

## DAFTAR PUSTAKA

- Abbas, A.K., Lichtman, A.H., Pillai, S., Baker, D.L., 2024. Basic immunology: functions and disorders of the immune system, 7th edition. ed. Elsevier, Philadelphia.
- Abd Rabou, M.G., Ramadan, A.M., Mohsen, A.M., Shawky, M., 2024. Evaluation of Hematological Parameters as Markers for Subclinical Inflammation in Adults with Familial Mediterranean Fever. *Middle East J Dig Dis* 16, 242–249. <https://doi.org/10.34172/mejdd.2024.399>
- Asghar, M.S., Khan, N.A., Haider Kazmi, S.J., *et al.*, 2020. Hematological parameters predicting severity and mortality in COVID-19 patients of Pakistan: a retrospective comparative analysis. *Journal of Community Hospital Internal Medicine Perspectives* 10, 514–520. <https://doi.org/10.1080/20009666.2020.1816276>
- Bain, B.J., 2008. Some influences on the ESR and the fibrinogen level in healthy subjects. *Clinical & Laboratory Haematology* 5, 45–54. <https://doi.org/10.1111/j.1365-2257.1983.tb00495.x>
- Bonaccio, M., Di Castelnuovo, A., Pounis, G., *et al.*, 2016. A score of low-grade inflammation and risk of mortality: prospective findings from the Moli-sani study. *Haematologica* 101, 1434–1441. <https://doi.org/10.3324/haematol.2016.144055>
- Buonacera, A., Stancanelli, B., Colaci, M., Malatino, L., 2022. Neutrophil to Lymphocyte Ratio: An Emerging Marker of the Relationships between the Immune System and Diseases. *IJMS* 23, 3636. <https://doi.org/10.3390/ijms23073636>
- Buttle, T.S., Hummerstone, C.Y., Billahalli, T., *et al.*, 2021. The monocyte-to-lymphocyte ratio: Sex-specific differences in the tuberculosis disease spectrum, diagnostic indices and defining normal ranges. *PLoS ONE* 16, e0247745. <https://doi.org/10.1371/journal.pone.0247745>
- Chen, L., Deng, H., Cui, H., *et al.*, 2018. Inflammatory responses and inflammation-associated diseases in organs. *Oncotarget* 9, 7204–7218. <https://doi.org/10.18632/oncotarget.23208>
- Chen, Y., Zhang, Y., Zhao, G., Chen, C., Yang, P., Ye, S., Tan, X., 2016. Difference in Leukocyte Composition between Women before and after Menopausal Age, and Distinct Sexual Dimorphism. *PLoS ONE* 11, e0162953. <https://doi.org/10.1371/journal.pone.0162953>
- Cure, M.C., Cure, E., Kirbas, A., Cicek, A.C., Yuce, S., 2013. The effects of Gilbert's syndrome on the mean platelet volume and other hematological

