

Daftar Pustaka

1. Zachariah JP, Samnaliev M. Echo-based screening of rheumatic heart disease in children: a cost-effectiveness Markov model. *J Med Econ*. 2015;18:410–9.
2. Rothenbühler M, O’Sullivan CJ, Stortecky S, Stefanini GG, Spitzer E, Estill J, et al. Active surveillance for rheumatic heart disease in endemic regions: a systematic review and meta-analysis of prevalence among children and adolescents. *Lancet Glob Heal*. 2014;2:e717–26.
3. Bhat T, Teli S, Rijal J, Bhat H, Raza M, Khoueiry G, et al. Neutrophil to lymphocyte ratio and cardiovascular diseases: a review. *Expert Rev Cardiovasc Ther*. 2013;11:55–9.
4. Oh J, Kang S-M, Hong N, Choi J-W, Lee S-H, Park S, et al. Relation between red cell distribution width with echocardiographic parameters in patients with acute heart failure. *J Card Fail*. 2009;15:517–22.
5. Dođdu O, Akpek M, Yarlıođluę M, Kalay N, Ardıç İ, Elçık D, et al. Relationship between hematologic parameters and left ventricular systolic dysfunction in stable patients with multi-vessel coronary artery disease. *Turk Kardiyol Dern Ars*. 2012;40:706–13.
6. Elemery M, Elmeligy N, Tabl M, Abd Elhaleem AE. Usefulness of novel hematologic inflammatory parameter: neutrophil to lymphocyte ratio in patients with rheumatic valve diseases. *Am J Res Commun*. 2016;4:43–62.
7. Akbođa MK, Akyel A, Şahinarslan A, Yayla Ç, Alsancak Y, Gökalp G, et al. Neutrophil-to-lymphocyte ratio is increased in patients with rheumatic mitral valve stenosis? *Anatol J Cardiol*. 2015;15:380.
8. Walker MJ, Barnett TC, McArthur JD, Cole JN, Gillen CM, Henningham A, et al. Disease manifestations and pathogenic mechanisms of group A Streptococcus. *Clin Microbiol Rev*. 2014;27:264–301.
9. Majid Abdul. Anatomi Jantung dan pembuluh darah SKsU, Denyut Jantung dan Aktifitas Listrik Jantung, dan Jantung sebagai Pompa. *Bagian Fisiol Fak Kedokt USU*. 2005;Fisiologi:7–16.
10. Organization WH. Rheumatic Fever and Rheumatic Heart Disease: Report of a WHO expert Consultation, Geneva, 29 October-1 November, 2001. Vol. 923. World Health Organization; 2004.
11. Guilherme L, Kalil J, Cunningham M. Molecular mimicry in the autoimmune pathogenesis of rheumatic heart disease. *Autoimmunity*. 2006;39:31–9.
12. Kumar V, Abbas AK, Fausto N, Aster JC. Robbins and Cotran pathologic basis of disease, professional edition e-book. Elsevier health sciences; 2014.
13. Zühlke LJ, Beaton A, Engel ME, Hugo-Hamman CT, Karthikeyan G, Katzenellenbogen JM, et al. Group A streptococcus, acute rheumatic fever and rheumatic heart disease: epidemiology and clinical considerations. *Curr Treat Options Cardiovasc Med*. 2017;19:15.
14. RM K. Nelson textbook of pediatrics. Bullying Sch Violence Ed. 2007;18.
15. Burke RJ, Chang C. Diagnostic criteria of acute rheumatic fever. *Autoimmun Rev*. 2014;13:503–7.
16. Remenyi B, ElGuindy A, Smith Jr SC, Yacoub M, Holmes Jr DR. Valvular aspects of rheumatic heart disease. *Lancet*. 2016;387:1335–46.
17. Reményi B, Wilson N, Steer A, Ferreira B, Kado J, Kumar K, et al. World Heart Federation criteria for echocardiographic diagnosis of rheumatic heart disease—an evidence-based guideline. *Nat Rev Cardiol*. 2012;9:297–309.
18. Leal MTBC, Passos LSA, Guarçoni FV, Aguiar JM de S, Silva RBR da, Paula TMN de, et

- al. Rheumatic heart disease in the modern era: recent developments and current challenges. *Rev Soc Bras Med Trop.* 2019;52.
