

# The Role of the Albumin-Bilirubin Score in Predicting Hemolysis, Elevated Liver Enzymes, and Low Platelet Count Syndrome

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## ABSTRACT

**Objective:** This study evaluated the utility of the Albumin-Bilirubin (ALBI) score as an indicator of liver dysfunction during pregnancy. The aim was to investigate the effectiveness of the ALBI score, which assesses liver function, in predicting the development of hemolysis, elevated liver enzymes, and low platelet count (HELLP) syndrome.

**Methods:** This retrospective case-control study was conducted at a tertiary center in Ankara between January 1, 2018, and January 1, 2022. Sixty-one patients diagnosed with HELLP syndrome and 122 healthy pregnant women, matched for age and gestational age, were included. Blood samples were collected at 20–28 weeks' gestation, an average of six weeks before the development of HELLP syndrome findings. Demographic, clinical, and biochemical data for all participants were analyzed. The ALBI scores of patients with confirmed HELLP syndrome were compared with those of the control group using regression and receiver operating characteristic (ROC) curve analysis to assess predictive value.

**Results:** Total bilirubin levels were significantly higher and albumin levels were significantly lower in the HELLP group ( $p < 0.05$ ). Consequently, ALBI scores were significantly higher ( $p = 0.004$ ). ROC showed that ALBI had discriminatory power in predicting HELLP syndrome (area under the curve = 0.629;  $p = 0.007$ ). In both the HELLP group and the group including all participants, the ALBI score was not statistically significant in predicting poor composite neonatal outcome ( $p > 0.05$ ).

**Conclusion:** Although the ALBI score is used in prognostication for liver diseases, it can also be used for early prediction of HELLP syndrome. Prospective multicenter studies are needed to confirm cutoff values and reliability.

## INTRODUCTION

HELLP syndrome is a complex, pregnancy-specific disease with systemic involvement, and its pathogenesis is not completely understood. However, it is assumed that trophoblast infiltration during placental formation and remodeling of the uterine spiral arterioles are closely associated with the development of the disease.<sup>[1]</sup> Preeclampsia and other hypertensive disorders are among the most serious complications of pregnancy and are the leading cause of direct maternal mortality, accounting for 27% of deaths.<sup>[2]</sup> In severe cases, multiple organ systems may be affected

and damaged, including the kidneys, liver, brain, and vascular system, increasing the risk of death. A severe form of preeclampsia in which liver function is impaired solely by pregnancy and is characterized by hemolysis, elevated liver enzymes, and low platelet count is known as HELLP syndrome.<sup>[3]</sup>

To date, various treatments and micronutrient supplements have been studied and proposed to reduce the risk of preeclampsia, including antiplatelet agents, antioxidant vitamins, vitamin D, calcium and magnesium supplements.<sup>[4,5]</sup> However, no treatment intervention or nutrient

supplementation has been proven effective for treating preeclampsia, which may result in catastrophic outcomes if appropriate management is delayed due to inadequate or ineffective screening methods or tools. As there is no proven prophylaxis or treatment for preeclampsia, the focus should be on early prediction and proper management of the at-risk group for the development of preeclampsia and HELLP syndrome. By investigating biomarkers linked to processes involved in the currently known etiopathogenesis of the disease, especially before clinical manifestation, significant progress can be made in the timely prediction of the disease, its severity, and prognosis. This allows for earlier initiation of therapeutic measures and intensive follow-up.

In women with preeclampsia, ischemic vascular changes and endothelial damage can be observed in all organs, especially the placenta, kidneys, brain, and liver. It has long been accepted that this systemic endothelial damage is caused by an imbalance between angiogenic and antiangiogenic factors, with the antiangiogenic side prevailing.<sup>[6]</sup> Liver histopathology of women with preeclampsia showed endothelial cell damage, microvesicular adiposity, fibrinogen accumulation and ischemic periportal hemorrhage.<sup>[7]</sup>

The albumin-bilirubin (ALBI) score was initially developed as a measure of hepatic function in hepatocellular carcinoma and was later successfully used to predict survival and prognosis in many non-malignant liver diseases.<sup>[8-10]</sup> Significant impairment of liver function is associated with high morbidity and mortality, regardless of the underlying cause. Therefore, ALBI, as a measure of hepatic function, may serve as a prognostic or predictive factor for conditions beyond primary liver diseases.

