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Expert Opinion Article

Frequency And Severity Of Thrombocytopenia In Patients With Liver Cirrhosis

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Abstract

Objective: To Establish The Rate And Intensity Of Thrombocytopenia, In Patients With Liver Cirrhosis.

Methodology: The Study Was Conducted From January 2025 To June 2025, And The Setting Of The Study Was On Gims Gambat Where 247 Patients With Cirrhosis Were Sampled Using Consecutive Sampling Technique. Clinical, Biochemical And Ultrasound Criteria Were Used To Diagnose Liver Cirrhosis. The Platelet Counts Were Calculated In Order To Categorize Thrombocytopenia Into Mild, Moderate, Or Severe Thrombocytopenia. The Demographic And Clinical Data Were Captured And Statistical Analysis Was Carried Out Using Spss 26 With Chi-Square Test And Considered Significant At P 0.05.

Results: The Age Of 247 Patients With Cirrhosis Was 40.46± 12.29 Years And 55.1% Of The Patients Were Male. Thrombocytopenia Was Found In 36.8% Of Patients. Individuals Who Had Thrombocytopenia Were Much Younger In Comparison To Those Who Did Not (P=0.0001). Thrombocytopenia Was Significantly Correlated With Child-Pugh Class (P= 0.0001), Gender (P= 0.068) And Length Of Cirrhosis Had No Significant Correlation (P= 0.428).

Conclusion: This Research Has Indicated That Thrombocytopenia Is A Very Common And Clinically Notable Occurrence In Chronic Liver Disease And Its Severity May Rise With Advancement Of Hepatic Dysfunction. Identifying Its Patterns Is Critical In The Determination Of The Risk Of Bleeding And The Design Of Invasive Procedures. Detection Of Thrombocytopenia Earlier And Proper Supervision Can Help To Make Clinical Decisions In A Safer Way And Enhance The General Management Of Liver Disease Patients On Their Chronic Conditions.

Keywords: Platelet Count, Thrombocytopenia, Child-Pugh Classification, Haematological Abnormalities, Liver Cirrhosis, Portal Hypertension

Introduction

Liver Cirrhosis Is A Debilitating And Chronic Liver Disease, Which Plagues Millions Of People Across The World, And Is A Major International Health Issue [1]. Cirrhosis, Which Is Progressive In Nature With Normal Liver Tissue Being Transformed To Non-Functional Scar Tissue, Is Due To A Wide Variety Of Aetiologies Which Include: Chronic Viral Hepatitis, Alcohol Abuse, And Non-Alcoholic Fatty Liver Disease [2]. Chronic Liver Disease Has Been Reported To Be As High As 44 Percent In Some Areas Of Pakistan And The Number Is Gradually Rising Higher. Another Severe Complication That Has Been Observed In Liver Cirrhosis Is Thrombocytopenia, Which Is A Haematological Complication That Is Manifested By The Decrease In The Number Of Platelets To Below The Normal Range [3]. The Multifactorial Causes Of Thrombocytopenia In Cirrhotic Patients Are Reduced Hepatic Production Of Thrombopoietin, Platelet Sequestration In The Spleen, And Dysfunction Of Bone Marrow As A Result Of Hypersplenism [4,5]. Furthermore, It Is Enhanced By The Fact That Portal Hypertension, Which Is A Usual Outcome Of End-Stage Liver Disease, Is Also Present [6].

