

DAFTAR PUSTAKA

- Agrawal, S., Kumar, S., Talwar, D., Patel, M., Reddy, H., 2023. Significance of Neutrophil-lymphocyte Ratio, Neutrophil-platelet Ratio, and Neutrophil-tolymphocyte and Platelet Ratio in Predicting Outcomes in Dengue Patients on Admission in Wardha, Maharashtra, India: A Retrospective Cohort Study. *JCDR*. <https://doi.org/10.7860/JCDR/2023/65292.18658>
- Ahmad, M., Ibrahim, M., Mohamed, Z., Ismail, N., Abdullah, M., Shueb, R., Shafei, M., 2018. The Sensitivity, Specificity and Accuracy of Warning Signs in Predicting Severe Dengue, the Severe Dengue Prevalence and Its Associated Factors. *IJERPH* 15, 2018. <https://doi.org/10.3390/ijerph15092018>
- Alla, D., Alla, S.S.M., Vempati, R., Bhatt, H., Sultana, Q., Bhatt, S., Mohsin, T., Siddiqua, A., 2022. Dengue & COVID-19: A Comparison and the Challenges at Hand. *Cureus*. <https://doi.org/10.7759/cureus.31877>
- Annan, E., Treviño, J., Zhao, B., Rodriguez-Morales, A.J., Haque, U., 2023. Direct and indirect effects of age on dengue severity: The mediating role of secondary infection. *PLoS Negl Trop Dis* 17, e0011537. <https://doi.org/10.1371/journal.pntd.0011537>
- Arora, S., Nandan, D., Sharma, A., Benerjee, P., Singh, D., 2021. Predictors of severe dengue amongst children as per the revised WHO classification. *J Vector Borne Dis* 58, 329. <https://doi.org/10.4103/0972-9062.318312>
- Aryati, A., Wrahatnala, B.J., Yohan, B., Fanny, M., Hakim, F.K.N., Sunari, E.P., Zuroidah, N., Wardhani, P., Santoso, M.S., Husada, D., Rohman, A., Tarmizi, S.N., Sievers, J.T.O., Sasmono, R.T., 2020. Dengue Virus Serotype 4 Is Responsible for the Outbreak of Dengue in East Java City of Jember, Indonesia. *Viruses* 12, 913. <https://doi.org/10.3390/v12090913>
- Bhatt, P., Sabeena, S.P., Varma, M., Arunkumar, G., 2021. Current Understanding of the Pathogenesis of Dengue Virus Infection. *Curr Microbiol* 78, 17–32. <https://doi.org/10.1007/s00284-020-02284-w>
- Bhatt, P., Varma, M., Sood, V., Ambikan, A., Jayaram, A., Babu, N., Gupta, S., Mukhopadhyay, C., Neogi, U., 2024. Temporal cytokine storm dynamics in dengue infection predicts severity. *Virus Research* 341, 199306. <https://doi.org/10.1016/j.virusres.2023.199306>
- Chaloemwong, J., Tantiworawit, A., Rattanathammethee, T., Hantrakool, S., Chai-Adisaksopha, C., Rattarittamrong, E., Norasetthada, L., 2018. Useful clinical features and hematological parameters for the diagnosis of dengue infection in patients with acute febrile illness: a retrospective study. *BMC Hematol* 18, 20. <https://doi.org/10.1186/s12878-018-0116-1>
- Chao, C.-H., Wu, W.-C., Lai, Y.-C., Tsai, P.-J., Perng, G.-C., Lin, Y.-S., Yeh, T.-M., 2019. Dengue virus nonstructural protein 1 activates platelets via Toll-like receptor 4, leading to thrombocytopenia and hemorrhage. *PLoS Pathog* 15, e1007625. <https://doi.org/10.1371/journal.ppat.1007625>