In this context, our hypothesis was based on the fact that the development of HELLP can be predicted by the ALBI score. Our aim was to investigate the efficacy of the ALBI score, which is used to measure liver function in various liver diseases, in predicting the development of HELLP syndrome in patients with preeclampsia.

## MATERIALS AND METHODS

### Design

We conducted a retrospective case-control study of women diagnosed with HELLP syndrome and healthy pregnant women between January 1, 2018, and January 1, 2022, at a large tertiary referral hospital in Ankara. After approval by the ethics committee of the local hospital for medical research (Date: 21/04/2022, No: E-90057706-799-05), the medical records were retrospectively reviewed. All procedures were conducted in accordance with ethical rules and the principles of the Declaration of Helsinki. However, as not all participants could be reached, and this was a retrospective study, written informed consent could not be obtained.

The age range of the pregnant women included in the study was 18-45 years. Patients with known cardiovascular, au-

toimmune, or endocrine disease, liver and gallbladder disease, acute or chronic kidney disease, known malignancies, malnutrition, multiple pregnancies, assisted reproductive technology pregnancies and smokers were excluded from the study. The diagnosis of HELLP was made according to the guidelines of the 2020 Practice Bulletin of the American College of Obstetricians and Gynecologists (ACOG).<sup>[11]</sup> The participants were divided into two groups: The study group included 61 patients diagnosed with HELLP syndrome, and the control group consisted of 122 healthy pregnant women matched for age and gestational week. A total of 183 cases were analyzed retrospectively.

### Randomization

Two patients – one before and one after each of the 61 retrospectively screened and verified patients with a HELLP diagnosis who presented to the hospital according to the hospital protocol number and met the inclusion and exclusion criteria – were included in the control group. The control group consisted of 122 individuals, with an allocation ratio of 1:2.

### Data collection

The demographic and clinical characteristics of the patients included in the study were analyzed in detail. Demographic data collected included age, body mass index (BMI), number of pregnancies, parity, previous pregnancy history, gestational age at presentation, gestational age at delivery, fetal sex, APGAR scores, need for neonatal resuscitation, neonatal characteristics, smoking status, and history of assisted reproductive treatment. Clinical data included patients' blood pressure readings and other clinical parameters specific to HELLP syndrome. Blood samples and laboratory data from patients diagnosed with HELLP syndrome were retrospectively analyzed using hospital records archived at the time of diagnosis.

Blood samples were collected between 20 and 28 weeks of gestation, before the diagnosis of HELLP syndrome (median time to diagnosis was 6 weeks). In the control group, blood samples were also collected between 20 and 28 weeks of gestation. The patients' laboratory parameters were analyzed comprehensively. Complete blood counts, including white blood cells, neutrophil granulocytes, lymphocytes, and platelets; biochemical analyses, such as aspartate aminotransferase, alanine transaminase, lactate dehydrogenase, albumin, and creatinine; bleeding profiles; and platelet function were measured. ALBI scores were calculated using the formula  $(\log_{10} \text{bilirubin} \times 0.66) + (\text{albumin} \times -0.085)$ .<sup>[7]</sup>

### CNO (composite neonatal outcome)

The composite neonatal outcome described fetal well-being and included several components: A 5-minute APGAR score above 7, no admission to a neonatal intensive care unit, and a birth weight over 2,500 g. The absence of these criteria or the presence of any adverse component was defined as "poor CNO".