19. Bhaya M, Panwar S, Beniwal R, Panwar RB. High prevalence of rheumatic heart disease detected by echocardiography in school children. *Echocardiography.* 2010;27:448–53.
 20. Kane A, Mirabel M, Touré K, Périer M-C, Fazaa S, Tafflet M, et al. Echocardiographic screening for rheumatic heart disease: age matters. *Int J Cardiol.* 2013;168:888–91.
 21. Khoiriah F, Anggraini DI. Congestive Heart Failure NYHA IV et causa Penyakit Jantung Rematik dengan Hipertensi Grade II dan Gizi Kurang. *J Major.* 2017;6:102–8.
 22. Roberts K V, Brown ADH, Maguire GP, Atkinson DN, Carapetis JR. Utility of auscultatory screening for detecting rheumatic heart disease in high-risk children in Australia's Northern Territory. *Med J Aust.* 2013;199:196–9.
 23. Gewitz MH, Baltimore RS, Tani LY, Sable CA, Shulman ST, Carapetis J, et al. Revision of the Jones Criteria for the diagnosis of acute rheumatic fever in the era of Doppler echocardiography: a scientific statement from the American Heart Association. *Circulation.* 2015;131:1806–18.
 24. Nugroho A, Nawawi AM. Hubungan antara rasio neutrofil-limfosit dan skor sequential organ failure assesment pada pasien yang dirawat di ruang intensive care unit. *J Anestesi Perioper.* 2013;1:189–96.
 25. de Jager CPC, van Wijk PTL, Mathoera RB, de Jongh-Leuvenink J, van der Poll T, Wever PC. Lymphocytopenia and neutrophil-lymphocyte count ratio predict bacteremia better than conventional infection markers in an emergency care unit. *Crit care.* 2010;14:1–8.
 26. Imtiaz F, Shafique K, Mirza SS, Ayoob Z, Vart P, Rao S. Neutrophil lymphocyte ratio as a measure of systemic inflammation in prevalent chronic diseases in Asian population. *Int Arch Med.* 2012;5:1–6.
 27. Lanzkowsky P. *Manual of pediatric hematology and oncology.* Elsevier; 2005.
 28. Li J, Chen Q, Luo X, Hong J, Pan K, Lin X, et al. Neutrophil-to-lymphocyte ratio positively correlates to age in healthy population. *J Clin Lab Anal.* 2015;29:437–43.
 29. Akib AP, Munasir Z, Kurniati N. *Buku Ajar Alergi-Imunologi Anak Edisi Kedua.* Jakarta Badan Penerbit IDAI. 2008;45–7.
 30. Warrington R, Watson W, Kim HL, Antonetti FR. An introduction to immunology and immunopathology. *Allergy, Asthma Clin Immunol.* 2011;7:1–8.
 31. Wright HL, Moots RJ, Bucknall RC, Edwards SW. Neutrophil function in inflammation and inflammatory diseases. *Rheumatology.* 2010;49:1618–31.
 32. Kristanti S, Hendrianingtyas M. Hubungan neutrophils/lymphocytes ratio dan c-reactive protein pada infeksi neonatal. *J Nutr Heal.* 2017;5:187–94.
 33. Soehnlein O. Multiple roles for neutrophils in atherosclerosis. *Circ Res.* 2012;110:875–88.
 34. Balta S, Cakar M, Demirkol S, Arslan Z, Akhan M. Higher neutrophil to lymphocyte ratio in patients with metabolic syndrome. SAGE Publications Sage CA: Los Angeles, CA; 2013.
 35. Lakshman R, Finn A. Neutrophil disorders and their management. *J Clin Pathol.* 2001;54:7–19.
 36. Buyukkaya E, Karakaş MF, Karakaş E, Akçay AB, Tanboga IH, Kurt M, et al. Correlation of neutrophil to lymphocyte ratio with the presence and severity of metabolic syndrome. *Clin Appl Thromb.* 2014;20:159–63.
 37. Li D, Qi HUA, Zhi LIU, Jing LI, Xu L, Shan W, et al. Association between inflammatory mediators and angiographic morphologic features indicating thrombus formation in patients with acute myocardial infarction. *Chin Med J (Engl).* 2009;122:1738–42.

38. Aviles RJ, Martin DO, Apperson-Hansen C, Houghtaling PL, Rautaharju P, Kronmal RA, et al. Inflammation as a risk factor for atrial fibrillation. *Circulation*. 2003;108:3006–10.