- Chen, C.-Y., Chiu, Y.-Y., Chen, Y.-C., Huang, C.-H., Wang, W.-H., Chen, Y.-H., Lin, C.-Y., 2023. Obesity as a clinical predictor for severe manifestation of dengue: a systematic review and meta-analysis. *BMC Infect Dis* 23, 502. <https://doi.org/10.1186/s12879-023-08481-9>

- Chua, C.L.L., Morales, R.F., Chia, P.Y., Yeo, T.W., Teo, A., 2024. Neutrophils – an understudied bystander in dengue? *Trends in Microbiology* S0966842X24000969. <https://doi.org/10.1016/j.tim.2024.04.011>
- Clarice, C.S.H., Abeysuriya, V., De Mel, S., Uvindu Thilakawardana, B., De Mel, P., De Mel, C., Chandrasena, L., Seneviratne, S.L., Yip, C., Yap, E.S., 2019. Atypical lymphocyte count correlates with the severity of dengue infection. *PLoS ONE* 14, e0215061. <https://doi.org/10.1371/journal.pone.0215061>
- Gallagher, P., Chan, K.R., Rivino, L., Yacoub, S., 2020. The association of obesity and severe dengue: possible pathophysiological mechanisms. *Journal of Infection* 81, 10–16. <https://doi.org/10.1016/j.jinf.2020.04.039>
- Garcia-Bates, T.M., Cordeiro, M.T., Nascimento, E.J.M., Smith, A.P., Soares De Melo, K.M., McBurney, S.P., Evans, J.D., Marques, E.T.A., Barratt-Boyes, S.M., 2013. Association between Magnitude of the Virus-Specific Plasmablast Response and Disease Severity in Dengue Patients. *The Journal of Immunology* 190, 80–87. <https://doi.org/10.4049/jimmunol.1103350>
- Garishah, F.M., Rother, N., Riswari, S.F., Alisjahbana, B., Overheul, G.J., Van Rij, R.P., Van Der Ven, A., Van Der Vlag, J., De Mast, Q., 2021. Neutrophil Extracellular Traps in Dengue Are Mainly Generated NOX-Independently. *Front. Immunol.* 12, 629167. <https://doi.org/10.3389/fimmu.2021.629167>
- Gupta, A., Rijhwani, P., Pahadia, M.R., Kalia, A., Choudhary, S., Bansal, D.P., Gupta, D., Agarwal, P., Jat, R.K., 2021. Prevalence of Dengue Serotypes and Its Correlation With the Laboratory Profile at a Tertiary Care Hospital in Northwestern India. *Cureus*. <https://doi.org/10.7759/cureus.15029>
- Hartoyo, E., Purnamasari, L., 2020. Perubahan Pola Serotipe Pasien Demam Berdarah Dengue pada tahun 2014, 2016, dan 2018 di Area Lahan Basah. *SP* 22, 160. <https://doi.org/10.14238/sp22.3.2020.160-3>
- Holcar, M., Goropevšek, A., Ihan, A., Avčín, T., 2015. Age-Related Differences in Percentages of Regulatory and Effector T Lymphocytes and Their Subsets in Healthy Individuals and Characteristic STAT1/STAT5 Signalling Response in Helper T Lymphocytes. *Journal of Immunology Research* 2015, 1–13. <https://doi.org/10.1155/2015/352934>
- Hottz, E., Tolley, N.D., Zimmerman, G.A., Weyrich, A.S., Bozza, F.A., 2011. Platelets in dengue infection. *Drug Discovery Today: Disease Mechanisms* 8, e33–e38. <https://doi.org/10.1016/j.ddmec.2011.09.001>
- Ishaque, N., Siddique, M.U., Imran, A., Malik, N.A., 2022. Utilization of Neutrophil to Lymphocyte Ratio to Assess Recovery in Patient with Dengue. *J. Haematol Stem Cell Res*, 77–80.
