

BIBLIOGRAPHY

- Aggarwal, S., Gollapudi, S., Gupta, S., 1999. Increased TNF- α -Induced Apoptosis in Lymphocytes from Aged Humans: Changes in TNF- α Receptor Expression and Activation of Caspases. *The Journal of Immunology* 162, 2154–2161. <https://doi.org/10.4049/jimmunol.162.4.2154>
- Agusinta, L., 2020. PENGANTAR METODE PENELITIAN MANAJEMEN. Jakad Media Publishing.
- Ahmadpoor, P., Rostaing, L., 2020. Why the immune system fails to mount an adaptive immune response to a COVID-19 infection. <https://doi.org/10.1111/tri.13611>
- Akhmerov, A., Marbán, E., 2020. COVID-19 and the Heart. *Circulation Research* 126, 1443–1455. <https://doi.org/10.1161/CIRCRESAHA.120.317055>
- Alqahtani, J.S., Oyelade, T., Aldhahir, A.M., Alghamdi, S.M., Almeahmadi, M., Alqahtani, A.S., Quaderi, S., Mandal, S., Hurst, J.R., 2020. Prevalence, Severity and Mortality associated with COPD and Smoking in patients with COVID-19: A Rapid Systematic Review and Meta-Analysis. *PLoS One* 15, e0233147. <https://doi.org/10.1371/journal.pone.0233147>
- Apostol, A.C., Jensen, K.D.C., Beaudin, A.E., 2020. Training the Fetal Immune System Through Maternal Inflammation—A Layered Hygiene Hypothesis. *Frontiers in Immunology* 11.
- Assinger, A., 2014. Platelets and Infection – An Emerging Role of Platelets in Viral Infection. *Front Immunol* 5, 649. <https://doi.org/10.3389/fimmu.2014.00649>
- Atri, D., Siddiqi, H.K., Lang, J.P., Nauffal, V., Morrow, D.A., Bohula, E.A., 2020. COVID-19 for the Cardiologist. *JACC Basic Transl Sci* 5, 518–536. <https://doi.org/10.1016/j.jacbts.2020.04.002>
- Awasthi, S., Wagner, T., Venkatakrishnan, A.J., Puranik, A., Hurchik, M., Agarwal, V., Conrad, I., Kirkup, C., Arunachalam, R., O'Horo, J., Kremers, W., Kashyap, R., Morice, W., Halamka, J., Williams, A.W., Faubion, W.A., Badley, A.D., Gores, G.J., Soundararajan, V., 2021. Plasma IL-6 levels following corticosteroid therapy as an indicator of ICU length of stay in critically ill COVID-19 patients. *Cell Death Discov.* 7, 1–15. <https://doi.org/10.1038/s41420-021-00429-9>
- Barnes, P.J., 2010. Mechanisms and resistance in glucocorticoid control of inflammation. *J Steroid Biochem Mol Biol* 120, 76–85. <https://doi.org/10.1016/j.jsbmb.2010.02.018>