- parameters. *Blood Coagulation & Fibrinolysis* 24, 484–488.  
<https://doi.org/10.1097/MBC.0b013e32835e4230>
- El Brihi J, Pathak S. Normal and Abnormal Complete Blood Count With Differential. [Updated 2024 Jun 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK604207/>
- Elgazzar, A.H., Elmonayeri, M., 2015. Inflammation, in: Elgazzar, A.H. (Ed.), *The Pathophysiologic Basis of Nuclear Medicine*. Springer International Publishing, Cham, pp. 69–98. [https://doi.org/10.1007/978-3-319-06112-2\\_4](https://doi.org/10.1007/978-3-319-06112-2_4)
- Feng, W., Liu, Y., Zhu, L., Xu, L., Shen, H., 2022. Evaluation of neutrophil-to-lymphocyte ratio and platelet-to-lymphocyte ratio as potential markers for ulcerative colitis: a retrospective study. *BMC Gastroenterol* 22. <https://doi.org/10.1186/s12876-022-02571-9>
- Fest, J., Ruiters, R., Mooijaart, S.P., *et al.*, 2019. Erythrocyte sedimentation rate as an independent prognostic marker for mortality: a prospective population-based cohort study. *J Intern Med* 285, 341–348. <https://doi.org/10.1111/joim.12853>
- Gao, K., Zhu, W., Liu, W., *et al.*, 2019. The predictive role of monocyte-to-lymphocyte ratio in osteoporosis patient. *Medicine* 98, e16793. <https://doi.org/10.1097/MD.00000000000016793>
- Gasparyan, A.Y., Ayvazyan, L., Mukanova, U., Yessirkepov, M., Kitas, G.D., 2019. The Platelet-to-Lymphocyte Ratio as an Inflammatory Marker in Rheumatic Diseases. *Ann Lab Med* 39, 345–357. <https://doi.org/10.3343/alm.2019.39.4.345>
- Gulati, G., Uppal, G., Gong, J., 2022. Unreliable Automated Complete Blood Count Results: Causes, Recognition, and Resolution. *Ann Lab Med* 42, 515–530. <https://doi.org/10.3343/alm.2022.42.5.515>
- Handoko, B., Arliny, Y., Priyanto, H., Andayani, N., Yanifitri, D.B., 2025. Analysis of Monocyte to Lymphocyte Ratio and Clinical Symptoms of Clinically Confirmed Pulmonary Tuberculosis New Case Patients Before Treatment and After Intensive Phase. *J Respirol Indones* 45, 55–60. <https://doi.org/10.36497/jri.v45i1.533>
- Hashemi, R., Majidi, A., Motamed, H., Amini, A., Najari, F., Tabatabaey, A., 2015. Erythrocyte Sedimentation Rate Measurement Using as a Rapid Alternative to the Westergren Method. *Emergency (Tehran, Iran)* 3, 50–53.

- Holinstat, M., 2017. Normal platelet function. *Cancer Metastasis Rev* 36, 195–198. <https://doi.org/10.1007/s10555-017-9677-x>
- Huang, Y., Deng, W., Zheng, S., *et al.*, 2018. Relationship between monocytes to lymphocytes ratio and axial spondyloarthritis. *International Immunopharmacology* 57, 43–46. <https://doi.org/10.1016/j.intimp.2018.02.008>
- Italiani, P., Boraschi, D., 2014. From Monocytes to M1/M2 Macrophages: Phenotypical vs. Functional Differentiation. *Front. Immunol.* 5. <https://doi.org/10.3389/fimmu.2014.00514>
- Jou, J.M., Lewis, S.M., Briggs, C., *et al.*, 2011. ICSH review of the measurement of the erythrocyte sedimentation rate. *International Journal of Laboratory Hematology* 33, 125–132. <https://doi.org/10.1111/j.1751-553X.2011.01302.x>
- Justiz Vaillant AA, Sabir S, Jan A. Physiology, Immune Response. [Updated 2024 Jul 27]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK539801/>
- Kratz, A., Plebani, M., Peng, M., Lee, Y.K., McCafferty, R., Machin, S.J., the International Council for Standardization in Haematology (ICSH), 2017. ICSH recommendations for modified and alternate methods measuring the erythrocyte sedimentation rate. *Int J Lab Hematology* 39, 448–457. <https://doi.org/10.1111/ijlh.12693>
- Kumar, V., Abbas, A.K., Aster, J.C., Turner, J.R., Perkins, J.A., Robbins, S.L., Cotran, R.S. (Eds.), 2021. Robbins & Cotran pathologic basis of disease, Tenth edition. ed. Elsevier, Philadelphia, PA.
- Kurt, C., Altunçekiç Yildirim, A., 2022. Contribution of Erythrocyte Sedimentation Rate to Predict Disease Severity and Outcome in COVID-19 Patients. *Canadian Journal of Infectious Diseases and Medical Microbiology* 2022, 1–7. <https://doi.org/10.1155/2022/6510952>
- Kusuma, G.F.P., Maliawan, S., Mahadewa, T.G.B., *et al.*, 2020. Neutrophil-to-lymphocyte Ratio and Platelet-to-lymphocyte Ratio Correlations with C-reactive Protein and Erythrocyte Sedimentation Rate in Traumatic Brain Injury. *Open Access Maced J Med Sci* 8, 1185–1192. <https://doi.org/10.3889/oamjms.2020.5544>
- Lapić, I., Piva, E., Spolaore, F., Tosato, F., Pelloso, M., Plebani, M., 2019. Automated measurement of the erythrocyte sedimentation rate: method validation and comparison. *Clinical Chemistry and Laboratory Medicine (CCLM)* 57, 1364–1373. <https://doi.org/10.1515/cclm-2019-0204>