- Islam, M.T., Quispe, C., Herrera-Bravo, J., Sarkar, C., Sharma, R., Garg, N., Fredes, L.I., Martorell, M., Alshehri, M.M., Sharifi-Rad, J., Daştan, S.D., Calina, D., Alsafi, R., Alghamdi, S., Batiha, G.E.-S., Cruz-Martins, N., 2021. Production, Transmission, Pathogenesis, and Control of Dengue Virus: A Literature-Based Undivided Perspective. *BioMed Research International* 2021, 1–23. <https://doi.org/10.1155/2021/4224816>
- Ivashkiv, L.B., Donlin, L.T., 2014. Regulation of type I interferon responses. *Nat Rev Immunol* 14, 36–49. <https://doi.org/10.1038/nri3581>
- Jain, A., Chaturvedi, U.C., 2010. Dengue in infants: an overview. *FEMS Immunol Med Microbiol* 59, 119–130. <https://doi.org/10.1111/j.1574-695X.2010.00670.x>

- Jampangern, W., Vongthoung, K., Jittmittraphap, A., Worapongpaiboon, S., Limkittikul, K., Chuansumrit, A., Tarunotai, U., Chongsa-nguan, M., 2007. Characterization of Atypical Lymphocytes and Immunophenotypes of Lymphocytes in Patients with Dengue Virus Infection.
- Khan, Md.A.S., Al Mosabbir, A., Raheem, E., Ahmed, A., Hasan, M., Alam, F.B., Hannan, N., Yesmin, S., Amin, R., Ahsan, N., Anwar, S., Afroza, S., Hossain, M.S., 2021. Clinical spectrum and predictors of severity of dengue among children in 2019 outbreak: a multicenter hospital-based study in Bangladesh. *BMC Pediatr* 21, 478. <https://doi.org/10.1186/s12887-021-02947-y>
- Lee, I.-K., Lee, W.-H., Liu, J.-W., Yang, K.D., 2010. Acute myocarditis in dengue hemorrhagic fever: a case report and review of cardiac complications in dengue-affected patients. *International Journal of Infectious Diseases* 14, e919–e922. <https://doi.org/10.1016/j.ijid.2010.06.011>
- Lei, C., Yu, Q., Wang, H., Liu, J., Chen, S., Zhao, Z., Qiu, L., 2021. Responses of CD27+CD38+ plasmablasts, and CD24hi CD27hi and CD24hi CD38hi regulatory B cells during primary dengue virus 2 infection. *Clinical Laboratory Analysis* 35, e24035. <https://doi.org/10.1002/jcla.24035>
- Lien, T.-S., Sun, D.-S., Hung, S.-C., Wu, W.-S., Chang, H.-H., 2021. Dengue Virus Envelope Protein Domain III Induces Nlrp3 Inflammasome-Dependent NETosis-Mediated Inflammation in Mice. *Front. Immunol.* 12, 618577. <https://doi.org/10.3389/fimmu.2021.618577>
- Liu, X., Guan, G., Cui, X., Liu, Yaqing, Liu, Yinghan, Luo, F., 2021. Systemic Immune-Inflammation Index (SII) Can Be an Early Indicator for Predicting the Severity of Acute Pancreatitis: A Retrospective Study. *IJGM Volume* 14, 9483–9489. <https://doi.org/10.2147/IJGM.S343110>
- Ma, Y., Zhang, Y., Zhu, L., 2021. Role of neutrophils in acute viral infection. *Immunity Inflamm & Disease* 9, 1186–1196. <https://doi.org/10.1002/iid3.500>
- Malavige, G.N., Jeewandara, C., Ogg, G.S., 2022. Dengue and COVID-19: two sides of the same coin. *J Biomed Sci* 29, 48. <https://doi.org/10.1186/s12929-022-00833-y>