**Table 1.** Maternal and neonatal demographic and clinical characteristics

| Variable                                  | Control (n=122)  | HELLP (n=61)    | p                |
|---|------------------|-----------------|------------------|
| Age (years)                               | 26 (24-30)       | 29 (25-33)      | 0.055            |
| BMI (kg/m <sup>2</sup> )                  | 29.0 (26.1-32.9) | 29 (26-33)      | 0.532            |
| Gravida                                   | 2 (1-3)          | 2 (1-3)         | 0.922            |
| Parity                                    | 1 (0-2)          | 1 (0-1)         | 0.581            |
| Abortus                                   | 0 (0-0)          | 0 (0-1)         | 0.733            |
| Gestational age at blood sampling (weeks) | 26 (25-26)       | 26 (25-27)      | 0.945            |
| Gestational age at delivery (weeks)       | 39 (38-40)       | 33 (29-35)      | <b>&lt;0.001</b> |
| Fetal female gender                       | 55 (45.1)        | 29 (47.5)       | 0.753            |
| APGAR Score at 1st minute                 | 9 (9-9)          | 7 (4-9)         | <b>&lt;0.001</b> |
| APGAR Score at 5th minute                 | 10 (10-10)       | 8 (7-10)        | <b>&lt;0.001</b> |
| Neonatal intensive care unit admission    | 11 (9.0)         | 34 (55.1)       | <b>&lt;0.001</b> |
| Birth weight (grams)                      | 3240 (2948-3503) | 1565 (847-2410) | <b>&lt;0.001</b> |
| Systolic blood pressure at birth (mmHg)   | 110 (106-111)    | 155 (150-160)   | <b>&lt;0.001</b> |
| Diastolic pressure at birth (mmHg)        | 69 (66-71)       | 105 (98-110)    | <b>&lt;0.001</b> |
| Poor composite neonatal outcome           | 16 (13.1)        | 49 (80.3)       | <b>&lt;0.001</b> |

BMI, body mass index. Data are expressed as median and quartiles (Q1-Q3), or number (percentage) where appropriate. A p value of <0.05 indicates a significant difference. Statistically significant p-values are in bold.

### Statistical analysis

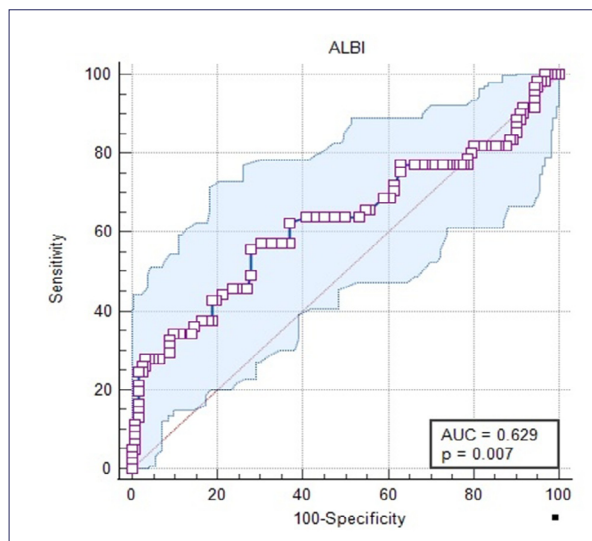
All statistical analyses were performed using RStudio (Af-fero General Public License v3; 2011). We used histograms, probability plots, and the Kolmogorov-Smirnov/Shapiro-Wilk tests to assess whether the variables were normally distributed. Descriptive analysis of non-normally distributed numerical data used medians and quartiles (Q1-Q3). Mann-Whitney U tests were conducted to compare these parameters among the groups. For categorical variables, descriptive analyses were presented as frequency and percentage. Relationships between categorical variables were analyzed using the Chi-square test or Fisher's exact test. Receiver operating characteristic (ROC) analysis was used to evaluate CNO and HELLP syndrome prediction parameters. When a cut-off value was significant, sensitivity, specificity, and area under the curve (AUC) were reported. Multivariate analysis used binary logistic regression to identify new independent HELLP syndrome variables from univariate analyses. Model fit was assessed with the Hosmer-Lemeshow goodness-of-fit statistic. A p-value below 0.05 indicated statistical significance.

### RESULTS

A total of 183 participants were included: 61 patients in the HELLP group and 122 in the control group. There were no significant differences between the groups in age, BMI, gravidity, parity, or history of miscarriage (all p>0.05). Gestational age at admission was similar (26 [25-26] weeks vs. 26 [25-27] weeks, p=0.945), but HELLP patients delivered significantly earlier (p<0.001). Neonatal outcomes were significantly worse in the HELLP group: 1st and 5th minute

APGAR scores were lower (p<0.001), the intensive care unit admission rate was higher (55.1% vs. 9.0%, p<0.001), birth weights were lower (p<0.001), and the rate of poor composite negative neonatal outcomes was higher (80.3% vs. 13.1%, p<0.001). Systolic and diastolic blood pressures were significantly higher in HELLP patients (p<0.001) (Table 1).