- Liao, Q.-Q., Mo, Y.-J., Zhu, K.-W., *et al.*, 2024. Platelet-to-Lymphocyte Ratio (PLR), Neutrophil-to-Lymphocyte Ratio (NLR), Monocyte-to-Lymphocyte Ratio (MLR), and Eosinophil-to-Lymphocyte Ratio (ELR) as Biomarkers in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease (AECOPD). *COPD* Volume 19, 501–518. <https://doi.org/10.2147/COPD.S447519>
- Lorubbio, M., Diamanti, D., Ghiandai, A., *et al.*, 2024. Evaluation of Stability and Accuracy Compared to the Westergren Method of ESR Samples Analyzed at VES-MATIC 5. *Diagnostics* 14, 557. <https://doi.org/10.3390/diagnostics14050557>
- Lowsby, R., Gomes, C., Jarman, I., *et al.*, 2015. Neutrophil to lymphocyte count ratio as an early indicator of blood stream infection in the emergency department. *Emerg Med J* 32, 531–534. <https://doi.org/10.1136/emmermed-2014-204071>
- Marpaung, O.P., Sitorus, G.M., 2022. Neutrophil-Lymphocyte Ratio (Nlr) And Erythrocyte Sedimentation Rate (Esr) Correlation In Covid-19 Patients At Hermina Hospital Medan. *Jurnal Eduhealth* 13.
- Mautong, H., Anisetti, B., Shourav, M., Lin, M., 2024. Erythrocyte Sedimentation Rate (ESR) as a Predictor of White Matter Lesion (WML) Progression (P2-5.031). *Neurology* 102, 5725. <https://doi.org/10.1212/WNL.0000000000206005>
- Medzhitov, R., 2008. Origin and physiological roles of inflammation. *Nature* 454, 428–435. <https://doi.org/10.1038/nature07201>
- Menzel, A., Samouda, H., Dohet, F., Loap, S., Ellulu, M.S., Bohn, T., 2021. Common and Novel Markers for Measuring Inflammation and Oxidative Stress Ex Vivo in Research and Clinical Practice—Which to Use Regarding Disease Outcomes? *Antioxidants* 10, 414. <https://doi.org/10.3390/antiox10030414>
- Mirna, M., Schmutzler, L., Topf, A., Hoppe, U.C., Lichtenauer, M., 2021. Neutrophil-to-lymphocyte ratio and monocyte-to-lymphocyte ratio predict length of hospital stay in myocarditis. *Sci Rep* 11, 18101. <https://doi.org/10.1038/s41598-021-97678-6>
- Mollaiei, M., Abbasi, A., Hassan, Z.M., Pakravan, N., 2020. The intrinsic and extrinsic elements regulating inflammation. *Life Sciences* 260, 118258. <https://doi.org/10.1016/j.lfs.2020.118258>
- Naito, Y., Takagi, T., Yoshikawa, T., 2007. Neutrophil-Dependent Oxidative Stress in Ulcerative Colitis. *J. Clin. Biochem. Nutr.* 41, 18–26. <https://doi.org/10.3164/jcbn.2007003>