There Is Variation In Levels Of Thrombocytopenia In Patients With Chronic Liver Disease In Various Studies. Mehmood Et Al Determined The Prevalence Of Thrombocytopenia Among Chronic Liver Disease And Cirrhosis Patients. They Stated That Thrombocytopenia Occurred In 36.3 Percent In Patients With Liver Cirrhosis. Of The People With Low Platelet Counts, 26.1% Of The Patients Experienced Mild Thrombocytopenia And 49.3% Experienced Moderate Thrombocytopenia. It Was Severe Thrombocytopenia In 24.6% Of Patients [7]. According To The Study Performed By Abbas Et Al., It Was Stated That Thrombocytopenia Was Observed In 61.4 Percent Of Patients With Chronic Liver Disease And Cirrhosis [8]. Thrombocytopenia Is Associated With Significantly High Mortality And Morbidity Levels In Chronic Liver Disease And Cirrhosis Patients. It Is An Indicator Of Predictive Value Of Mortality And Development Of Hepatic Encephalopathy In Cirrhosis Patients [9,10]. Considering The Fact That Chronic Liver Disease Is Very Common Among Our Population It Presents Several Complications. Among The Complications Of Chronic Liver Disease And Cirrhosis, Thrombocytopenia Manifests Itself. Thrombocytopenia Plays One Of The Central Roles In The Clinical Condition Of Liver Cirrhosis, And The Impact It Makes On The Patient Care, The Assessment Of The Risks, And The Articulation Of Specific Treatment Strategies Is Immense. The Identification Of The Frequency And Severity Of Thrombocytopenia In The Given Group Of Patients Is The Key To Developing Knowledge About The Related Challenges And Promoting Clinical Outcomes. The Objective Of The Proposed Study Is To Assess The Incidence And Extent Of Thrombocytopenia In Liver Cirrhosis Patients In Gims, Gambat. The Study Can Fill In The Most Important Gaps In The Knowledge And Can Help To Improve The Risk Assessment Measures And Help To Develop The Specific Treatment Plans Which May Help To Manage The Liver Cirrhosis Patients In The Best Way Possible.

The Research By Targeting Thrombocytopenia In This Healthcare Setting Hopes To Yield Useful Information That Will Be Utilized In Evidence-Based Clinical Practice. The Projected Results Are Likely To Enhance The Current Literature Body And Act As A Guide Towards Better Quality Of Care And Improved Treatment Modalities Of The Liver Cirrhosis Patients In Gims, Gambat.

Methodology

The Present Study Was A Descriptive Cross-Sectional One That Was Carried Out In The Medical Units I, Ii, Iii, And The General Medicine Outpatient Department Of Gims, Gambat Between January 2025 And June 2025. A Non-Probability Consecutive Method Of Sampling Was Used To Include A Total Of 247 Patients Who Had A Confirmed Diagnosis Of Liver Cirrhosis. A Combination Of Clinical Examination (Ascites, Palmar Erythema, Or Clubbing), Abnormal Liver Functioning (Bilirubin >1.5mg/Dl, Albumin Less Than 3.5 Gram/Dl, Inr Greater Than 1.2, Or Ast Greater Than Alt) And Ultrasound Scan (Nodular, Atrophic Liver With Rough Echotexture And Irregular Edges) Were Used To Diagnose Liver Cirrhosis. These Criteria Helped In The Proper Selection Of The Patients With Chronic Liver Disease. Thrombocytopenia Was Determined As The Platelet Count Less Than 150,000/ Ul As Per International Standards And Categorized As Mild (100,000-149,999/ Ul), Moderate (50,000-99,999/ Ul), And Severe (Less Than 50,000/ Ul). This Is A Common Haematological Abnormality Seen In Liver Cirrhosis And Can Have A Great Impact On The Prognosis And Management Of The Disease Particularly When Performing A Procedure That Is Associated With Bleeding. The Inclusion Criteria Were That The Patients Had Liver Cirrhosis Of At Least Six Months Duration, Classified In Child-Pugh Class A, B Or C, Had No Haematological Disorder (Immune Thrombocytopenia, Leukaemia, Or Myelodysplastic Syndrome), No Bone Marrow Disease, No History Of Splenectomy Or Liver Transplant, No Active Malignancy, No Chemotherapy Or Radiotherapy, No Acute Liver Failure, No Chronic Renal Failure Requiring Dialysis, Pregnant Women Or Lactating Women, No Platelet Transfusion Within Four Weeks, Demographic And Clinical Data Like Age, Gender, Years Of Liver Cirrhosis, Child-Pugh, And Platelet Count Were Noted On A Structured Proforma After The Written Informed Consent Was Received. The Levels Of The Platelets Were Determined On A Sysmex-1000 Haematology Machine And The Patients Were Grouped On This Basis. Data Collection And Data Storage Were Done In Strict Secrecy. The Spss Version 26 Was Used To Analyse Data. Descriptive Statistics (Mean, Standard Deviation, Frequencies, And Percentages) Were Done And Chi-Square Test Was Used To Assess The Relationship Between Clinical Variables And Thrombocytopenia With P 0.05 Being Rated As Significant.