- Martina, B.E.E., Koraka, P., Osterhaus, A.D.M.E., 2009. Dengue Virus Pathogenesis: an Integrated View. *Clin Microbiol Rev* 22, 564–581. <https://doi.org/10.1128/CMR.00035-09>
- Mathew, A., 2018. Defining the role of NK cells during dengue virus infection. *Immunology* 154, 557–562. <https://doi.org/10.1111/imm.12928>
- Nanaware, N., Banerjee, A., Mullick Bagchi, S., Bagchi, P., Mukherjee, A., 2021. Dengue Virus Infection: A Tale of Viral Exploitations and Host Responses. *Viruses* 13, 1967. <https://doi.org/10.3390/v13101967>
- Narayan, R., Tripathi, S., 2020. Intrinsic ADE: The Dark Side of Antibody Dependent Enhancement During Dengue Infection. *Front. Cell. Infect. Microbiol.* 10, 580096. <https://doi.org/10.3389/fcimb.2020.580096>
- Noisakran, S., Onlamoon, N., Hsiao, H.-M., Clark, K.B., Villinger, F., Ansari, A.A., Perng, G.C., 2012. Infection of bone marrow cells by dengue virus in vivo. *Experimental Hematology* 40, 250–259.e4. <https://doi.org/10.1016/j.exphem.2011.11.011>

- Opasawatchai, A., Amornsupawat, P., Jiravejchakul, N., Chan-in, W., Spoerk, N.J., Manopwisedjaroen, K., Singhasivanon, P., Yingtaeesak, T., Suraamornkul, S., Mongkolsapaya, J., Sakuntabhai, A., Matangkasombut, P., Loison, F., 2019. Neutrophil Activation and Early Features of NET Formation Are Associated With Dengue Virus Infection in Human. *Front. Immunol.* 9, 3007. <https://doi.org/10.3389/fimmu.2018.03007>
- Papayannopoulos, V., 2018. Neutrophil extracellular traps in immunity and disease. *Nat Rev Immunol* 18, 134–147. <https://doi.org/10.1038/nri.2017.105>
- Pathak, B., Chakravarty, A., Krishnan, A., 2021. High viral load positively correlates with thrombocytopenia and elevated haematocrit in dengue infected paediatric patients. *Journal of Infection and Public Health* 14, 1701–1707. <https://doi.org/10.1016/j.jiph.2021.10.002>
- Paz-Bailey, G., Sánchez-González, L., Torres-Velasquez, B., Jones, E.S., Perez-Padilla, J., Sharp, T.M., Lorenzi, O., Delorey, M., Munoz-Jordan, J.L., Tomashek, K.M., Waterman, S.H., Alvarado, L.I., Rivera-Amill, V., 2022. Predominance of Severe Plasma Leakage in Pediatric Patients With Severe Dengue in Puerto Rico. *The Journal of Infectious Diseases* 226, 1949–1958. <https://doi.org/10.1093/infdis/jiac165>
- Prayon, K.M., Oncog, A.S., 2022. Absolute Neutrophil Counts and Neutrophil to Lymphocyte Ratio as Early Predictive markers of Dengue Severity among Children admitted in Governor Celestino Gallares Memorial Hospital: A 5-Year Retrospective Study.
- Raharjo, B., Hadi, S., 2019. High Fluorescent Lymphocyte Count Examination in Dengue Hemorrhagic patients with Sysmex XN-1000 Hematology Analyzer. *Indonesia Journal of Clinical Pathology and Medical Laboratory* 2019 March, 25(2): 207-210.