- Bashash, D., Hosseini-Baharanchi, F.S., Rezaie-Tavirani, M., Safa, M., Akbari Dilmaghani, N., Faranoush, M., Abolghasemi, H., 2020. The Prognostic Value of Thrombocytopenia in COVID-19 Patients; a Systematic Review and Meta-Analysis. *Arch Acad Emerg Med* 8, e75.
- Batah, S.S., Fabro, A.T., 2021. Pulmonary pathology of ARDS in COVID-19: A pathological review for clinicians. *Respir Med* 176, 106239. <https://doi.org/10.1016/j.rmed.2020.106239>
- Bayry, J., Fournier, E.M., Maddur, M.S., Vani, J., Wootla, B., Sib  ril, S., Dimitrov, J.D., Lacroix-Desmazes, S., Berdah, M., Crabol, Y., Oksenhendler, E., L  vy, Y., Mouthon, L., Saut  s-Fridman, C., Hermine, O., Kaveri, S.V., 2011. Intravenous immunoglobulin induces proliferation and immunoglobulin synthesis from B cells of patients with common variable immunodeficiency: a mechanism underlying the beneficial effect of IVIg in primary immunodeficiencies. *J Autoimmun* 36, 9–15. <https://doi.org/10.1016/j.jaut.2010.09.006>
- Behrens, E.M., 2017. Review: Cytokine Storm Syndrome: Looking Toward the Precision Medicine Era. <https://doi.org/10.1002/art.40071>
- Bhaskar, S., Sinha, A., Banach, M., Mittoo, S., Weissert, R., Kass, J.S., Rajagopal, S., Pai, A.R., Kutty, S., 2020. Cytokine Storm in COVID-19—Immunopathological Mechanisms, Clinical Considerations, and Therapeutic Approaches: The REPROGRAM Consortium Position Paper. *Front Immunol* 11, 1648. <https://doi.org/10.3389/fimmu.2020.01648>
- Boccatonda, A., D’Ardes, D., Rossi, I., Grignaschi, A., Lanotte, A., Cipollone, F., Guagnano, M.T., Giostra, F., 2022. Platelet Count in Patients with SARS-CoV-2 Infection: A Prognostic Factor in COVID-19. *J Clin Med* 11, 4112. <https://doi.org/10.3390/jcm11144112>
- Brownlee, M., 2005. The pathobiology of diabetic complications: a unifying mechanism. *Diabetes* 54, 1615–1625. <https://doi.org/10.2337/diabetes.54.6.1615>
- Bunyavanich, S., Do, A., Vicencio, A., 2020. Nasal Gene Expression of Angiotensin-Converting Enzyme 2 in Children and Adults. *JAMA* 323, 2427–2429. <https://doi.org/10.1001/jama.2020.8707>
- Burhan, E., Susanto, A.D., Nasution, S.A., Ginanjar, E., Pitoyo, W., Susilo, A., Firdaus, I., Santoso, A., Arifa, D., Arif, S.K., Syam, F., Rasmin, M., Rengganis, I., Sukrisman, L., Wiyono, W.H., Isbaniah, F., Elhidsi, M., Aniwidyaningsih, W., Handayani, D., Sugiri, J.R., Wahyudi, E.R., Mulansari, N.A., Muchtar, F., Rumende, C.M., Soeroto, A.Y., Triyono, A., Katu, S., Agustina, P., Puspitorini, D., Prasetya, I., Musbah, T., Pulungan, A.B.,

Pudjiadi, A.H., Sjakti, A., Yanuarso, P.B., Alam, A., Kaswandani, N., Putri, N.D., Kadafi, K.T., Roeslaini, R.D., Sambo, M., 2020. Pedomatan Tatalaksana COVID-19. Jakarta.

Burki, T.K., 2020. Coronavirus in China. *The Lancet Respiratory Medicine* 8, 238. [https://doi.org/10.1016/S2213-2600\(20\)30056-4](https://doi.org/10.1016/S2213-2600(20)30056-4)

Burrell, C.J., Howard, C.R., Murphy, F.A., 2016. *Fenner and White's Medical Virology*. Academic Press.

Busillo, J.M., Cidlowski, J.A., 2013. The five Rs of glucocorticoid action during inflammation: ready, reinforce, repress, resolve, and restore. *Trends Endocrinol Metab* 24, 109–119. <https://doi.org/10.1016/j.tem.2012.11.005>

Cai, Q., Huang, D., Yu, H., Zhu, Z., Xia, Z., Su, Y., Li, Z., Zhou, G., Gou, J., Qu, J., Sun, Y., Liu, Y., He, Q., Chen, J., Liu, L., Xu, L., 2020. COVID-19: Abnormal liver function tests. *J Hepatol* 73, 566–574. <https://doi.org/10.1016/j.jhep.2020.04.006>

Caillon, A., Zhao, K., Klein, K.O., Greenwood, C.M.T., Lu, Z., Paradis, P., Schiffrin, E.L., 2021. High Systolic Blood Pressure at Hospital Admission Is an Important Risk Factor in Models Predicting Outcome of COVID-19 Patients. *American Journal of Hypertension* 34, 282–290. <https://doi.org/10.1093/ajh/hpaa225>

Cappanera, S., Palumbo, M., Kwan, S.H., Priante, G., Martella, L.A., Saraca, L.M., Sicari, F., Vernelli, C., Di Giuli, C., Andreani, P., Mariottini, A., Francucci, M., Sensi, E., Costantini, M., Bruzzone, P., D'Andrea, V., Gioia, S., Ciocchi, R., Tiri, B., 2021. When Does the Cytokine Storm Begin in COVID-19 Patients? A Quick Score to Recognize It. *J Clin Med* 10, 297. <https://doi.org/10.3390/jcm10020297>

