

## DAFTAR PUSTAKA

- Afrifa, J., Gyekye, S., Owiredo, W., Ephraim, R., Essien-Baidoo, S., Amoah, S., Simpong, D., Arthur, A., 2015. Application of sigma metrics for the assessment of quality control in clinical chemistry laboratory in Ghana: A pilot study. *NMJ* 56, 54–58.
- Agresti R, Meneghini E, Baili P, et al. Association of adiposity, dysmetabolisms, and inflammation with aggressive breast cancer subtypes: a cross-sectional study. *Breast Cancer Res Treat.* 2016;157(1):179-189.
- Ahmad A. (2019) Breast Cancer Statistics: Recent Trends. In: Ahmad A. (eds) Breast Cancer Metastasis and Drug Resistance. Advances in Experimental Medicine and Biology, vol 1152. *Springer, Cham.*
- Alkabban FM, Ferguson T. Breast Cancer. 2021 Aug 7. In: StatPearls [Internet]. Treasure Island (FL): *StatPearls*, PMID: 29493913.
- Allin KH, Nordestgaard BG, Flyger H, Bojesen SE. Elevated pre-treatment levels of plasma C-reactive protein are associated with poor prognosis after breast cancer: a cohort study. *Breast Cancer Res.* 2011 Jun 3;13(3):R55.
- A. Mantovani, P. Allavena, A. Sica, and F. Balkwill, “Cancer- related inflammation,” *Nature*, vol. 454, no. 7203, pp. 436–444, 2008.
- American College of Radiology. Breast imaging reporting and data system (BI-RADS). 4th ed. Reston (VA): *American College of Radiology*, 2003
- Asegaonkar SB, Asegaonkar BN, Takalkar UV, Advani S, Thorat AP. C-Reactive Protein and Breast Cancer: New Insights from Old Molecule. *Int J Breast Cancer.* 2015;2015:145647.
- Basu S, Harris H, Larsson A, Vasson MP, Wolk A. Is There Any Role for Serum Cathepsin S and CRP Levels on Prognostic Information in Breast Cancer? The Swedish Mammography Cohort. *Antioxid Redox Signal.* 2015 Dec 1;23(16):1298-302.
- Bates JP, Derakhshandeh R, Jones L, Webb TJ. Mechanisms of immune evasion in breast cancer. *BMC Cancer.* 2018 May 11;18(1):556.
- Binnewies M, Roberts EW, Kersten K, et al. Understanding the tumor immune microenvironment (TIME) for effective therapy. *Nat Med.* 2018;24(5):541-550.
- Bombonati, A. & Sgroi, D. C. The molecular pathology of breast cancer progression. *J. Pathol.* 223, 307–317 (2011).
- Boras E, Slevin M, Alexander MY, Aljohi A, Gilmore W, Ashworth J, et al. Monomeric C-reactive protein and Notch-3 co-operatively increase angiogenesis through PI3K signalling pathway. *Cytokine* (2014) 69:165–79.
- Brewer HR, Jones ME, Schoemaker MJ, et al. Family history and risk of breast cancer: an analysis accounting for family structure. *Breast Cancer Res Treat.* 2017; 165: 193-200.
- Braig D, Nero TL, Koch HG, Kaiser B, Wang X, Thiele JR, et al. Transitional changes in the CRP structure lead to the exposure of proinflammatory binding sites. *Nat Commun* (2017) 8:14188.
- Buonomo, O. C. et al. New insights into the metastatic behavior after breast cancer surgery, according to well-established clinicopathological variables and molecular subtypes. *PLOS ONE* 12, e0184680 (2017).

- Cardoso, F. et al. 4th ESO–ESMO international consensus guidelines for advanced breast cancer (ABC 4). *Ann. Oncol.* 29, 1634–1657 (2018).
- Chen L, Tan C, Li Q, et al. Assessment of the albumin-bilirubin score in breast cancer patients with liver metastasis after surgery. *Heliyon*. 2023;9(11):e21772.
- Ciubotaru I, Potempa LA, Wander RC. Production of modified C-reactive protein in U937-derived macrophages. *Exp Biol Med* (2005) 230(10):762–70.
- Corti C, et al. Targeting brain metastases in breast cancer. *Cancer Treatment Reviews*. 2022. 103:102324.
- Coussens LM, Werb Z. Inflammation and cancer. *Nature*. 2002;420(6917):860–867.