Hematologic parameters, including hemoglobin, leukocyte, neutrophil, monocyte, and platelet counts, were similar between groups, but lymphocyte counts were

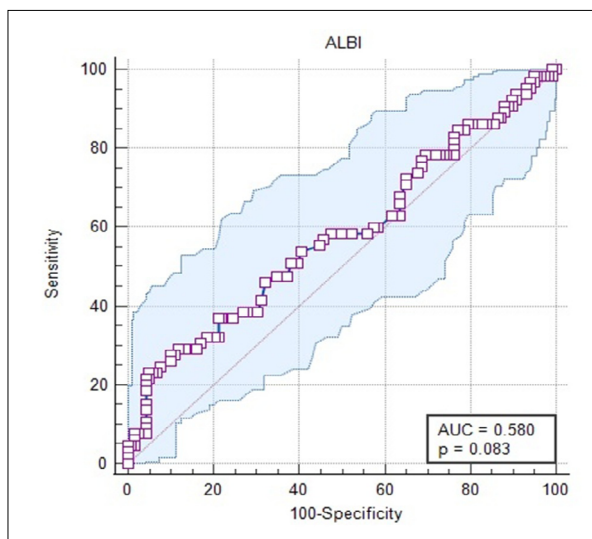


**Figure 1.** Receiver operating characteristic curve analysis of ALBI values for predicting hemolysis, elevated liver enzymes, and low platelet syndrome.

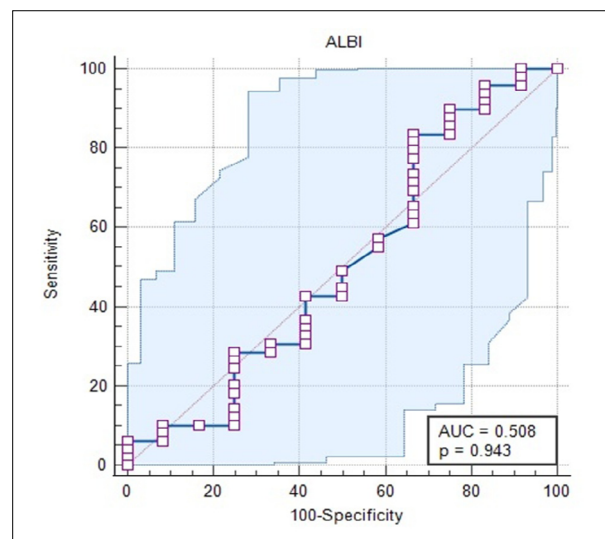
**Table 2.** Comparison of ALBI scores and laboratory parameters between groups

| Variable                       | Control<br>(n=122)   | HELLP<br>(n=61)      | p            |
|--------------------------------|----------------------|----------------------|--------------|
| Hemoglobin (g/dL)              | 12.0 (11.0-12.8)     | 12.3 (11.2-13.2)     | 0.113        |
| WBC (mm <sup>3</sup> )         | 8320 (7133-10018)    | 8900 (7095-10850)    | 0.478        |
| Lymphocytes (mm <sup>3</sup> ) | 1825 (1500-2183)     | 2050 (1460-2830)     | 0.053        |
| Neutrophils (mm <sup>3</sup> ) | 5705 (4668-7118)     | 5530 (4390-6920)     | 0.355        |
| Monocytes (mm <sup>3</sup> )   | 600 (430-750)        | 630 (575-700)        | 0.105        |
| Platelets (mm <sup>3</sup> )   | 247 (210-288)        | 273 (182-385)        | 0.253        |
| AST (U/L)                      | 15 (12-17)           | 16 (11-21)           | 0.240        |
| ALT (U/L)                      | 12 (10-16)           | 13 (9-18)            | 0.947        |
| LDH (U/L)                      | 199 (197-204)        | 200 (194-230)        | 0.502        |
| Total bilirubin (mg/dL)        | 0.30 (0.23-0.42)     | 0.38 (0.27-0.52)     | <b>0.018</b> |
| Albumin (g/L)                  | 39.0 (37.7-41.0)     | 38.0 (35.0-42.0)     | <b>0.012</b> |
| ALBI score                     | -2.84 (-3.04; -2.69) | -2.72 (-2.93; -2.36) | <b>0.004</b> |

AST: Aspartate aminotransferase; ALBI: Albumin-bilirubin; ALT: Alanine transaminase; LDH; Lactate dehydrogenase; WBC: White blood count. Data are expressed as median and quartiles (Q1-Q3). A p value of <0.05 indicates a significant difference. Statistically significant p-values are in bold.