Caricchio, R., Gallucci, M., Dass, C., Zhang, X., Gallucci, S., Fleece, D., Bromberg, M., Criner, G.J., Temple University COVID-19 Research Group, 2021. Preliminary predictive criteria for COVID-19 cytokine storm. *Ann Rheum Dis* 80, 88–95. <https://doi.org/10.1136/annrheumdis-2020-218323>

Chai, X., Hu, L., Zhang, Y., Han, W., Lu, Z., Ke, A., Zhou, J., Shi, G., Fang, N., Fan, Jia, Cai, J., Fan, Jue, Lan, F., 2020. Specific ACE2 Expression in Cholangiocytes May Cause Liver Damage After 2019-nCoV Infection. <https://doi.org/10.1101/2020.02.03.931766>

Chan, J.W.M., Ng, C.K., Chan, Y.H., Mok, T.Y.W., Lee, S., Chu, S.Y.Y., Law, W.L., Lee, M.P., Li, P.C.K., 2003. Short term outcome and risk factors for adverse clinical outcomes in adults with severe acute respiratory syndrome (SARS). *Thorax* 58, 686–689. <https://doi.org/10.1136/thorax.58.8.686>

- Channappanavar, R., Perlman, S., 2017. Pathogenic human coronavirus infections: causes and consequences of cytokine storm and immunopathology. *Semin Immunopathol* 39, 529–539. <https://doi.org/10.1007/s00281-017-0629-x>
- Chegni, H., PAKRAVAN, N., SAADATI, M., GHAFARI, A.D., SHIRZAD, H., HASSAN, Z.M., 2020. Is There a Link between COVID-19 Mortality with Genus, Age, ABO Blood Group Type, and ACE2 Gene Polymorphism? *Iran J Public Health* 49, 1582–1584. <https://doi.org/10.18502/ijph.v49i8.3910>
- Chen, F., Hao, L., Zhu, S., Yang, X., Shi, W., Zheng, K., Wang, T., Chen, H., 2021. Potential Adverse Effects of Dexamethasone Therapy on COVID-19 Patients: Review and Recommendations. *Infect Dis Ther* 10, 1907–1931. <https://doi.org/10.1007/s40121-021-00500-z>
- Chen, G., Wu, D., Guo, W., Cao, Y., Huang, D., Wang, H., Wang, T., Zhang, Xiaoyun, Chen, H., Yu, H., Zhang, Xiaoping, Zhang, M., Wu, S., Song, J., Chen, T., Han, M., Li, S., Luo, X., Zhao, J., Ning, Q., 2020. Clinical and immunological features of severe and moderate coronavirus disease 2019. *J Clin Invest* 130, 2620–2629. <https://doi.org/10.1172/JCI137244>
- Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y., Xia, J., Yu, T., Zhang, X., Zhang, L., 2020. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet* 395, 507–513. [https://doi.org/10.1016/S0140-6736\(20\)30211-7](https://doi.org/10.1016/S0140-6736(20)30211-7)
- Chen, X., Zhao, B., Qu, Y., 2020. Viral load SARS-CoV-2 serum yang terdeteksi (RNAemia)... - Google Cendekia [WWW Document]. URL https://scholar.google.com/scholar_lookup?title=Detectable%20serum%20SARS-CoV-2%20viral%20load%20%28RNAemia%29%20is%20closely%20correlated%20with%20drastically%20elevated%20interleukin%206%20%28IL-6%29%20level%20in%20critically%20ill%20COVID-19%20patients&author=XH%20Chen&author=BH%20Zhao&author=YM%20Qu&publication_year=2020&journal=Clin%20Infect%20Dis&volume=&pages= (accessed 3.8.23).
- Chen, Xiaohua, Zhao, B., Qu, Y., Chen, Y., Xiong, J., Feng, Y., Men, D., Huang, Q., Liu, Y., Yang, B., Ding, J., Li, F., 2020. Detectable Serum Severe Acute Respiratory Syndrome Coronavirus 2 Viral Load (RNAemia) Is Closely Correlated With Drastically Elevated Interleukin 6 Level in Critically Ill Patients With Coronavirus Disease 2019. *Clinical Infectious Diseases* 71, 1937–1942. <https://doi.org/10.1093/cid/ciaa449>
- Chen, Y., Du, Y., Li, Y., Wang, X., Gao, P., Yang, G., Fang, Y., Meng, Y., Zhao, X., 2015. Panaxadiol Saponin and Dexamethasone Improve Renal Function

in Lipopolysaccharide-Induced Mouse Model of Acute Kidney Injury. PLoS One 10, e0134653. <https://doi.org/10.1371/journal.pone.0134653>

