mass index
BP	Blood pressure
CCB	Calcium channel blocker
CHF	Congestive heart failure
CI	Confidence interval
CKD	Chronic kidney disease
CMV	Cytomegalovirus

CNI	Calcineurin inhibitor
CSA	Cyclosporine
CV	Cardiovascular
DPP-IV	Dipeptidyl peptidase 4
DM	Diabetes mellitus
FBS	Fasting blood sugar
eGFR	estimated Glomerular filtration rate
GLP-I	Glucagon like peptide-I
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance
INR	International normalized ratio
FPG	Fasting plasma glucose
FRS	Framingham risk score
GGT	Gammaglutamyl transferase
HbA1C	Hemoglobin A1 C
HBV	Hepatitis B Virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis C virus
HDL	High density lipoproteins
HLA	Human leukocyte antigens
HTN	Hypertension

HypoMg	Hypomagnesemia
IDDM	Insulin dependent diabetes mellitus
LT	Liver transplantation
MELD	Model of End-Stage Liver Disease
MMF	Mycophenolate mofetil
MS	Metabolic syndrome
mTOR	Mammalian target of rapamycin
NAFLD	Non-alcoholic fatty liver disease
NASH	Non-alcoholic steatohepatitis
NODAT	New onset diabetes after transplant
NODM	New onset diabetes mellitus
OGTT	Oral glucose tolerance test
OLT	Orthotopic liver transplantation
OPTN	Organ Procurement Transplant Network
OR	Odds ratio
PC	Prothrombin concentration
PELD	Pediatric End-Stage Liver Disease
PG	Plasma glucose
PIZZ	Protease inhibitor ZZ
PLT	Platelets

PPAR	Peroxisome proliferator-activated receptors
Pre-Tx	Pretransplant
PROCAM	Prospective Cardiovascular Münster
PSC	Primary sclerosing cholangitis
PT	Prothrombin time
PTDM	Posttransplant diabetes mellitus
PTMS	Posttransplant metabolic syndrome
RR	Relative risk
SCORE	Systematic Coronary Risk Evaluation
SD	Standard deviation
Sir	Sirolimus
SRTR	Scientific Registry of Transplant Recipient
SVR	Sustained virology response
SUs	Sulphonylureas
Tac	Tacrolimus
TLC	Total leucocytic count
TZDs	Thiazolidinedione derivatives
UNOS	United Network for Organ Sharing
USRDS	United states renal data system
WHO	World health organization
2 hr PP	2 hour postprandial

LIST OF FIGURES AND DIAGRAMS

Indications for Liver Transplantation

Introduction:

Patients should be considered for liver transplantation if they have evidence of fulminant hepatic failure, a life-threatening systemic complication of liver disease, or a liver-based metabolic defect or, more commonly, cirrhosis with complications such as hepatic encephalopathy, ascites, hepatocellular carcinoma, hepatorenal syndrome, or bleeding caused by portal hypertension. While the complications of cirrhosis can often be managed relatively effectively, they indicate a change in the natural history of the disease that should lead to consideration of liver transplantation ***(Leary et al, 2008)***.

Indications of liver transplantation:

In the following tables, we will mention the indications of liver transplantation.

Table (1) : Biochemical and Clinical Indications for Liver Transplantation in Chronic Liver Disease

(Goldman's Cecil Medicine, 24th edition)

CHOLESTATIC LIVER DISEASE
Bilirubin >10 mg/dL
Intractable pruritus
Progressive cholestatic bone disease
Recurrent bacterial cholangitis
HEPATOCELLULAR LIVER DISEASE
Serum albumin <3 g/dL
Prothrombin time >3 seconds above control
BOTH CHOLESTATIC AND HEPATOCELLULAR LIVER DISEASES
Recurrent or severe hepatic encephalopathy
Refractory ascites
Spontaneous bacterial peritonitis
Recurrent portal hypertensive bleeding
Severe chronic fatigue and weakness
Progressive malnutrition
Development of hepatorenal syndrome
Detection of small hepatocellular carcinoma

Table (2) : Medical conditions for which liver transplantation is indicated *(Goldman's Cecil Medicine, 24th edition)*

Viral	Hepatitis C
	Hepatitis B
Autoimmune liver disease	—
Alcohol-related liver disease	—
Inherited/metabolic liver diseases	Hereditary hemochromatosis
	α -1-Antitrypsin deficiency
	Wilson disease
	Nonalcoholic fatty liver disease
	Tyrosinemia
	Type IV glycogen storage disease
	Neonatal hemochromatosis
	Amyloidosis
	Hyperoxaluria
	Urea cycle defects
	Amino acid defects
Cholestatic liver disease	Primary biliary cirrhosis
	Primary sclerosing cholangitis
	Biliary atresia
	Alagille syndrome
	Progressive familial intrahepatic cholestasis
	Cystic fibrosis
	Bile duct loss
Malignancy	Hepatocellular carcinoma
	Cholangiocarcinoma
	Fibrolamellar carcinoma
	Epithelioid hemangioendothelioma
	Hepatoblastoma
	Metastatic neuroendocrine tumor
Polycystic liver disease	—
Vascular disorder	Budd-Chiari syndrome
Fulminant hepatic failure	—
Retransplantation	—