**Figure 2.** Receiver operating characteristic curve analysis of albumin-bilirubin values for predicting poor composite neonatal outcomes in all participants.



**Figure 3.** Receiver operating characteristic curve analysis of albumin-bilirubin values for predicting poor composite neonatal outcomes in patients with hemolysis, elevated liver enzymes, and low platelet syndrome only.

slightly higher in the HELLP group ( $p=0.053$ ). Biochemical analysis showed significantly higher total bilirubin levels (0.38 [0.27–0.52] vs. 0.30 [0.23–0.42] mg/dL,  $p=0.018$ ) and lower albumin levels (38.0 [35.0–42.0] vs. 39.0 [37.7–41.0] g/L,  $p=0.012$ ) in the HELLP group, resulting in a higher ALBI score (-2.72 [-2.93; -2.36] vs. -2.84 [-3.04; -2.69],  $p=0.004$ ). No significant differences were found in AST, ALT, or LDH levels (Table 2). ROC analysis showed that the ALBI score had discriminatory power for HELLP, with an AUC of 0.629 (cut-off  $>-2.73$ ; 95% CI: 0.554–0.699;  $p=0.007$ ) (Fig. 1). At 90% sensitivity, the cut-off value was  $>-3.30$ , and at 90% specificity, it was  $>-2.58$ . The ALBI

score was not statistically significant for predicting poor CNO in patients diagnosed with HELLP or in the overall patient group ( $p=0.943$  and  $p=0.083$ , respectively) (Fig. 2 & Fig. 3). These results suggest that although the ALBI score provides moderate discrimination between HELLP patients and the control group, its utility for predicting adverse neonatal outcomes is limited (Table 3).

Table 4 examines the ALBI score calculated from blood samples taken at 20–28 weeks of gestation, maternal blood total bilirubin and albumin values, and demographic data as risk factors for the development of HELLP syndrome. Albumin and ALBI scores were statistically signif-

**Table 3.** ROC analysis for predicting HELLP syndrome (using the optimal cut-off, 90% sensitivity, and 90% specificity) and poor CNO using the ALBI score

| Variable                                | AUC   | CI 95%      | p     | Cut-off value | Sensitivity (%) | Specificity (%) |
|---|-------|-------------|-------|---------------|-----------------|-----------------|
| HELLP prediction                        | 0.629 | 0.554-0.699 | 0.007 | >-2.73        | 56              | 72              |
|   |       |             |       | >-2.58        | 34              | 90              |
|   |       |             |       | >-3.30        | 90              | 8               |
| Poor CNO prediction in all participants | 0.580 | 0.505-0.652 | 0.083 | >-2.45        | 23              | 95              |
| Poor CNO prediction only in HELLP group | 0.508 | 0.376-0.638 | 0.943 | >-3.12        | 84              | 33              |

ALBI: Albumin-bilirubin; AUC: Area under the curve; CI: Confidence interval; CNO: Composite neonatal outcome; HELLP: Hemolysis, elevated liver enzymes and low platelet; ROC: Receiver operating characteristic. A p value of <0.05 indicates a significant difference. Statistically significant p-values are in bold.

**Table 4.** Multivariate and univariate logistic regression analyses to determine the increased risk of developing HELLP syndrome associated with changes in various parameters

| Variable                 | OR    | CI (95%)     | p            |
|--------------------------|-------|--------------|--------------|
| Age (year)               | 1.048 | 0.992-1.106  | 0.094        |
| BMI (kg/m <sup>2</sup> ) | 1.025 | 0.959-1.094  | 0.467        |
| Parity                   | 0.980 | 0.740-1.297  | 0.887        |
| Albumin (g/L)            | 0.889 | 0.811-0.975  | <b>0.012</b> |
| Total bilirubin (mg/dL)  | 5.119 | 0.878-29.850 | 0.070        |
| ALBI                     | 4.406 | 1.654-11.736 | <b>0.003</b> |
| ALBI <sup>‡</sup>        | 5.102 | 1.861-13.984 | <b>0.002</b> |