Cheng, Y., Luo, R., Wang, K., Zhang, M., Wang, Z., Dong, L., Li, J., Yao, Y., Ge, S., Xu, G., 2020. Kidney disease is associated with in-hospital death of patients with COVID-19. *Kidney International* 97, 829–838. <https://doi.org/10.1016/j.kint.2020.03.005>

Chousterman, B.G., K Swirski, F., F Weber 4, G., 2017. Cytokine storm and sepsis disease pathogenesis - PubMed [WWW Document]. URL <https://pubmed.ncbi.nlm.nih.gov/28555385/> (accessed 1.19.23).

Colafrancesco, S., Alessandri, C., Conti, F., Priori, R., 2020. COVID-19 gone bad: A new character in the spectrum of the hyperferritinemic syndrome? *Autoimmun Rev* 19, 102573. <https://doi.org/10.1016/j.autrev.2020.102573>

Costa, L.B., Perez, L.G., Palmeira, V.A., Macedo E Cordeiro, T., Ribeiro, V.T., Lanza, K., Simões E Silva, A.C., 2020. Insights on SARS-CoV-2 Molecular Interactions With the Renin-Angiotensin System. *Front Cell Dev Biol* 8, 559841. <https://doi.org/10.3389/fcell.2020.559841>

COVID-19 Treatment Guidelines Panel, n.d. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines [WWW Document]. National Institutes of Health. URL <https://www.covid19treatmentguidelines.nih.gov/overview/clinical-spectrum/> (accessed 6.25.23).

Cristiani, L., Mancino, E., Matera, L., Nenna, R., Pierangeli, A., Scagnolari, C., Midulla, F., 2020. Will children reveal their secret? The coronavirus dilemma. *European Respiratory Journal* 55. <https://doi.org/10.1183/13993003.00749-2020>

Cruz-Topete, D., Cidlowski, J.A., 2015. One hormone, two actions: anti- and pro-inflammatory effects of glucocorticoids. *Neuroimmunomodulation* 22, 20–32. <https://doi.org/10.1159/000362724>

Danwang, C., Endomba, F.T., Nkeek, J.R., Wouna, D.L.A., Robert, A., Noubiap, J.J., 2020. A meta-analysis of potential biomarkers associated with severity of coronavirus disease 2019 (COVID-19). *Biomarker Research* 8, 37. <https://doi.org/10.1186/s40364-020-00217-0>

Darwish, I., Mubareka, S., Liles, W.C., 2011. Immunomodulatory therapy for severe influenza. *Expert Review of Anti-infective Therapy* 9, 807–822. <https://doi.org/10.1586/eri.11.56>

de Almeida-Pititto, B., Dualib, P.M., Zajdenverg, L., Dantas, J.R., de Souza, F.D., Rodacki, M., Bertoluci, M.C., Brazilian Diabetes Society Study Group

(SBD), 2020. Severity and mortality of COVID 19 in patients with diabetes, hypertension and cardiovascular disease: a meta-analysis. *Diabetology & Metabolic Syndrome* 12, 75. <https://doi.org/10.1186/s13098-020-00586-4>