- Rawat, S., Kumar, S., Duggal, S., Banerjee, A., 2024. Phenotypic alteration by dengue virus serotype 2 delays neutrophil apoptosis and stimulates the release of prosurvival secretome with immunomodulatory functions. *Journal of Leukocyte Biology* 115, 276–292. <https://doi.org/10.1093/jleuko/qiad133>
- Riswari, S.F., Tunjungputri, R.N., Kullaya, V., Garishah, F.M., Utari, G.S.R., Farhanah, N., Overheul, G.J., Alisjahbana, B., Gasem, M.H., Urbanus, R.T., De Groot, Philip.G., Lefeber, D.J., Van Rij, R.P., Van Der Ven, A., De Mast, Q., 2019. Desialylation of platelets induced by Von Willebrand Factor is a novel mechanism of platelet clearance in dengue. *PLoS Pathog* 15, e1007500. <https://doi.org/10.1371/journal.ppat.1007500>
- Roy, S.K., Bhattacharjee, S., 2021. Dengue virus: epidemiology, biology, and disease aetiology. *Can. J. Microbiol.* 67, 687–702. <https://doi.org/10.1139/cjm-2020-0572>
- Sadgir, A., Durge, K., Masavkar, S., 2023. Neutrophil-Lymphocyte Ratio as A Prognostic Indicator in Dengue Fever Patients at Tertiary Care Hospital in Northwest-Maharashtra. *IJAR* 11, 1198–1202. <https://doi.org/10.21474/IJAR01/16137>
- Salsabila, A.F., Juniastuti, Husada, D., Puspitasari, D., 2024. Hematology Profiles and Disease Severity of Pediatric Dengue Virus Infection at A Tertiary Hospital in Surabaya, Indonesia. *MBIOMJ* 34, 1–9. <https://doi.org/10.20473/mbiom.v34i1.2024.1-9>

- Sann, S., Heng, B., Vo, H.T.M., Arroyo Hornero, R., Lay, S., Sorn, S., Ken, S., Ou, T.P., Laurent, D., Yay, C., Ly, S., Dussart, P., Duong, V., Sakuntabhai, A., Kleinewietfeld, M., Cantaert, T., 2024. Increased frequencies of highly activated regulatory T cells skewed to a T helper 1-like phenotype with reduced suppressive capacity in dengue patients. *mBio* 15, e00063-24. <https://doi.org/10.1128/mbio.00063-24>
- Schmid, M.A., Diamond, M.S., Harris, E., 2014. Dendritic Cells in Dengue Virus Infection: Targets of Virus Replication and Mediators of Immunity. *Front. Immunol.* 5. <https://doi.org/10.3389/fimmu.2014.00647>
- Sharma, S.K., Kularia, R., Tundwal, V.K., Gaur, S., Tanwar, P.D., 2023. The Relation between Neutrophil Lymphocyte Ratio (NLR) and Grade of Severity in Dengue Infection. *International Journal of Pharmaceutical and Clinical Research*.
- Shih, H.-I., Wang, Y.-C., Wang, Y.-P., Chi, C.-Y., Chien, Y.-W., 2024. Risk of severe dengue during secondary infection: A population-based cohort study in Taiwan. *Journal of Microbiology, Immunology and Infection* 57, 730–738. <https://doi.org/10.1016/j.jmii.2024.07.004>
- Singh, A., Bisht, P., Bhattacharya, S., Guchhait, P., 2020. Role of Platelet Cytokines in Dengue Virus Infection. *Front. Cell. Infect. Microbiol.* 10, 561366. <https://doi.org/10.3389/fcimb.2020.561366>
- Srichaikul, T., 2014. Hematologic Changes in Dengue Hemorrhagic Fever+. *J Hematol Transfus Med* 24.
- St. John, A.L., Rathore, A.P.S., 2019. Adaptive immune responses to primary and secondary dengue virus infections. *Nat Rev Immunol* 19, 218–230. <https://doi.org/10.1038/s41577-019-0123-x>
