Continuous 24-hour blood pressure monitoring, including assessment of dipping status and variability, is essential for accurate cardiovascular risk evaluation. Incorporating ambulatory blood pressure monitoring into routine risk assessment programs could help identify individuals at higher risk, particularly those with non-dipping patterns or elevated nighttime variability. Early detection and targeted interventions may reduce target organ damage and improve long-term cardiovascular outcomes.

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CORRELATION OF NEUTROPHIL-TO-LYMPHOCYTE RATIO WITH CHILD-PUGH SCORE IN PATIENTS WITH LIVER CIRRHOSIS

Introduction

Liver cirrhosis is a major cause of morbidity and mortality worldwide. It represents the end-stage of chronic liver disease, characterized by progressive fibrosis and the development of complications such as ascites, variceal bleeding, and hepatic encephalopathy. The Child-Pugh score remains one of the most widely used tools for assessing disease severity and predicting prognosis in cirrhosis patients. It incorporates five parameters: serum bilirubin, serum albumin, prothrombin time/INR, presence of ascites, and presence of hepatic encephalopathy.

Systemic inflammation is increasingly recognized as a key driver of cirrhosis progression. Mechanisms such as gut dysbiosis, bacterial translocation, and endotoxemia contribute to a persistent pro-inflammatory state that accelerates disease decompensation. The Neutrophil-to-Lymphocyte Ratio (NLR), derived from the routine complete blood count, has emerged as a cost-effective marker of systemic inflammation. Elevated NLR has been associated with poor outcomes in various chronic diseases, including cardiovascular disease, malignancy, and chronic liver disease.

Goal

The primary goal of this study is to investigate the correlation between the Neutrophil-to-Lymphocyte Ratio (NLR) and the Child-Pugh score in 20 patients diagnosed with liver cirrhosis.

The secondary objectives are: 1. To compare mean NLR values across Child-Pugh classes A, B, and C. 2. To assess the correlation between NLR and individual biochemical parameters including bilirubin and albumin.

Material and methods of research

This was a retrospective case review conducted at Gomel City Clinical Hospital No. 3. Data were extracted from an existing clinical database of patients diagnosed with liver cirrhosis. A total of 20 patients with confirmed diagnosis of liver cirrhosis were included in this study. The diagnosis was established based on clinical presentation, biochemical abnormalities, and ultrasound findings consistent with cirrhosis (such as nodular liver surface, coarse echotexture, and signs of portal hypertension).

For each patient, the collected data encompassed demographics, including age and gender, as well as disease etiology, with the primary diagnosis categorized as toxic-alimentary, cryptogenic, or other. Laboratory parameters were divided into complete blood count (CBC) components– specifically the absolute neutrophil count ($\times 10^3/\mu L$) and absolute lymphocyte count ($\times 10^3/\mu L$) – and biochemical markers, which included serum bilirubin (μmol/L), serum albumin (g/L), and the international normalized ratio (INR). Clinical parameters were also recorded, comprising the presence and severity of ascites (classified as none, mild, moderate, or severe), the grade of hepatic encephalopathy, and the presence of varices. Disease severity was quantified using the Child-Pugh score, which was further stratified into classes A (5–6 points), B (7–9 points), and C (10–15 points). Finally, the Neutrophil-to-Lymphocyte Ratio (NLR) was derived by calculating the absolute neutrophil count divided by the absolute lymphocyte count.

Data was analyzed using Microsoft Excel. Descriptive statistics including mean and standard deviation were calculated for continuous variables. Mean NLR values were compared across Child-Pugh classes A, B, and C. The Pearson correlation coefficient (r) was calculated to assess the linear relationship between:1. NLR and Child-Pugh Score. 2. NLR and Serum Albumin. 3. NLR and Serum Bilirubin.

The results of the research and their discussion

The cohort consisted of 20 patients, with a mean age of 59.2 years, ranging from 45 to 76 years. The gender distribution was as follows: 11 male patients (55%) and 9 female patients (45%). In terms of liver disease severity, based on the Child-Pugh classification, 7 patients (35%) were classified as Class A (Child-Pugh score 5–6), 6 patients (30%) as Class B (score 7–9), and 7 patients (35%) as Class C (score 10–15). Ascites was noted in a varying degree, with 9 patients (45%) having no ascites, 4 patients (20%) experiencing mild ascites, 1 patient (5%) presenting with moderate ascites, and 6 patients (30%) showing severe ascites. Regarding encephalopathy, 9 patients (45%) had no encephalopathy, 7 patients (35%) were classified as Grade 0-I (minimal hepatic encephalopathy), 3 patients (15%) were in Grade I (mild hepatic encephalopathy), and 1 patient (5%) had Grade I–II (moderate hepatic encephalopathy) (Table 1).

Table 1 – NLR distribution by Child-Pugh Class

Class	Count	Mean	Std	Median	Min	Max
A	7	1.59	0.67	1.33	1.05	2.94
B	6	2.02	1.11	1.9	0.89	4
C	7	6.16	4.60	5.83	1.83	12.71

Patients with Child-Pugh Class C cirrhosis had a mean NLR of 6.16, which was notably higher than those with Class A (1.59) and Class B (2.02) (Figure 1).

