

بسم الله الرحمن الرحيم



HOSSAM MAGHRABY



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



HOSSAM MAGHRABY

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



HOSSAM MAGHRABY



Risk Factors and Predictors of Occlusion of Stent of Trans Jugular Intrahepatic Porto-systemic Shunt (TIPSS) in Egyptian Patients with Primary Budd Chiari Syndrome

Thesis

Submitted for Partial Fulfillment of
Master Degree in **Tropical Medicine**

By

Ibrahim Abd El-Hakim Ibrahim Hindy Dawoud
M.B.B.Ch.

Under Supervision of

Prof. Dr. Fatma Ahmed Ali El-Din

Professor of Tropical Medicine
Faculty of Medicine - Ain Shams University

Prof. Dr. Mohamed El-Ghareeb Abo Elmaaty

Professor of Intervention Radiology
Faculty of Medicine - Ain Shams University

Dr. Heba Rashad Atteya

Lecturer of Tropical Medicine
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University

2021

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgments

*First and foremost, I feel always indebted to **Allah** the Most Beneficent and Merciful.*

*I wish to express my deepest thanks, gratitude and appreciation to **Prof. Dr. Fatma Ahmed Ali El-Din**, Professor of Tropical Medicine, Faculty of Medicine, Ain Shams University, for her meticulous supervision, kind guidance, valuable instructions and generous help.*

*Special thanks are due to **Prof. Dr. Mohamed El-Ghareeb Abo Elmaaty**, Professor of Intervention Radiology, Faculty of Medicine, Ain Shams University, for his sincere efforts, fruitful encouragement.*

*I am deeply thankful to **Dr. Heba Rashad Atteya**, Lecturer of Tropical Medicine, Faculty of Medicine, Ain Shams University, for her great help, outstanding support, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Ibrahim Abd El-Hakim Ibrahim Hindy Dawoud

List of Contents

Title	Page No.
List of Tables.....	i
List of Figures	iii
List of Abbreviations.....	v
Introduction	1
Aim of the Work	4
Review of Literature	
▪ Budd-Chiari Syndrome	5
▪ Transjugular Intrahepatic Portosystemic Shunt	35
Patients and Methods.....	47
Results.....	54
Discussion	77
Summary.....	86
Conclusion	٨٩
Recommendations	90
References	91
Arabic Summary	

List of Tables

Table No.	Title	Page No.
Table 1:	The primary etiologies of Budd-Chiari syndrome	14
Table 2:	Data of history and examination of enrolled patients was summarized in table	55
Table 3:	Sonographic findings of the enrolled patients	57
Table 4:	Etiology of BCS in the studied patients.....	58
Table 5:	Laboratory data of the patients preintervention and during follow up 6 months.....	60
Table 6:	Number of patients with occluded TIPSS stent along the follow up 6 months after TIPSS	63
Table 7:	Comparison between patients with occluded stent and patients with patent stent after 6 months follow up regarding age and sex	64
Table 8:	Comparison between patients with patent stent and patients with occluded stent regarding present & past history, clinical signs and main presenting symptom	65
Table 9:	Comparison between patients with patent stent and patients with occluded stent after 6 months follow up regarding sonographic features.....	66
Table 10:	Comparison between patent stent group and occluded stent group after 6 months follow up regarding pre-TIPSS labs	69
Table 11:	Comparison between patent stent group and occluded stent group at 6 months follow up after TIPSS regarding the etiology of BCS.....	70

List of Tables *cont...*

Table No.	Title	Page No.
Table 12:	Comparison between patent stent group and occluded stent group regarding their follow up clinical data and labs after 1 day post TIPSS	72
Table 13:	Comparison between patent stent group and occluded stent group regarding their follow up clinical data and labs after 7 days post TIPSS.....	73
Table 14:	Comparison between patent stent group and occluded stent group regarding their follow up clinical data and labs after 3 months post TIPSS	74
Table 15:	Comparison between patent stent group and occluded stent group regarding their follow up clinical data and labs after 6 months post TIPSS	75
Table 16:	Logistic regression analysis for predictors of TIPSS occlusion	76

List of Figures

Fig. No.	Title	Page No.
Figure 1:	Occlusion of upper part of inferior vena cava (IVC).....	21
Figure 2:	CT in acute Budd-Chiari syndrome demonstrates hepatomegaly with diffuse patchy enhancement due to hepatic congestion and necrosis.....	22
Figure 3:	CT in A chronic Budd-Chiari syndrome demonstrates large enhancing regenerative nodule (arrow) as well as ascites and lack of hepatic opacification due to congestion and necrosis	23
Figure 4:	Venography showing no flow in hepatic vein (arrow).....	25
Figure 5:	Shows intrahepatic venous occlusion (arrow marks vessel wall and asterisk marks the occluded lumen).....	27
Figure 6:	Reticulin stain showing advanced nodular regenerative hyperplasia with thin atrophic hepatocytes plates at the periphery (arrow) and expanded hyperplastic plates in the middle (asterisk).....	27
Figure 7:	Recommended stepwise therapeutic algorithm of BCS	31
Figure 8:	Venogram showing insertion of TIPSS in a patient with BCS	37
Figure 9:	Various malpositioned TIPSS configurations that have obstruction of flow with risk for spontaneous thrombosis.....	44
Figure 10:	Main presenting symptom of the studied patients	56
Figure 11:	The etiology of BCS in the enrolled patients.....	59

List of Figures cont...