- Danforth DN. The Role of Chronic Inflammation in the Development of Breast Cancer. *Cancers (Basel)*. 2021 Aug 3;13(15):3918.
- breast cancer. Balancing immune response: crosstalk between adaptive and innate immune cells during breast cancer progression. *Breast Cancer Res*. 2007;9(4):212.
- DeSantis CE, Ma J, Gaudet MM, et al. Breast cancer statistics, 2019. *CA Cancer J Clin*. 2019;69(6):438–451.
- Devaraj S, Venugopal S, Jialal I. Native pentameric C-reactive protein displays more potent pro-atherogenic activities in human aortic endothelial cells than modified C-reactive protein. *Atherosclerosis* (2006) 184:48–52.
- Dieci, M. V. et al. Update on tumor-infiltrating lymphocytes (TILs) in breast cancer, including recommendations to assess TILs in residual disease after neoadjuvant therapy and in carcinoma in situ: a report of the International Immuno-Oncology Biomarker Working Group on Breast Cancer. *Semin. Cancer Biol.* 52, 16–25 (2018).
- Endogenous H, Breast Cancer Collaborative G, Key TJ, et al. Sex hormones and risk of breast cancer in premenopausal women: a collaborative reanalysis of individual participant data from seven prospective studies. *Lancet Oncol*. 2013; 14: 1009–1019.
- Faria SS, Fernandes PC Jr, Silva MJ, et al. The neutrophil-to-lymphocyte ratio: a narrative review. *Ecancermedicalscience*. 2016;10:702.
- Favaro E, Amadori A, Indraccolo S. Cellular interactions in the vascular niche: implications in the regulation of tumor dormancy. *APMIS*. 2008 Jul-Aug;116(7-8):648–59.
- Fujii T, Tokuda S, Nakazawa Y, et al. Implications of Low Serum Albumin as a Prognostic Factor of Long-term Outcomes in Patients With Breast Cancer. *In Vivo*. 2020;34(4):2033–2036.
- Gabay C, Kushner I. Acute-phase proteins and other systemic responses to inflammation. *Engl J Med*. 1999;340(6):448–454.
- Hage FG, Szalai AJ. C-reactive protein gene polymorphisms, C-reactive protein blood levels and cardiovascular disease risk. *J Am Coll Cardiol* (2007) 50(12):1115–22
- Han Y, Mao F, Wu Y, Fu X, Zhu X, Zhou S, Zhang W, Sun Q, Zhao Y. Prognostic role of C-reactive protein in breast cancer: a systematic review and meta-analysis. *Int J Biol Markers*. 2011 Oct-Dec;26(4):209–15
- Hanahan D, Weinberg RA. The hallmarks of cancer. *Cell*. 2000 Jan 7;100(1):57–70.

- Handojo D, et al. Panduan Penatalaksanaan Kanker Peraboi 2020. PERABOI. 2020.p1.
- Harbeck N, Penault-Llorca F, Cortes J, et al. Breast cancer. *Nat Rev Dis Primers*. 2019;5(1):66.
- Hwang KT, Chung JK, Roh EY, et al. Prognostic Influence of Preoperative Fibrinogen to Albumin Ratio for Breast Cancer. *J Breast Cancer*. 2017;20(3):254-263.
- Heitzer, E., Haque, I. S., Roberts, C. E. S. & Speicher, M. R. Current and future perspectives of liquid biopsies in genomics-driven oncology. *Nat. Rev. Genet*. 20, 71–88 (2019).
- Hong T, Liu A, Cai D, et al. Preoperative serum C-reactive protein levels and early breast cancer by BMI and menopausal status. *Cancer Invest*. 2013;31(4):279-285.
- Hutajulu SH, Prabandari YS, Bintoro BS, et al. Delays in the presentation and diagnosis of women with breast cancer in Yogyakarta, Indonesia: A retrospective observational study. *PLoS One*. 2022;17.
- Iarc., I. A. for R. on C. W. H. O. (2012). Globocan 2012: Estimated Cancer Incidence, Mortality and Prevalence Worldwide in 2012. *Globocan*. <https://doi.org/10.1002/ijc.27711>
- Il'yasova D, Colbert LH, Harris TB, et al. Circulating levels of inflammatory markers and cancer risk in the health aging and body composition cohort. *Cancer Epidemiol Biomarkers Prev*. 2005;14(10):2413-2418.