39. Blangy H, Sadoul N, Dousset B, Radauceanu A, Fay R, Aliot E, et al. Serum BNP, hs-C-reactive protein, procollagen to assess the risk of ventricular tachycardia in ICD recipients after myocardial infarction. *Europace*. 2007;9:724–9.
40. Konstantino Y, Kusniec J, Reshef T, David-Zadeh O, Mazur A, Strasberg B, et al. Inflammatory biomarkers are not predictive of intermediate-term risk of ventricular tachyarrhythmias in stable CHF patients. *Clin Cardiol An Int Index Peer-Reviewed J Adv Treat Cardiovasc Dis*. 2007;30:408–13.
41. Chatterjee S, Chandra P, Guha G, Kalra V, Chakraborty A, Frankel R, et al. Pre-procedural elevated white blood cell count and neutrophil-lymphocyte (N/L) ratio are predictors of ventricular arrhythmias during percutaneous coronary intervention. *Cardiovasc Haematol Disord Targets (Formerly Curr Drug Targets-Cardiovascular Hematol Disord)*. 2011;11:58–60.
42. Gibson PH, Cuthbertson BH, Croal BL, Rae D, El-Shafel H, Gibson G, et al. Usefulness of neutrophil/lymphocyte ratio as predictor of new-onset atrial fibrillation after coronary artery bypass grafting. *Am J Cardiol*. 2010;105:186–91.
43. Engström G, Melander O, Hedblad B. Leukocyte count and incidence of hospitalizations due to heart failure. *Circ Hear Fail*. 2009;2:217–22.
44. Uthamalingam S, Patvardhan EA, Subramanian S, Ahmed W, Martin W, Daley M, et al. Utility of the neutrophil to lymphocyte ratio in predicting long-term outcomes in acute decompensated heart failure. *Am J Cardiol*. 2011;107:433–8.
45. Ertas F, Yuksel M, Akıl MA, s Ulgen M. Association between neutrophil to lymphocyte ratio and pulmonary arterial hypertension. 2013;
46. Guthrie GJK, Charles KA, Roxburgh CSD, Horgan PG, McMillan DC, Clarke SJ. The systemic inflammation-based neutrophil–lymphocyte ratio: experience in patients with cancer. *Crit Rev Oncol Hematol*. 2013;88:218–30.
47. Winangun IMA, Aryana IGPS, Astika IN, Kuswardhani RAT. Relationship of albumin serum levels and Neutrophil-Lymphocyte Ratios (NLR) on activities of daily living elderly patients with delirium at Sanglah General Hospital, Bali, Indonesia.
48. Han BK, Wysham KD, Cain KC, Tyden H, Bengtsson AA, Lood C. Neutrophil and lymphocyte counts are associated with different immunopathological mechanisms in systemic lupus erythematosus. *Lupus Sci Med*. 2020;7:e000382.
49. Song M, Graubard BI, Rabkin CS, Engels EA. Neutrophil-to-lymphocyte ratio and mortality in the United States general population. *Sci Rep*. 2021;11:1–9.
50. Stefaniuk P, Szymczyk A, Podhorecka M. The Neutrophil to lymphocyte and lymphocyte to monocyte ratios as new prognostic factors in hematological malignancies—a narrative review. *Cancer Manag Res*. 2020;12:2961.
51. Mushtaq MU, Chaudhary SG, Murthy GSG, Hall AC, Atallah EL, Mattison RJ. Prognostic significance of neutrophil-to-lymphocyte ratio in relapsed/refractory acute myeloid leukemia. *Blood*. 2018;132:5246.
52. Akboğa MK, Abacı A, Canpolat U, Yayla Ç, Şahinarslan A, Açıkgöz K, et al. OP-074 Association of Red Blood Cell Distribution Width with The Presence and Severity of Rheumatic Mitral Valve Stenosis. *Am J Cardiol*. 2015;115:S32–3.
53. Polat N, Yildiz A, Yuksel M, Bilik MZ, Aydin M, Acet H, et al. Association of neutrophil–lymphocyte ratio with the presence and severity of rheumatic mitral valve stenosis. *Clin*

- Appl Thromb. 2014;20:793–8.