- Sucupira, P.H.F., Silveira Ferreira, M., Santos Coutinho-da-Silva, M., Alves Bicalho, K., Carolina Campi-Azevedo, A., Pedro Brito-de-Sousa, J., Peruhype-Magalhães, V., Rios, M., Konduru, K., Teixeira-Carvalho, A., Graziela Alves Coelho-dos-Reis, J., Ribeiro Do Valle Antonelli, L., Bortolo De Rezende, V., Ludolf Ribeiro De Melo, F., Couto Garcia, C., Carla Silva-Andrade, J., Artur Da Costa-Rocha, I., Alves Da Rocha, L., Aprigio Silva, V., Damasceno Pinto, S., Araújo De Melo, S., Guimarães Costa, A., De Souza Gomes, M., Rodrigues Amaral, L., Luiz Lima Bertarini, P., Cristina Da Silva Furtado, E., Vieira Pinto Da Silva, E., Alves Ramos, B., Barros Dos Santos, É., Nazaré Oliveira Freitas, M., Maria Caetano Faria, A., Fernando Da Costa Vasconcelos, P., De Souza Bastos, M., Carício Martins, L., Assis Martins-Filho, O., Sobreira Silva Araújo, M., 2023. Serotype-associated immune response and network immunoclusters in children and adults during acute Dengue virus infection. *Cytokine* 169, 156306. <https://doi.org/10.1016/j.cyto.2023.156306>
- Tsheten, T., Clements, A.C.A., Gray, D.J., Adhikary, R.K., Furuya-Kanamori, L., Wangdi, K., 2021. Clinical predictors of severe dengue: a systematic review and meta-analysis. *Infect Dis Poverty* 10, 123. <https://doi.org/10.1186/s40249-021-00908-2>
- Utama, I.M.S., Lukman, N., Sukmawati, D.D., Alisjahbana, B., Alam, A., Murniati, D., Utama, I.M.G.D.L., Puspitasari, D., Kosasih, H., Laksono, I., Karyana, M., Karyanti, M.R., Hapsari, M.M.D.E.A.H., Meutia, N., Liang, C.J., Wulan, W.N., Lau, C.-Y., Parwati, K.T.M., 2019. Dengue viral infection in

- Indonesia: Epidemiology, diagnostic challenges, and mutations from an observational cohort study. *PLoS Negl Trop Dis* 13, e0007785. <https://doi.org/10.1371/journal.pntd.0007785>
- Vicente, C.R., Herbinger, K.-H., Fröschl, G., Malta Romano, C., De Souza Areias Cabidelle, A., Cerutti Junior, C., 2016. Serotype influences on dengue severity: a cross-sectional study on 485 confirmed dengue cases in Vitória, Brazil. *BMC Infect Dis* 16, 320. <https://doi.org/10.1186/s12879-016-1668-y>
- Vogt, M.B., Lahon, A., Arya, R.P., Spencer Clinton, J.L., Rico-Hesse, R., 2019. Dengue viruses infect human megakaryocytes, with probable clinical consequences. *PLoS Negl Trop Dis* 13, e0007837. <https://doi.org/10.1371/journal.pntd.0007837>
- Wichmann, O., Hongsiriwon, S., Bowonwatanuwong, C., Chotivanich, K., Sukthana, Y., Pukrittayakamee, S., 2004. Risk factors and clinical features associated with severe dengue infection in adults and children during the 2001 epidemic in Chonburi, Thailand. *Tropical Med Int Health* 9, 1022–1029. <https://doi.org/10.1111/j.1365-3156.2004.01295.x>
- Xia, W., Tan, Y., Hu, S., Li, C., Jiang, T., 2022. Predictive Value of Systemic Immune-Inflammation index and Neutrophil-to-Lymphocyte Ratio in Patients with Severe COVID-19. *Clin Appl Thromb Hemost* 28, 107602962211113. <https://doi.org/10.1177/10760296221111391>
- Ye, Z., Hu, T., Wang, J., Xiao, R., Liao, X., Liu, M., Sun, Z., 2022. Systemic immune-inflammation index as a potential biomarker of cardiovascular diseases: A systematic review and meta-analysis. *Front. Cardiovasc. Med.* 9, 933913. <https://doi.org/10.3389/fcvm.2022.933913>
- Yung, C.-F., Lee, K.-S., Thein, T.-L., Tan, L.-K., Gan, V.C., Wong, J.G.X., Lye, D.C., Ng, L.-C., Leo, Y.-S., 2015. Dengue Serotype-Specific Differences in Clinical Manifestation, Laboratory Parameters and Risk of Severe Disease in Adults, Singapore. *The American Journal of Tropical Medicine and Hygiene* 92, 999–1005. <https://doi.org/10.4269/ajtmh.14-0628>
- Zahorec, R., 2021. Neutrophil-to-lymphocyte ratio, past, present and future perspectives. *BLL* 122, 474–488. https://doi.org/10.4149/BLL_2021_078
- Zerfu, B., Kassa, T., Legesse, M., 2023. Epidemiology, biology, pathogenesis, clinical manifestations, and diagnosis of dengue virus infection, and its trend in Ethiopia: a comprehensive literature review. *Trop Med Health* 51, 11. <https://doi.org/10.1186/s41182-023-00504-0>