- Ilmiah M, Anniwati L, Soehartini. 2014. Metode Bromcresol Green (BCG) Dan Bromcresol Purple (BCP) pada Sirosis Hati yang Mendapat Infus Albumin. *Indonesian Journal of Clinical Pathology and Medical Laboratory* 20(2): 73-79.
- Irwig, L., Macaskill, P. & Houssami, N. Evidence relevant to the investigation of breast symptoms: the triple test. *Breast 11*, 215–220 (2002).
- Joe BN, Burstein HJ, Vora SR. Clinical features, diagnosis, and staging of newly diagnosed breast cancer. *Wolters Kluwer UpToDate*. 2022.
- Joshi H, Press MF. Molecular Oncology of Breast Cancer.In: The Breast Comprehensive Management of Benign and Malignant Disease. *Elsevier*. 2017. p1170.
- Liu X, Guo X, Zhang Z. Preoperative Serum Hypersensitive-c-Reactive-Protein (Hs-CRP) to Albumin Ratio Predicts Survival in Patients with Luminal B Subtype Breast Cancer. *Onco Targets Ther*. 2021;14:4137-4148.
- Kalli S, Semine A, Cohen S, Naber SP, Makim SS, Bahl M. American Joint Committee on Cancer's Staging System for Breast Cancer, Eighth Edition: What the Radiologist Needs to Know. *Radiographics*. 2018;38(7):1921-1933.
- Kaplan MH, Volanakis JE. Interaction of C-reactive protein complexes with the complement system I. Consumption of human complement associated with the reaction of C-reactive protein with pneumococcal C-polysaccharide and with the choline phosphatides, lecithin and sphingomyelin. *J Immunol* (1974) 112(6):2135–47.
- Kaur RP, Rubal, Banipal RPS, Vashistha R, Dhiman M, Munshi A. Association of elevated levels of C-reactive protein with breast cancer, breast cancer subtypes, and poor outcome. *Curr Probl Cancer*. 2019;43(2):123-129.

- K. H. Allin and B. G. Nordestgaard, "Elevated C-reactive protein in the diagnosis, prognosis, and cause of cancer," *Critical Reviews in Clinical Laboratory Sciences*, vol. 48, no. 4, pp. 155–170, 2011.
- Kim, M.H., Ahn, J.Y., Song, J.E., Choi, H., Ann, H.W., Kim, J.K., Kim, J.H., Jeon, Y.D., Kim, S.B., Jeong, S.J., Ku, N.S., Han, S.H., Song, Y.G., Choi, J.Y., Kim, Y.S. & Kim, J.M. 2015. The C-reactive protein/albumin ratio as an independent predictor of mortality in patients with severe sepsis or septic shock treated with early goal-directed therapy. *PLoS One*, 10(7): 1–13.
- Kim, ES., Kim, S., Koh, M. *et al.* C-reactive protein binds to integrin  $\alpha 2$  and Fc $\gamma$  receptor I, leading to breast cell adhesion and breast cancer progression. *Oncogene* 37, 28–38 (2018).
- Kühn T, Sookthai D, Graf ME, et al. Albumin, bilirubin, uric acid and cancer risk: results from a prospective population-based study. *Br J Cancer*. 2017;117(10):1572-1579.
- Kumar D, Banerjee D. Methods of albumin estimation in clinical biochemistry: Past, present, and future. *Clin Chim Acta*. 2017;469:150-160.
- Koo MM, von Wagner C, Abel GA, McPhail S, Rubin GP, Lyratzopoulos G. Typical and atypical presenting symptoms of breast cancer and their associations with diagnostic intervals: Evidence from a national audit of cancer diagnosis. *Cancer Epidemiol*. 2017;48:140-146.
- Lambert AW, Pattabiraman DR, Weinberg RA. Emerging Biological Principles of Metastasis. *Cell*. 2017;168(4):670-691.
- Landskron G, De la Fuente M, Thuwajit P, Thuwajit C, Hermoso MA. Chronic inflammation and cytokines in the tumor microenvironment. *J Immunol Res*. 2014;2014:149185
- Levin, E. R. & Pietras, R. J. Estrogen receptors outside the nucleus in breast cancer. *Breast Cancer Res. Treat.* 108, 351–361 (2008).