54. Guilherme L, Cury P, Demarchi LMF, Coelho V, Abel L, Lopez AP, et al. Rheumatic heart disease: proinflammatory cytokines play a role in the progression and maintenance of valvular lesions. *Am J Pathol.* 2004;165:1583–91.
 55. Zahorec R. Ratio of neutrophil to lymphocyte counts-rapid and simple parameter of systemic inflammation and stress in critically ill. *Bratisl Lek Listy.* 2001;102:5–14.
 56. Lai WW, Mertens LL, Cohen MS, Geva T. *Echocardiography in pediatric and congenital heart disease: from fetus to adult.* John Wiley & Sons; 2015.
 57. MYUNG K. PARK: *Park's Pediatric Cardiology for Practitioners.* Copyright; 2014.
 58. Brunner M, Moeslinger T, Spieckermann PG. Echocardiography for teaching cardiac physiology in practical student courses. *Adv Physiol Educ.* 1995;268:S2.
 59. Crawford MH, Grant D, O'Rourke RA, Starling MR, Groves BM. Accuracy and reproducibility of new M-mode echocardiographic recommendations for measuring left ventricular dimensions. *Circulation.* 1980;61:137–43.
 60. Geva T, van der Velde ME. Imaging techniques: echocardiography, magnetic resonance imaging, and computerized tomography. *Nadas' Pediatr Cardiol.* 2006;183–211.
 61. Mertens LL, Rigby ML, Horowitz ES, Anderson RH. Cross sectional echocardiographic and Doppler imaging. In: *Paediatric Cardiology.* Elsevier; 2010. p. 313–39.
 62. Sukardi R PS, Djer MM, roeslani RD, Endryarni B Y. Penatalaksanaan terkini gagal jantung pada anak. *Manag Pediatr Hear Dis Pract from early Detect to intervvention.* 2000;40–63.
 63. Mertens LL, Friedberg MK. Imaging the right ventricle—current state of the art. *Nat Rev Cardiol.* 2010;7:551–63.
 64. Flyer DC. Rheumatic fever. Dalam: Keane JF, Lock JE, Flyer DC. *Nadas' pediatric cardiology.* Edisi ke-2. Philadelphia: Elsevier; 2006.
 65. Frommelt PC. Diastolic ventricular function assessment. *Echocardiogr Pediatr Congenit Hear Dis from fetus to adult.* 2021;146–67.
 66. Mondrowinduro P, Hasan I, Alwi I, Abdullah M. Disfungsi Diastolik Ventrikel Kiri pada Pasien Sirosis Hati: Proporsi, Korelasi, dan Hubungan Parameter Fungsi Diastolik dengan Derajat Disfungsi Hati. *J Penyakit Dalam Indones.* 2018;5:2–10.
 67. Mawlana W, Donia A, Elamrousy D. Relation between red cell distribution width and left ventricular function in children with heart failure. *Int Sch Res Not.* 2014;2014.
 68. Albakri A. Rheumatic heart failure: A review of clinical status and meta-analysis of echocardiography diagnosis and efficacy of shorter duration of antibiotic. *Intern Med Care.* 2018;2.
 69. Afşin A, Asoğlu R, Kurtoğlu E, Kaya H. Neutrophil to Lymphocyte Ratio as a Predictor of Left Ventricular Hypertrophy in Patients with Newly Diagnosed Hypertension. *J Hypertens Manag.* 2019;5:42.
 70. Nursidiq AA, Purwaningtyas N, Wasyanto T. Association Between Neutrophil to Lymphocyte Ratio and Left Ventricle Global Longitudinal Strain in Acute Myocardial Infarction. *ACI (Acta Cardiol Indones.* 4:80–7.
 71. Adem B, Gokhan E, Hacer S, Emine G, Sedat O. Predictive value of elevated neutrophil-lymphocyte ratio for left ventricular systolic dysfunction in patients with non ST-elevated acute coronary syndrome. 2015;
 72. Mangoni AA, Koelling TM, Meyer GS, Akins CW, Fifer MA. Outcome following mitral valve replacement in patients with mitral stenosis and moderately reduced left ventricular ejection fraction. *Eur J cardio-thoracic Surg.* 2002;22:90–4.

73. Dahlan MS. Besar sampel dan cara pengambilan sampel dalam penelitian kedokteran dan kesehatan. *Jakarta Salemba Med.* 2010;5:1–2.