Results

The Study Involved **247** Liver Cirrhotic Patients. The Mean Age Was 40.46 ± 12.29 Years, And The Mean Period Of Liver Cirrhosis Was 31.86 ± 17.96 Months (95% Ci: 29.6134.11) (**Table I**). The Male Population Was 55.1% Of The Study Population With A Female Population Of 44.9%. About The Severity Of The Disease, There Was 27.1% In Child-Pugh Class A, 42.1% In Class B, And 30.8% In Class C.

The Severity Of Thrombocytopenia In The Entire Population Revealed That 23.1% Of The Population

Had Mild, 48.4 Percent Moderate And 28.6 Percent Severe Thrombocytopenia (**Table Ii**).

Patients With And Without Thrombocytopenia Were Compared And Found That, Patients With Thrombocytopenia Were Much Younger With A Mean Age Of 31.07±11.71 Years Old Compared To 45.94±8.84 Years Without Thrombocytopenia (P = 0.0001) (**Table Iii**). There Were No Significant Differences In The Liver Cirrhosis Duration (30.67 ± 18.15 Vs. 32.55 ± 17.86 Months, P = 0.428).

When It Comes To The Gender Distribution, The Percentage Of Males Among Thrombocytopenic Was 62.6% And 52.3% In The Non-Thrombocytopenic Group; This Was Not Statistically Significant (P = 0.068).

Thrombocytopenia And Child-Pugh Class Were Significantly Related. Out Of The Thrombocytopenic Patients, There Were 58.2% Class A, 33.0% Class B And 8.8% Class C. Conversely, Non-Thrombocytopenic Patients Were Distributed In Class B (47.4) And Class C (43.6) (P = 0.0001), Which Means That The Presence Of Thrombocytopenia, In This Case, Is Correlated With Lower Child-Pugh Class.

Table I: Baseline Demographic And Clinical Characteristics (N = 247)

Variable	Value
Age (Years), Mean ± Sd	40.46 ± 12.29
95% Ci For Age	38.92 – 42.00
Duration Of Cirrhosis (Months), Mean ± Sd	31.86 ± 17.96
95% Ci For Duration	29.61 – 34.11
Gender, N (%)	
− Male	136 (55.1)
− Female	111 (44.9)
Child-Pugh Class, N (%)	
− Class A	67 (27.1)
− Class B	104 (42.1)
− Class C	76 (30.8)

Table Ii: Severity Of Thrombocytopenia (N = 247)

Severity	N (%)
Mild	57 (23.1)
Moderate	119 (48.4)
Severe	71 (28.6)

Table Iii: Comparison Between Patients With And Without Thrombocytopenia

Variable	Thrombocytopenia Present	Thrombocytopenia Absent	P-Value
Age (Years), Mean ± Sd	31.07 ± 11.71	45.94 ± 8.84	0.0001
Duration Of Cirrhosis (Months), Mean ± Sd	30.67 ± 18.15	32.55 ± 17.86	0.428
Gender, N (%)			
− Male	62.6	52.3	0.068
− Female	37.4	47.7	
Child-Pugh Class, N (%)			0.0001
− Class A	58.2	9.0	
− Class B	33.0	47.4	
− Class C	8.8	43.6	