- Natakusuma, T.I.S.D., Mahadewa, T.G.B., Maliawan, S., *et al.*, 2023. Correlation of MLR with CRP and MPVPCR with LED in Traumatic Brain Injury. *Open Access Maced J Med Sci* 11, 156–161. <https://doi.org/10.3889/oamjms.2023.11299>
- Prame Kumar, K., Nicholls, A.J., Wong, C.H.Y., 2018. Partners in crime: neutrophils and monocytes/macrophages in inflammation and disease. *Cell Tissue Res* 371, 551–565. <https://doi.org/10.1007/s00441-017-2753-2>
- Promptchara, E., Parnsamut, C., Wangviwat, N., *et al.*, 2024. Performance evaluation of alternate ESR measurement method using BC-780 automated hematology analyzer: a comparison study with the Westergren reference method. *Clinical Chemistry and Laboratory Medicine (CCLM)* 62, 303–311. <https://doi.org/10.1515/cclm-2023-0499>
- Punchard, N.A., Whelan, C.J., Adcock, I., 2004. *The Journal of Inflammation*. *J Inflamm* 1, 1. <https://doi.org/10.1186/1476-9255-1-1>
- Purushothaman, A., 2019. Comparison of Manual Versus Automated Data Collection Method for Haematological Parameters. *BJSTR* 15. <https://doi.org/10.26717/BJSTR.2019.15.002702>
- Qu, R., Ling, Y., Zhang, Y., *et al.*, 2020. Platelet-to-lymphocyte ratio is associated with prognosis in patients with coronavirus disease-19. *Journal of Medical Virology* 92, 1533–1541. <https://doi.org/10.1002/jmv.25767>
- Schmidt, M.I., Saad, M.J.A., Duncan, B.B., 2005. Subclinical inflammation and obesity, diabetes and related disorders. *Drug Discovery Today: Disease Mechanisms* 2, 307–312. <https://doi.org/10.1016/j.ddmec.2005.08.003>
- Sonmez, O., Sonmez, M., 2017. Role of platelets in immune system and inflammation. *Porto Biomedical Journal* 2, 311–314. <https://doi.org/10.1016/j.pbj.2017.05.005>
- Stojan, G., Fang, H., Magder, L., Petri, M., 2013. Erythrocyte sedimentation rate is a predictor of renal and overall SLE disease activity. *Lupus* 22, 827–834. <https://doi.org/10.1177/0961203313492578>
- Stone WL, Basit H, Zubair M, *et al.* Pathology, Inflammation. [Updated 2024 Aug 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK534820/>
- Suszek, D., Górak, A., Majdan, M., 2020. Differential approach to peripheral blood cell ratios in patients with systemic lupus erythematosus and various manifestations. *Rheumatol Int* 40, 1625–1629. <https://doi.org/10.1007/s00296-020-04669-3>

- Tishkowski K, Zubair M. Erythrocyte Sedimentation Rate. [Updated 2023 Apr 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK557485/>
- Toori, K.U., Qureshi, M.A., Chaudhry, A., Safdar, M.F., 2021. Neutrophil to lymphocyte ratio (NLR) in COVID-19: A cheap prognostic marker in a resource constraint setting. *Pak J Med Sci* 37. <https://doi.org/10.12669/pjms.37.5.4194>
- Van De Vyver, M., 2023. Immunology of chronic low-grade inflammation: relationship with metabolic function. *Journal of Endocrinology* 257, e220271. <https://doi.org/10.1530/JOE-22-0271>
- Van Furth, R., 1985. Monocyte production during inflammation. *Comparative Immunology, Microbiology and Infectious Diseases* 8, 205–211. [https://doi.org/10.1016/0147-9571\(85\)90045-1](https://doi.org/10.1016/0147-9571(85)90045-1)
- Van Werkhoven, C.H., Huijts, S.M., Bolkenbaas, M., *et al.*, 2015. The Impact of Age on the Efficacy of 13-valent Pneumococcal Conjugate Vaccine in Elderly. *Clin Infect Dis.* 61, 1835–1838. <https://doi.org/10.1093/cid/civ686>
- Wang, J., Zhang, F., Jiang, F., Hu, L., Chen, J., Wang, Y., 2021. Distribution and reference interval establishment of neutrophil-to-lymphocyte ratio (NLR), lymphocyte-to-monocyte ratio (LMR), and platelet-to-lymphocyte ratio (PLR) in Chinese healthy adults. *Clinical Laboratory Analysis* 35, e23935. <https://doi.org/10.1002/jcla.23935>
- Wu, H., Zhou, H., Chen, P., 2022. Correlation of neutrophil-lymphocyte ratio (NLR), platelet-lymphocyte ratio (PLR), and mean platelet volume (MPV) with gout activity: A monocentric and retrospective study. *Medicine* 101, e30242. <https://doi.org/10.1097/md.00000000000030242>
- Zahorec, R., 2021. Neutrophil-to-lymphocyte ratio, past, present and future perspectives. *BLL* 122, 474–488. [https://doi.org/10.4149/BLL\\_2021\\_078](https://doi.org/10.4149/BLL_2021_078)
- Zhou, Q., Shao, X., Xu, L., Zou, H., Chen, W., 2024. Association between Monocyte-to-Lymphocyte Ratio and Inflammation in Chronic Kidney Disease: A Cross-Sectional Study. *Kidney Blood Press Res* 49, 1066–1074. <https://doi.org/10.1159/000542625>