74. Curry C. Red Cell Distribution Width (RDW) test. *Medscape* Available URL <https://emedicine.medscape.com/article/2098635-overview>. 2018;
75. Kar YD, Gullu UU. The role of whole-blood parameters in predicting the severity of acute rheumatic carditis in children. *Haseki Tip Bul.* 2021;59:178–83.
76. Islam AKMM, Majumder AAS. Rheumatic fever and rheumatic heart disease in Bangladesh: A review. *Indian Heart J.* 2016;68:88–98.
77. Butt HI, Shahbaz A, Nawaz H, Butt K. Comparative Clinical Characteristics of Rheumatic Heart Disease Patients Undergoing Surgical Valve Replacement. *Cureus.* 2019;11.
78. Marpaung LNSM, Tobing TCL, Saragih RAC. Characteristic quality of life children with rheumatic heart disease. *Open Access Maced J Med Sci.* 2021;9:270–3.
79. Sastroasmoro S, Madiyono B, Oesman IN, Putra ST, Advani N. Survival patterns of children with rheumatic heart disease. *Med J Indones.* 1995;4:254–63.
80. Manjunath CN, Srinivas P, Ravindranath KS, Dhanalakshmi C. Incidence and patterns of valvular heart disease in a tertiary care high-volume cardiac center: a single center experience. *Indian Heart J.* 2014;66:320–6.
81. Laudari S, Subramanyam G. A study of spectrum of rheumatic heart disease in a tertiary care hospital in Central Nepal. *Int J Cardiol Hear Vasc.* 2017 Jun;15:26–30.
82. Meshaal MS, Nagi A, Eldamaty A, Elnaggar W, Gaber M, Rizk H. Neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) as independent predictors of outcome in infective endocarditis (IE). *Egypt Hear J.* 2019;71.
83. Arbel Y, Shacham Y, Ziv-Baran T, Perl ML, Finkelstein A, Halkin A, et al. Higher neutrophil/lymphocyte ratio is related to lower ejection fraction and higher long-term all-cause mortality in ST-elevation myocardial infarction patients. *Can J Cardiol.* 2014;30:1177–82.
84. Chen C, Cong BL, Wang M, Abdullah M, Wang XL, Zhang YH, et al. Neutrophil to lymphocyte ratio as a predictor of myocardial damage and cardiac dysfunction in acute coronary syndrome patients. *Integr Med Res.* 2018;7:192–9.
85. Gromadziński L, Januszko-Giergielewicz B, Jalali R, Arlukowicz T, Pruszczyk P. The role of neutrophil to lymphocyte ratio as a predictor of left ventricular diastolic dysfunction in chronic kidney disease patients. *Folia Cardiol.* 2018;13:1–8.
86. Giray D, Hallioglu O. Are there any novel markers in acute rheumatic fever: neutrophil-to-lymphocyte ratio, platelet-to-lymphocyte ratio, and monocyte-to-lymphocyte ratio. *Cardiol Young.* 2020 May;30:717–21.
87. Durmus E, Kivrak T, Gerin F, Sunbul M, Sari I, Erdogan O. Neutrophil-to-Lymphocyte Ratio and Platelet-to-Lymphocyte Ratio are Predictors of Heart Failure. *Arq Bras Cardiol.* 2015/11/03. 2015 Dec;105:606–13.
88. Syahradian Hasbrima, Sri Endah Rahayuningsih DH. Korelasi antara Neutrophil-Lymphocyte Ratio dan NT-proBNP pada Pasien Gagal Jantung Anak Akibat Penyakit Jantung Rematik. *Sari Pediatr.* 2021;23:191–6.
89. Loof TG, Sohail A, Bahgat MM, Tallam A, Arshad H, Akmatov MK, et al. Early Lymphocyte Loss and Increased Granulocyte/Lymphocyte Ratio Predict Systemic Spread of *Streptococcus pyogenes* in a Mouse Model of Acute Skin Infection. *Front Cell Infect Microbiol.* 2018;8:101.
90. Pamuk U, Azak E, Cetin I. Assessment of Myocardial Mechanics in Acute Rheumatic Fever

- Using Speckle Tracking Echocardiography. *authorea*. 2021;1–7.
91. Çelik SF, Çelik E. The neutrophil-to-lymphocyte ratio and mean platelet volume can be associated with severity of valvular involvement in patients with acute rheumatic carditis. *Cardiovasc J Afr*. 2018;29:296–300.