Figure 1: Distribution Of Thrombocytopenia Severity

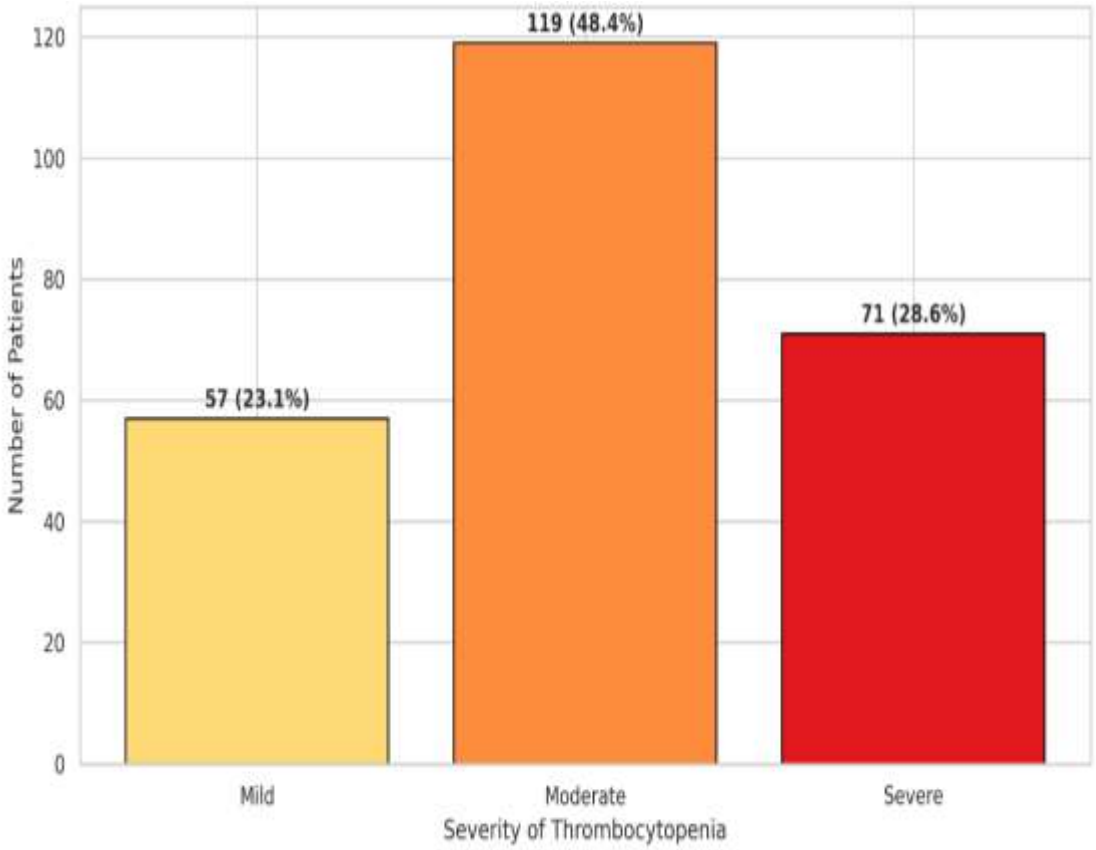
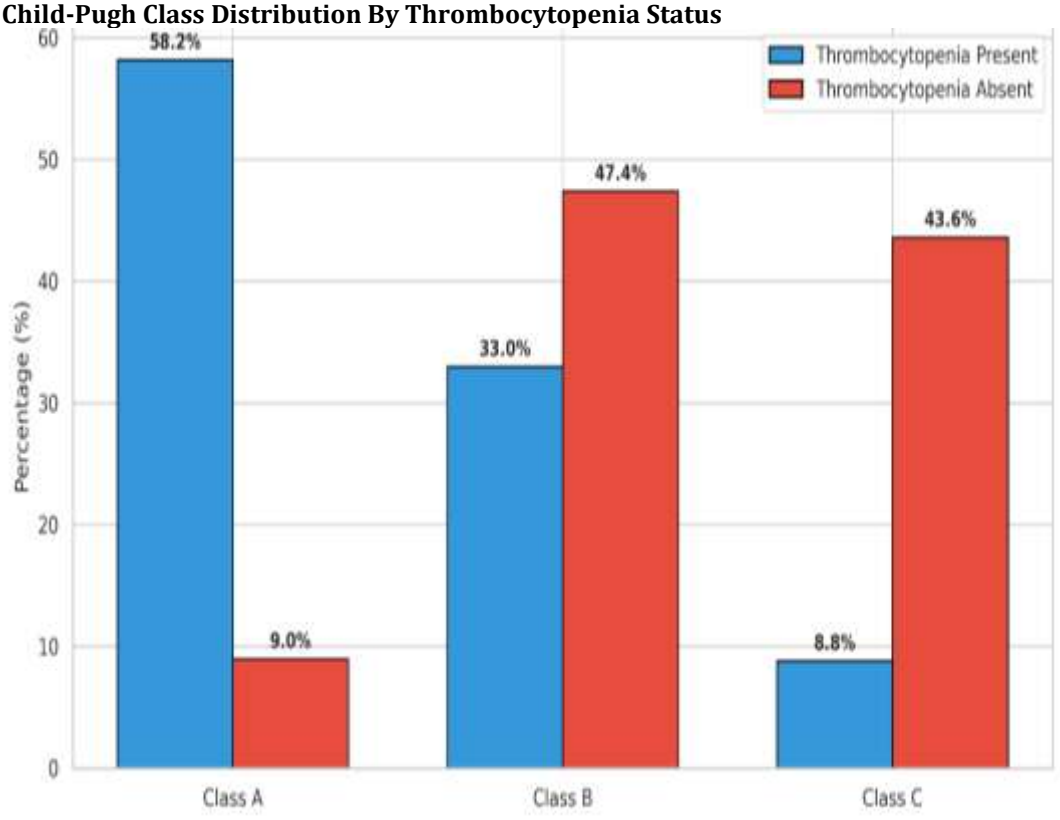