ALBI: Albumin-bilirubin; BMI: Body mass index; CI: Confidence interval; HELLP: Hemolysis, elevated liver enzymes and low platelet; OR: Odds ratio. A p value of <0.05 indicates a significant difference. Statistically significant p-values are in bold. <sup>‡</sup>Age, BMI and parity adjusted.

icant (p<0.05). When ALBI scores were adjusted for age, BMI, and parity, each unit increase in the ALBI score increased the risk of developing HELLP syndrome by 5.102 times [OR: 5.102; 95% CI: 1.861–13.984; p=0.002].

## DISCUSSION

In this study, we investigated the diagnostic value of the ALBI score, which is calculated on the basis of albumin and bilirubin and provides information on liver function, in pregnant women with HELLP syndrome compared to healthy pregnant women. We showed that the ALBI score has a sensitivity of 90% for diagnosing HELLP syndrome when the cutoff value is set at -3.30. These biochemical changes were associated with prematurity, low birth weight, low APGAR scores, higher rates of ICU admission, and more frequent adverse neonatal outcomes, confirming the known burden of HELLP on perinatal health. Our findings were consistent with previous studies that reported liver dysfunction, endothelial damage, and systemic involvement in HELLP syndrome and preeclampsia, which are among the most severe pregnancy complications worldwide.<sup>[12-14]</sup>

The ALBI score was originally developed for the objective assessment of liver function in patients with hepatocellular carcinoma.<sup>[8]</sup> Since then, it has been validated as a predictor of morbidity and mortality in numerous non-malignant liver diseases.<sup>[15,16]</sup> In our study population, the ALBI score, with an AUC of 0.629, demonstrated moderate discriminatory power in distinguishing HELLP patients from controls. Although transaminase and lactate dehydrogenase (LDH) levels did not differ significantly between groups, the ALBI score detected subtle changes in liver function, demonstrating its potential as a more comprehensive index than individual liver markers.

In previous studies, the ALBI score was used to assess cholestasis in pregnancy and to investigate its association with liver damage. No difference was found between the control group and the cholestasis group regarding the ALBI score. However, unlike our study, the relationship between the ALBI score and pregnancy outcomes was not evaluated.<sup>[17,18]</sup> In our study, the predictive value of ALBI for neonatal outcomes was limited. Although HELLP syndrome was strongly associated with an unfavorable neonatal prognosis, ALBI did not significantly improve prediction of the composite neonatal outcome (AUC, 0.580). In

the analysis of the HELLP group, ALBI almost completely lost its prognostic ability (AUC, 0.508). These results suggest that although ALBI may be useful for detecting liver dysfunction and distinguishing a HELLP pregnancy from a healthy pregnancy, neonatal outcome is likely influenced by many additional maternal, fetal, and placental factors beyond liver function.

Currently, clinical studies support the validity of the ALBI score for assessing liver function during hepatectomy, radiofrequency ablation, transarterial chemoembolization, radiation therapy, and systemic therapy. However, because the ALBI score includes only serum albumin and bilirubin, it has limitations. First, serum albumin levels may vary in patients with liver disease, those receiving albumin replacement therapy, or those taking branched-chain amino acid medications. Second, albumin levels may differ depending on the measurement method used. Additionally, bilirubin levels may be elevated in patients with constitutional jaundice despite normal liver function, which can affect the ALBI score.<sup>[19]</sup> It should also be noted that the clinical presentation of HELLP syndrome does not arise primarily or solely from liver damage. However, despite these confounding factors, we believe that demonstrating a score obtained from a simple blood test can predict HELLP syndrome an average of six weeks before it occurs, which will inspire future studies. The ALBI score, considered significant for predicting preeclampsia.<sup>[20]</sup> has generally been supported by clinical studies and provides a valid basis for future research on bilirubin metabolism, liver inflammation, and immunology.

Our study has some limitations. First, generalizability may be limited by the single-center retrospective design. Second, we did not perform dynamic measurements of ALBI during pregnancy, which may have greater predictive value than a single measurement. Third, our sample size, particularly in the HELLP group, was relatively small, which may have reduced the statistical power of the ROC analysis.

