



Sudan University of Science & Technology
College of Graduate Studies



**Characterization of Portal Hypertension in North
Gezira State using Ultrasonography**

توصيف ارتفاع ضغط دم الوريد البابي في شمال الجزيرة بواسطة
التصوير الموجات فوق الصوتية

*A thesis Submitted for Fulfillment of Requirement of the PhD
Degree in Medical Diagnostic Ultrasound*

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الآية

قال الله تعالى:
(اللَّهُ لَا إِلَهَ إِلَّا هُوَ الْحَيُّ الْقَيُّومُ ۚ لَا تَأْخُذُهُ سِنَّةٌ وَلَا نَوْمٌ ۚ لَهُ
مَا فِي السَّمَاوَاتِ وَمَا فِي الْأَرْضِ ۗ مَنْ ذَا الَّذِي يَشْفَعُ
عِنْدَهُ إِلَّا بِإِذْنِهِ ۚ يَعْلَمُ مَا بَيْنَ أَيْدِيهِمْ وَمَا خَلْفَهُمْ ۗ وَلَا
يُحِيطُونَ بِشَيْءٍ مِنْ عِلْمِهِ إِلَّا بِمَا شَاءَ ۚ وَسِعَ كُرْسِيُّهُ
السَّمَاوَاتِ وَالْأَرْضَ ۗ وَلَا يَئُودُهُ حِفْظُهُمَا ۚ وَهُوَ الْعَلِيُّ
الْعَظِيمُ)

سورة البقرة - الآية [255]

Dedication

To the soul of my grandfather. To my beloved and blessed parent who did everything for me. To my sons whom were support and encouraged me . To my wife for his patience, encouragement and continues support . To all my staff members through all levels of education. To all my colleagues with respect and admiration.

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Abstract

This a descriptive, analytic, study which was aimed to diagnosis the portal hypertension by assessing liver cirrhosis, measure vessel diameter ,spleen size, and identify the ascites and abnormal collateral route. The study was carried out 360 consecutive adult patients selected randomly, all patients ages above 30 years the study included 45 patients with normal portal systemic other with mansonic hepatosplenic schistosomiasis recruited from north Gezira State (Central Sudan) between January 2016 and January 2019. Patient were include if they came from a known endemic area for schistosomiasis ,hepato splenomegaly on physical examination. Patient exclude if ultrasound finding suggestive of portal hypertension causes by other diseases. Ultrasound examination was performed using B-mode grayscale Sono Scape A6 portable machine using convex probe with frequency range from 3.5 to 5 MHz . Sonographic features were observed, which included overall assessment of liver size portal vein splenic vein, splenic size , gall bladder wall thickness, collateral and ascite The study followed international scanning guide line and protocol to perform portal hypertension. The data was collected, classified, analyzed using SPSS. The results of the study showed that the male patients were dominant (67.8%). The study revealed that there were 209(58.1%) had portal hypertention, 106(29.4%) had periportal fibrosis. There were highly incidence of portal hypertention patients due to the majority of patients had schistosomiasis in advance stage associated with collateral in different sites, enlarged left liver lobe and wall thickness of gall bladder . Portal vein as well as splenic vein in patient with schistosomiasis were significantly greater when compare with the mean obtained from normal

group . In conclusion ultrasoungraphic findings are usually highly specific, and can be considered sufficient to confirm the diagnosis of portal hypertension due to schistosomiasis especially in endemic area. . The study recommended that due to increase of portal hypertension in Gezera State need to do longitudinal study for these patient and follow up, and the study recommended to used Doppler to increase accuracy of diagnosis .

المستخلص

أجريت هذه الدراسة الوصفية التحليلية بهدف تشخيص ارتفاع ضغط دم الوريد البابي بتقييم تليف الكبد و قياس قطر الأوردة وحجم الطحال والجانيبيات والاستسقاء. اجريت هذه الدراسة علي 360 مريض تم اختيارهم عشوائيا من بينهم عينة سليمة عددهم 45 شخص (12.5%) لديهم وريد بابي طبيعي أخذت كعينه معايره . المرضى جميعهم أعمارهم أكبر من 30 سنة مقيمين في منطقة شمال ولاية الجزيرة (وسط السودان) في الفترة ما بين يناير 2016 يناير 2019 لديهم تضخم في الكبد والطحال بسبب داء البلهارسيا. استبعدت الدراسة أي ارتفاع ضغط دم الوريد البابي بأمراض أخرى. تم تقييم حجم الكبد و قياس قطر الوريد البابي ووريد الطحال وحجم الطحال وسمك قطر القناة الصفراوية والجانيبيات والاستسقاء وذلك باستخدام جهاز موجات فوق الصوتية متحرك (صنو سكيب A6) ذو مسبار محذب ذو تردد 3.5 ميغاهيرتز . اتبعت الدراسة البروتوكول الدولي لإجراء الموجات فوق الصوتية للوريد البابي.

تم جمع البيانات و تصنيفها وتحليلها باستخدام الحزمة الإحصائية للدراسات الاجتماعية. وجدت الدراسة أن غالبية المرضى من الذكور(67.8%) وأن 209 مريض يمثلون (58%) لديهم ارتفاع ضغط دم الوريد البابي و 106 مريض يمثلون (29.4%) لديهم تليف بمحيط الوريد البابي و45مريض يمثلون (12.5%) لديهم وريد بابي طبيعي وأن غالبية مرضي ارتفاع ضغط دم الوريد البابي مصابون بمرض البلهارسيا مصحوبا بجانيبيات, زيادة في حجم الفص الأيسر الكبدي وسمك جدار القناة الصفراوية.وان هنالك فرق كبير في قطر الوريد البابي ووريد الطحال مقارنة بقطر أوردة الأصحاء. وخلصت الدراسة أن نتيجة الموجات فوق الصوتية محددة بدرجة كبيرة ويمكن اعتبارها كافية لتأكيد تشخيص ارتفاع ضغط دم الوريد البابي بسبب داء البلهارسيا خاصة في هذه المنطقة الموبوءة بالبهارسيا. وأوصت الدراسة بعمل دراسة طوليه ومتابعه للمرضي وذلك لمتابعه الأثر أذى يحدثه المرض مع عمل صور دوبلار الملون للمساعدة في زيادة فعالية التشخيص.

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Abbreviation

PHT	Portal hypertension
US	Ultrasonography
GIT	Gastro intestine tract
TAUS	Trans abdominal ultrasound
CL	Caudate lobe
RL	Right lobes
IVC	Inferior van cava
PV	Portal vein
RPV	R Portal vein
LPV	L Portal vein
SV	Splenic vein
SMV	Superior mesenteric vein
IMV	Inferior mesenteric vein
CLD	Chronic liver disease
PVV	Portal vein velocity
WHO	World Health Organization
MCL	Mid clavicular line
PSL	Parasternal line
USB	Unit System Bowers
SPSS	Statistic Package for Social Science
GB	Gall bladder
PPF	Periportal fibrosis