Figure 2: Child-Pugh Class Distribution By Thrombocytopenia Status



Discussion

Thrombocytopenia Is A Widespread Haematological Defect Among Patients With Chronic Liver Disease,

And Is An Important Clinical Outcome That Is Used In The Clinical Decision-Making Process, Planning Of Procedures And General Prognosis. The Results Of The Current Research Are Consistent With The International Data Showing That Thrombocytopenia Is A Common Condition That Is Preceded By Hepatic Dysfunction Because Of Dysfunctional Production Of Thrombopoietin, Splenic Sequestration, Immunological Processes, And Bone Marrow Repression [1, 4, And 14]. Globally, The Liver Disease Is A Significant Healthcare Issue With Hematologic Dysfunctional Conditions Like Thrombocytopenia Adding To The Morbidity And Risk Of Bleeding In Both Routine And Invasive Procedures [1, 2].

The Thrombocytopenia Severity Is Also In Line With What Has Been Presented Before In The Region And Internationally. Both Mehmood Et Al. And Abbas Et Al. Have Demonstrated That Thrombocytopenia Is Extremely Common Among The Patients With Cirrhosis That Report To Tertiary Care Hospitals, And Usually Correlates With The Extent Of Portal Hypertension And Splenic Platelet Pooling [7,8]. This Trend Was Also Present Within Our Cohort, With Mild To Moderate Thrombocytopenia Being The Most Common, Yet Severe Thrombocytopenia Was Also A Subgroup Of Clinical Interest. These Patterns Support The Known Fact That The Number Of Platelets Reduces Gradually With The Increasing Grades Of Hepatic Fibrosis And Portal Hypertension. Pathophysiology In Chronic Liver Disease, Thrombocytopenia Is Multifactorial In Nature. Less Hepatic Production Of Thrombopoietin Is A Major Cause, And Hypersplenism Due To Portal Hypertension Is A Significant Contributory Factor Due To Increased Platelet Sequestration [4,14]. Further, Related Disorders Like Metabolic Dysfunction -Related Fatty Liver Disease, Alcoholic Liver Disease, And Viral Hepatitis Can Contribute To Worsening Thrombocytopenia In Terms Of Immune Control And Bone Marrow Suppression [6, 12]. This Multifactorial Aetiology Is Supported By Our Findings With Patients Having Advanced Or Decompensated Cirrhosis Showing More Tendencies Of Presenting With Lower Platelet Counts.

The Clinical Implications Are Very Important Especially When It Comes To Invasive Procedures. Easl And Ash Guidelines Note That Risk Bleeding Should Be Assessed Carefully And That Strategies Of Proper Correction Should Be Applied Based On The Procedural Requirements [2, 11, And 16]. Severely Thrombocytopenic Patients May Need To Be Optimized With Regard To Peri-Procedural Factors, Such As Platelet Transfusion Or Pharmacologic Measures. Recent Innovations, E.G. Thrombopoietin Receptor Agonists (Tpo-Ras), Are An Effective Alternative To Transfusion And May Achieve An Improvement In The Platelet Counts With Favourable Safety Profiles As Demonstrated In Meta-Analyses And Clinical Trials [13,15]. Even Though Our Research Did Not Assess Therapeutic Interventions, The Percentage Of Thrombocytopenia Severity Distribution Proves The Significance Of Personalized Peri-Procedural Planning.

Predictive Utility Of Doppler Ultrasonography And Portal Hemodynamic Had Been Mentioned In Past Literature As They Had Shown That Asymmetry Of Flow Patterns Is Associated Not Only With The Progression Of Cirrhosis But Also With The Extent Of Hematologic Malfunction [10]. These Results Are Comparable To Hematologic Patterns That Can Be Found In Our Population, Thus Indicating That Thrombocytopenia Can Be An Effective Indirect Indicator Of The Severity Of The Disease And Portal Hypertension.

Some Of The Strengths Of This Study Are That It Dwells Upon The Severity Of Platelet Count And Is Pertinent To The Everyday Clinical Practice. The Results Mirror The Current World Trends In Tertiary Care Facilities And Favour The Existing World Knowledge Of Thrombocytopenia In Liver Disease. Limitations, However, Are That There Is Only Single-Centre Design And Stratification Not By Aetiology Of Cirrhosis Or Decompensation Status. As Well, Longitudinal Follow-Up Of The Bleeding Outcomes Was Not Carried Out. Future Studies Which Include Multicentre Cohort Studies, Dynamic Evaluation Of Platelet Changes And Longitudinal Clinical Outcome Would Enhance Interpretability.

Overall, This Paper Confirms That Thrombocytopenia Is Largely Common In The Case Of Chronic Liver Disease Patients, And The Severity Of Anaemia Depends On The Progress Of The Disease. To Achieve Optimal Management, Risk Stratification And Safe Conduct Of Invasive Procedures In This Group Of Patients, It Is Crucial To Identify The Frequency, Underlying Mechanisms, And Clinical Implications Of The Condition.

Conclusion

This Paper Shows That Thrombocytopenia Is A Common And Clinically Relevant Observation In The Chronic Liver Disease And The Severity Of The Condition Rises With The Worsening Of Hepatic Dysfunction. It Is Imperative To Identify Its Trends With The Aim Of Determining The Risk Of Bleeding And Designing Invasive Interventions. Timely Detection And Proper Follow Up Of Thrombocytopenia Would Aid In A Safer Clinical Decision Making And Overall Management Of Chronic Liver Disease Patients.

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