Fig. No.	Title	Page No.
Figure 12:	Change in serum albumin level and INR during follow up 6 months after TIPSS.....	61
Figure 13:	Change in hemoglobin level and BUN during follow up 6 months after TIPSS.....	61
Figure 14:	Rate of TIPSS stent occlusion along the follow up 6 months after TIPSS.....	62
Figure 15:	Number of patients with occluded TIPSS stent alongg the follow up 6 months after TIPSS.....	63
Figure 16:	Comparison between patients with patent stent and patients with occluded stent after 6 months follow up regarding liver echogenicity	67
Figure 17:	Comparison between patients with patent stent and patients with occluded stent after 6 months follow up regarding number of hepatic veins occlusion	67
Figure 18:	Comparison between patients with patent stent and patients with occluded stent after 6 months follow up regarding ascites	68
Figure 19:	Comparison between patent stent group and occluded group stent at 6 months follow up after TIPSS regarding the etiology of BCS	71

List of Abbreviations

Abb.	Full term
ALB.....	Albumin
ALT.....	Alanine Aminotransferase
AMM.....	Angiogenic myeloid metaplasia
APS/APA	Antiphospholipid syndrome
AST.....	Aspartate Aminotransferase
BCS.....	Budd Chiari syndrome
BD.....	Behcet's disease
BUN.....	Blood urea nitrogen
CIN	Contrast induced nephropathy
CML.....	Chronic myelogenous leukemia
CRP.....	C-Reactive Protein
CT.....	Computed tomography
DVT	Deep venous thrombosis
EASL	European Association for the Study of the Liver
ESR.....	Erythrocyte Sedimentation Rate
ET	Essential thrombocytosis
FVLM	Factor V leiden mutation
HBG.....	Hemoglobin
HCC	Hepatocellular carcinoma
HE.....	Hepatic encephalopathy
HVC BCS.....	Hepatic vena cava budd chiari syndrome
HVOTO.....	Hepatic venous outflow tract obstruction
INR	International normalized ratio
IVC.....	Inferior vena cava
MELD	Model for end stage liver disease
MF	Myelofibrosis
mPAP.....	Mean pulmonary artery pressure
MPD.....	Myeloproliferative diseases
MPN	Myeloproliferative neoplasms
MR	Magnetic resonance
MTHFRD.....	Methylenetetrahydrofolate Reductase Deficiency

List of Abbreviations *cont...*

Abb.	Full term
PGM.....	Prothrombin G mutation
PLT	Platelets
PNH.....	Paroxysmal nocturnal hemoglobinuria
PRV.....	Polycythemia rubra vera
PV	Portal vein
PVT.....	Portal vein thrombosis
TIPSS	Transjugular intrahepatic portosystemic shunt
US	Ultrasonography
WBC	White blood cells

ABSTRACT

Budd Chiari syndrome is a rare disorder which is characterized by hepatic venous outflow tract obstruction. The classical triad of presentation are ascites, hepatomegaly and abdominal pain.

Early diagnosis and proper treatment improve the overall survival and decreases morbidity and mortality, anticoagulation is main line of treatment, angioplasty, stenting and TIPSS provides way of decompression of the congested liver.

TIPSS is used as the most common line of treatment in treating BCS patients with good outcome in case of good patient selection.

TIPSS occlusion remains a major problem after intervention which require regular follow up and shunt revision for proper identification and restoring patency.

The prevalent thrombophilia etiology in the studied group was FVLM (69.7%) then MTHFRD (67.1%).

The overall rate of stent occlusion in 6 months among the patients was 50 % with highest rate of occlusion at 7 days post TIPSS and 3 months.

After analyzing the results, we found that there is no significant relation between age, sex and TIPSS stent occlusion. Different etiologies of BCS may be a risk factor for stent occlusion. Patients with AT III deficiency and PRV carried a higher rate of occlusion. Also cirrhotic and coarse liver by ultrasound may predict stent occlusion.

Keywords: Occlusion, Trans Jugular Intrahepatic Porto-systemic Shunt, Egyptian Patients, Primary Budd Chiari Syndrome

INTRODUCTION

Budd–Chiari syndrome (BCS) is a rare disorder caused by obstruction of the hepatic venous outflow tract at any level between the small hepatic veins and the right atrium, hence also known as hepatic venous outflow tract obstruction (HVOTO). This obstruction leads to venous stasis resulting in congestive hepatopathy (*Mukund & Gamanagatti, 2011*).

Congestive hepatopathy results in increased sinusoidal pressure with hepatic sinusoidal thrombosis as evidenced by fibrin deposition within sinusoids. This sinusoidal thrombosis in turn causes reduced hepatic perfusion leading to ischemia and necrosis of hepatocytes especially in perivenular zones leading to fibrosis and portal hypertension (*Simonetta et al., 2015*).

Budd–Chiari syndrome (BCS) may result due to primary venous problem or may be secondary to compression/invasion of venous outflow by a space occupying lesion within or outside the liver (*Van Wettere et al., 2018*).

Primary BCS is often related to multiple thrombophilic conditions, including primary myeloproliferative disorders, paroxysmal nocturnal haemoglobinuria, inherited thrombophilia (i.e., deficiencies of natural anticoagulants and mutations of factor V Leiden and Factor II), antiphospholipid antibodies, and circumstances at risk, such as pregnancy (*Valla, 2018*).