## CONCLUSION

Despite these limitations, our results are clinically relevant. The ALBI score is a simple, inexpensive, and easy-to-calculate index based on routinely measured laboratory parameters. Its moderate ability to distinguish HELLP patients from healthy pregnancies suggests it could complement current diagnostic tools in clinical practice. However, its limited role in predicting neonatal outcomes highlights the need to integrate ALBI with other maternal, fetal, and placental biomarkers in future predictive models. Prospective multicenter studies with larger populations are needed to further clarify the role of ALBI in risk stratification and management of HELLP syndrome.

## Ethics Committee Approval

The study was approved by the Etlik Zübeyde Hanım Women's Hospital Ethics Committee (Date: 21.04.2022, Decision No: E-90057706-799-05).

## Informed Consent

The requirement for informed consent was waived due to the retrospective nature of the study.

## Peer-review

Externally peer-reviewed.

## Authorship Contributions

Concept: M.L.D.; Design: S.S., C.I.; Supervision: M.L.D., C.I.; Materials: S.S.; Data collection &/or processing: M.L.D., S.S.; Analysis and/or interpretation: S.S.; Literature search: M.L.D., S.S.; Writing: M.L.D.; Critical review: S.C.

## Conflict of Interest

None declared.

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## Hemoliz, Yüksek Karaciğer Enzimleri ve Düşük Trombosit Sayısı Sendromunu Öngörmeye Albümin-Bilirubin Skorunun Rolü

**Amaç:** Çalışmanın amacı, karaciğer fonksiyon bozukluğunun değerlendirilmesinde kullanılan albumin-bilirubin (ALBI) skorunun, karaciğerin belirgin olarak etkilendiği hemoliz, yüksek karaciğer enzimleri ve düşük trombosit sayısı (HELLP) sendromunun gelişimini öngörmedeki etkinliğini araştırmaktır.

**Gereç ve Yöntem:** Bu retrospektif vaka-kontrol çalışması, 1 Ocak 2018 ile 1 Ocak 2022 tarihleri arasında Ankara'da üçüncü basamak bir merkezde yürütülmüştür. Çalışmaya HELLP sendromu tanısı almış 61 hasta ile birlikte yaş ve gebelik haftaları eşleştirilmiş 122 sağlıklı gebe kadın dahil edilmiştir. Kan örnekleri, HELLP sendromu bulgularının gelişmesinden ortalama 6 hafta önce, gebeliğin 20-28. haftalarında alınmıştır. Tüm katılımcıların demografik, klinik ve biyokimyasal verileri analiz edilmiştir. HELLP sendromu tanısı doğrulanmış hastaların ALBI skorları, öngörü değerini değerlendirmek için regresyon ve alıcı çalışma eğrisi analizleri kullanılarak kontrol grubuyla karşılaştırılmıştır.

**Bulgular:** HELLP grubunda toplam bilirubin düzeyleri anlamlı derecede yüksek iken albumin düzeyleri ise anlamlı derecede düşüktü ( $p < 0.05$ ). Sonuç olarak, ALBI skorları anlamlı derecede yüksekti ( $p = 0.004$ ). Alıcı çalışma eğrisi analizi, ALBI'nin HELLP sendromunu öngörmeye ayırt edici güce sahip olduğunu gösterdi (Eğri altında kalan alan = 0.629;  $p = 0.007$ ). Gerek HELLP grubunda gerekse de katılımcıların tümünün dahil edildiği grupta, ALBI skorunun, kötü kompozit neonatal sonuçların prediksyonunda istatistiksel olarak anlamlı yoktu ( $p > 0.05$ ).

**Sonuç:** Çalışmamızın sonuçlarına göre, karaciğer hastalıkları için özellikle prognoz belirlemede kullanılan ALBI skoru, HELLP sendromunun erken öngörüsünde de kullanılabilir öngörü modelleri arasında yer almaya adaydır. Ancak eşik değerleri ve güvenilirliği doğrulamak için prospektif çok merkezli çalışmalara ihtiyaç vardır.

**Anahtar Sözcükler:** ALBI skoru; gebelik hipertansiyonu; gestasyonel hipertansiyon; HELLP sendromu; karaciğer hastalığı; preeklampsi.