- Lis CG, Grutsch JF, Vashi PG, Lammersfeld CA. Is serum albumin an independent predictor of survival in patients with breast cancer?. *JPEN J Parenter Enteral Nutr*. 2003;27(1):10-15.
- Liu X, Guo X, Zhang Z. Preoperative Serum Hypersensitive-c-Reactive-Protein (Hs-CRP) to Albumin Ratio Predicts Survival in Patients with Luminal B Subtype Breast Cancer. *Onco Targets Ther*. 2021;14:4137-4148. Published 2021 Jul 9. doi:10.2147/OTT.S320111
- Majeed W, Aslam B, Javed I, et al. Breast cancer: major risk factors and recent developments in treatment. *APJCP*. 2014; 15: 3353-3358.
- Maltoni M, Amadori D. Prognosis in advanced cancer. *Hematol Oncol Clin North Am*. 2002;16(3):715-729.
- Mariotto AB, Etzioni R, Hurlbert M, Penberthy L, Mayer M. Estimation of the Number of Women Living with Metastatic Breast Cancer in the United States. *Cancer Epidemiol Biomarkers Prev*. 2017;26(6):809-815.
- Merlot AM, Kalinowski DS, Richardson DR. Unraveling the mysteries of serum albumin-more than just a serum protein. *Front Physiol*. 2014;5:299.
- Momenimovahed Z, Salehiniya H. Epidemiological characteristics of and risk factors for breast cancer in the world. *Breast Cancer (Dove Med Press)*. 2019;11:151-164.

- Mortensen RF. C-reactive protein, inflammation, and innate immunity. *Immunol Res* (2001) 24(2):163–76.
- Morrow, M., Waters, J. & Morris, E. MRI for breast cancer screening, diagnosis, and treatment. *Lancet* 378, 1804–1811 (2011).
- Nechuta S, Lu W, Zheng Y, et al. Comorbidities and breast cancer survival: a report from the Shanghai Breast Cancer Survival Study. *Breast Cancer Res Treat.* 2013;139(1):227-235.
- Pahwa R, Goyal A, Jialal I. Chronic Inflammation. In: *StatPearls*. Treasure Island (FL): *StatPearls Publishing*; August 8, 2022.
- Pierce BL, Neuhouser ML, Wener MH, et al. Correlates of circulating C-reactive protein and serum amyloid A concentrations in breast cancer survivors. *Breast Cancer Res Treat.* 2009; 114:155–167. *Epub* 2008 Apr 10.
- Peters, T. (1996). All About Albumin: Biochemistry, Genetics and Medical Applications. San Diego, CA: *Academic Press Limited*.
- Petekaya I, Unlu O, Roach EC, et al. Prognostic role of inflammatory biomarkers in metastatic breast cancer. *J BUON.* 2017;22(3):614-622.
- Pradhan AD, Manson JE, Rifai N, Buring JE, Ridker PM. C-reactive protein, interleukin 6, and risk of developing type 2 diabetes mellitus. *J Am Med Assoc* (2001) 286(3):327–34.
- Riskesdas. (2018). Riset Kesehatan Dasar 2018. In Kementrian Kesehatan Republik Indonesia
- Shah R, Rosso K, Nathanson SD. Pathogenesis, prevention, diagnosis and treatment of breast cancer. *World J Clin Oncol.* 2014;5(3):283-298.
- Ruffell, B. et al. Leukocyte composition of human breast cancer. *Proc. Natl Acad. Sci. USA* 109, 2796–2801 (2012).
- Santen, R. J. Clinical review: effect of endocrine therapies on bone in breast cancer patients. *J. Clin. Endocrinol. Metab.* 96, 308–319 (2011).
- Sarett SM, Werfel TA, Lee L, et al. Lipophilic siRNA targets albumin in situ and promotes bioavailability, tumor penetration, and carrier-free gene silencing. *Proc Natl Acad Sci U S A.* 2017;114(32):E6490-E6497.
- Savas, P. et al. Clinical relevance of host immunity in breast cancer: from TILs to the clinic. *Nat. Rev. Clin. Oncol.* 13, 228–241 (2016).
- Seve P, Ray-Coquard I, Trillet-Lenoir V, et al. Low serum albumin levels and liver metastasis.
- Sicking I, Edlund K, Wesbuer E, et al. Prognostic influence of pre-operative C-reactive protein in node-negative breast cancer patients. *PLoS One.* 2014;9(10)
- Siegel RL, Miller KD, and Jemal A. Cancer Statistics, 2017. *CA Cancer J Clin.* 2017; 67: 7-30.