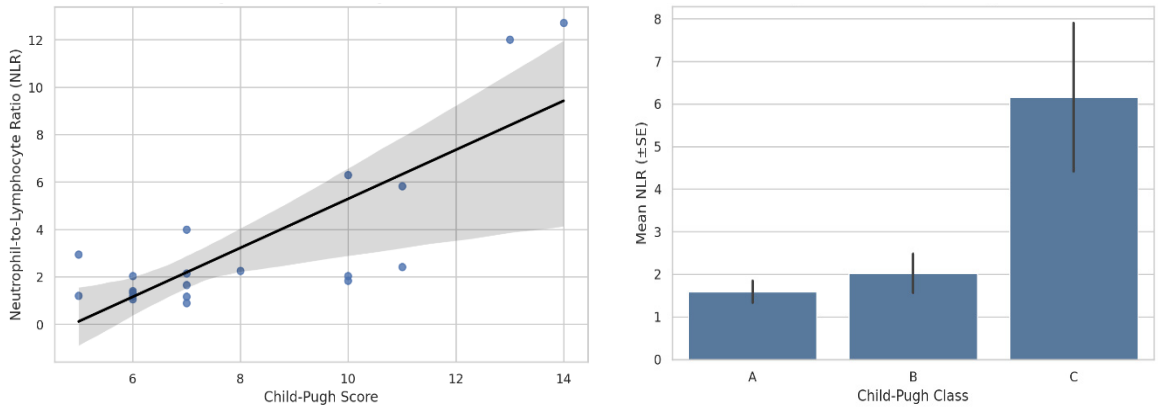


Figure 1 – NLR and Child-Pugh score comparison

The correlations between the NLR and other clinical variables were analyzed using complete pairs (N=20). A strong positive correlation was found between NLR and Child-Pugh Score (Pearson r=0.801), suggesting that higher Child-Pugh scores are associated with higher NLR values. Additionally, a moderate-to-strong positive correlation was observed between NLR and Bilirubin (Pearson r=0.649), indicating that higher levels of Bilirubin are associated with increased NLR. Conversely, a moderate-to-strong negative correlation was found between NLR and Albumin (Pearson r= –0.633), showing that lower levels of Albumin are linked to higher NLR values.

This retrospective case review of 20 cirrhosis patients reveals a strong association between the Neutrophil-to-Lymphocyte Ratio (NLR) and disease severity, as measured by the Child-Pugh score. Patients with advanced cirrhosis (Class C) had a significantly higher mean NLR (6.16) compared to those with compensated (Class A: 1.59) and moderately decompensated cirrhosis (Class B: 2.02).

These findings align with existing literature, where elevated NLR is associated with increased mortality and complications in cirrhosis. Systemic inflammation, reflected by NLR, is thought to stem from gut dysbiosis, bacterial translocation, and endotoxemia, which worsen with disease progression.

The clear separation of NLR values between Class A and Class C patients suggests that an NLR >5.0 could be a useful threshold for identifying advanced decompensated cirrhosis. All patients with NLR >5.0 were in Class C, except for one in Class B with moderate ascites. The correlation between NLR and bilirubin, albumin, and INR suggests that systemic inflammation is closely linked to liver dysfunction, particularly impaired excretory and synthetic capacities.

Due to its simplicity and low cost, NLR could serve as an adjunct tool for assessing cirrhosis severity. In resource-limited settings, NLR from a routine CBC can provide rapid insight into disease status, and serial NLR measurements could also help monitor progression and treatment response.

Conclusions

In this cohort of 20 patients with liver cirrhosis, the Neutrophil-to-Lymphocyte Ratio demonstrated a clear association with Child-Pugh score. Patients with Child-Pugh Class C cirrhosis had a mean NLR of 6.16, significantly higher than those with Class A (1.59) and Class B (2.02). NLR also showed meaningful relationships with bilirubin, albumin, and INR.

NLR is a simple, inexpensive, and readily available marker that may serve as a useful adjunctive tool for assessing disease severity in cirrhosis, particularly in resource-limited settings. Further prospective studies are warranted to validate these findings and establish the clinical utility of NLR in routine cirrhosis management.

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ANALYSIS OF RISK FACTORS AND ECHOCARDIOGRAPHIC MARKERS IN PATIENTS WITH HEART FAILURE AND ATRIAL FIBRILLATION

Introduction

In comparison to either illness alone, atrial fibrillation and heart failure often coexist, resulting in a complex clinical syndrome that is linked to a worse prognosis, higher hospitalisation rates, and increased death [1]. Studies show that about one-third of patients with HF also have concurrent AF, and that up to 40% of patients with AF will develop HF during the course of their condition [2]. Common risk factors for both illnesses include obesity, diabetes mellitus, valvular heart disease, hypertension, and coronary artery disease. These conditions promote structural and electrical remodelling of the myocardium, which predisposes to both atrial arrhythmogenesis and systolic/diastolic dysfunction.

Haemodynamic changes, such as higher left ventricular filling pressures, increased atrial strain, and neurohormonal activation, encourage electrical remodelling and fibrotic changes in the atrial myocardium in patients who already have heart failure [3]. Particularly in patients with compromised diastolic function, the absence of synchronised atrial contraction (atrial kick) lowers ventricular filling and may result in a 20–30% reduction in cardiac output.

Patients with poorly managed ventricular rates may develop tachycardia-induced cardiomyopathy, where prolonged tachycardia causes improper calcium handling, depletion of high-energy phosphates, and progressive ventricular failure [4]. With higher risks of stroke, systemic embolism, HF hospitalisation, and all-cause mortality, patients with both illnesses had worse results than those with either condition alone [5]. Recent studies indicate that early rhythm control may enhance results in certain populations, although the best timing and selection of therapies are still being investigated [6].

Goal

The main goal was to describe the clinical and demographic characteristics of patients who presented with atrial fibrillation as a heart failure complication, with a focus on the examination of the temporal relationship between HF diagnosis and AF onset, including latency periods and progression patterns.