- Sun YS, Zhao Z, Yang ZN, et al. Risk Factors and Preventions of Breast Cancer. *Int J Biol Sci.* 2017;13(11):1387-1397.
- Villaseñor A, Flatt SW, Marinac C, Natarajan L, Pierce JP, Patterson RE. Postdiagnosis C-reactive protein and breast cancer survivorship: findings from the WHEL study. *Cancer Epidemiol Biomarkers Prev.* 2014 Jan;23(1):189-99.
- Solinas, C., Carbognin, L., De Silva, P., Criscitiello, C. & Lambertini, M. Tumor-infiltrating lymphocytes in breast cancer according to tumor subtype: current state of the art. *Breast* 35, 142–150 (2017).



- Soeters PB, Wolfe RR, Shenkin A. Hypoalbuminemia: Pathogenesis and Clinical Significance. *JPEN J Parenter Enteral Nutr.* 2019;43(2):181-193.
- Sugiyono, 2006. Statistik Untuk Penelitian, 10th ed. CV Alfabeta, Bandung.
- Takegawa, R., Kabata, D., Shimizu, K., Hisano, S., Ogura, H., Shintani, A. & Shimazu, T. 2019. Serum albumin as a risk factor for death in patients with prolonged sepsis : An observational study. *J. Crit. Care*, 51(2019): 139–144.
- Thapa, S., Prasad, P. & Shakya, Y. 2017. Serum Lactate Albumin Ratio as a Predictor of Mortality in Severe Sepsis and Septic Shock at Tribhuvan University Teaching Hospital, Kathmandu. *Birat J. Health Sci*, 2(3): 191–195.
- Tillet WS, Francis T. Serological reactions in pneumonia with a non- protein somatic fraction of Pneumococcus. *J Exp Med* (1930) 52(4):561–71.
- Tuomisto, A.E., Mäkinen, M.J., Väyrynen, J.P., 2019. Systemic inflammation in colorectal cancer: Underlying factors, effects, and prognostic significance. *World J Gastroenterol* 25, 4383–4404.
- Villaseñor A, Flatt SW, Marinac C, Natarajan L, Pierce JP, Patterson RE. Postdiagnosis C-reactive protein and breast cancer survivorship: findings from the WHEL study. *Cancer Epidemiol Biomarkers Prev.* 2014;23(1):189-199.
- Volanakis JE. Human C-reactive protein: expression structure and function. *Mol Immunol* (2001) 38:189–97.
- Von Meyenfeldt M: Cancer-associated malnutrition: an introduction. *Eur J Oncol Nurs* 9: S35-S38, 2005. PMID: 16437756.
- Wang R, Zhu Y, Liu X, Liao X, He J, Niu L. The Clinicopathological features and survival outcomes of patients with different metastatic sites in stage IV breast cancer. *BMC Cancer.* 2019;19(1):1091.
- Westgard, J., 2014. Desirable Biological Variation Database specifications [WWW Document]. *Westgard QC*.
- Williams, C. & Lin, C.-Y. Oestrogen receptors in breast cancer: basic mechanisms and clinical implications. *Ecancermedalscience* 7, 370 (2013).
- Wulaningsih W, Holmberg L, Abeler-Doner L, Ng T, Rohrmann S, Van Hemelrijck M. Associations of C-Reactive Protein, Granulocytes and Granulocyte-to-Lymphocyte Ratio with Mortality from Breast Cancer in Non-Institutionalized American Women. *PLoS One.* 2016 Jun 13;11(6).
- Xiang M, Zhang H, Tian J, Yuan Y, Xu Z, Chen J. Low serum albumin levels and high neutrophil counts are predictive of a poorer prognosis in patients with metastatic breast cancer. *Oncol Lett.* 2022;24(6):432.
- Yeun JY, Kaysen GA. Factors influencing serum albumin in dialysis patients. *Am J Kidney Dis.* 1998;32(6 Suppl 4):S118-S125.
- Wawolumaja Arya, Pontoh Victor, Merung marselus. Terapi pada pasien kanker payudara stadium lanjut menurunkan kadar c- reaktif protein dan meningkatkan kadar albumin. Juli 2014. <https://ejournal.unsrat.ac.id/v2/index.php/biomedik/article/view/2332>