de Brabander, J., Michels, E.H.A., van Linge, C.C.A., Chouchane, O., Douma, R.A., Reijnders, T.D.Y., Schuurman, A.R., van Engelen, T.S.R., van Agtmael, M.A., Algera, A.G., Appelman, B., van Baarle, F.E.H.P., Bax, D.J.C., Beudel, M., Bogaard, H.J., Bomers, M., Bonta, P.I., Bos, L.D.J., Botta, M., de Brabander, J., de Bree, G.J., de Bruin, S., Bugiani, M., Bulle, E.B., Chouchane, O., Cloherty, A.P.M., Buis, D.T.P., de Rotte, M.C.F.J., Dijkstra, M., Dongelmans, D.A., Dujardin, R.W.G., Elbers, P.E., Fleuren, L.M., Geerlings, S.E., Geijtenbeek, T.B.H., Girbes, A.R.J., Goorhuis, B., Grobusch, M.P., Hafkamp, F.M.J., Hagens, L.A., Hamann, J., Harris, V.C., Hemke, R., Hermans, S.M., Heunks, L.M.A., Hollmann, M.W., Horn, J., Hovius, J.W., de Jong, M.D., Koning, R., Lim, E.H.T., van Mourik, N., Nellen, J., Nossent, E.J., Paulus, F., Peters, E., Piña-Fuentes, D.A.I., van der Poll, T., Preckel, B., Prins, J.M., Raasveld, J., Reijnders, T.D.Y., Schinkel, M., Schrauwen, F.A.P., Schultz, M.J., Schuurman, A.R., Schuurmans, J., Sigalof, K., Slim, M.A., Smeele, P., Smit, M.R., Stijns, C.S., Teunissen, C.E., Thorat, P., Tsonas, A.M., Tuinman, P.R., van der Valk, M., Veelo, D.P., Volleman, C., de Vries, H., Vught, L.A., van Vugt, M., Wouters, D., Zwinderman, K., Brouwer, M.C., Wiersinga, W.J., Vlaar, A.P.J., van de Beek, D., Wiersinga, W.J., van der Poll, T., Amsterdam UMC COVID-19 biobank study group, 2022. Association between dexamethasone treatment and the host response in COVID-19 patients admitted to the general ward. *Respiratory Research* 23, 145. <https://doi.org/10.1186/s12931-022-02060-3>

de la Rica, R., Borges, M., Gonzalez-Freire, M., 2020. COVID-19: In the Eye of the Cytokine Storm. *Frontiers in Immunology* 11.

De Miguel, C., Rudemiller, N.P., Abais, J.M., Mattson, D.L., 2015. Inflammation and hypertension: new understandings and potential therapeutic targets. *Curr Hypertens Rep* 17, 507. <https://doi.org/10.1007/s11906-014-0507-z>

Delang, L., Neyts, J., 2020. Medical treatment options for COVID-19. *Eur Heart J Acute Cardiovasc Care* 9, 209–214. <https://doi.org/10.1177/2048872620922790>

Demeulemeester, F., de Punder, K., van Heijningen, M., van Doesburg, F., 2021. Obesity as a Risk Factor for Severe COVID-19 and Complications: A Review. *Cells* 10, 933. <https://doi.org/10.3390/cells10040933>

Diao, B., Wang, Chenhui, Wang, R., Feng, Z., Zhang, J., Yang, H., Tan, Y., Wang, H., Wang, Changsong, Liu, L., Liu, Ying, Liu, Yueping, Wang, G., Yuan, Z., Hou, X., Ren, L., Wu, Y., Chen, Y., 2021. Human kidney is a target for novel severe acute respiratory syndrome coronavirus 2 infection. *Nat Commun* 12,

2506. <https://doi.org/10.1038/s41467-021-22781-1>

Dinareello, C.A., 1997. Interleukin-1. Cytokine Growth Factor Rev 8, 253–265.
[https://doi.org/10.1016/s1359-6101\(97\)00023-3](https://doi.org/10.1016/s1359-6101(97)00023-3)

Dong, Y., Mo, X., Hu, Y., Qi, X., Jiang, F., Jiang, Z., Tong, S., 2020. Epidemiology of COVID-19 Among Children in China. Pediatrics 145, e20200702.
<https://doi.org/10.1542/peds.2020-0702>

Dorjee, K., Kim, H., Bonomo, E., Dolma, R., 2020. Prevalence and predictors of death and severe disease in patients hospitalized due to COVID-19: A comprehensive systematic review and meta-analysis of 77 studies and 38,000 patients. PLOS ONE 15, e0243191.
<https://doi.org/10.1371/journal.pone.0243191>

Drent, M., Cobben, N.A., Henderson, R.F., Wouters, E.F., van Dieijen-Visser, M., 1996. Usefulness of lactate dehydrogenase and its isoenzymes as indicators of lung damage or inflammation. Eur Respir J 9, 1736–1742.
<https://doi.org/10.1183/09031936.96.09081736>

Dyussenbayev, A., 2017. Age Periods Of Human Life. Advances in Social Sciences Research Journal 4. <https://doi.org/10.14738/assrj.46.2924>

Elezkurtaj, S., Greuel, S., Ihlow, J., Michaelis, E.G., Bischoff, P., Kunze, C.A., Sinn, B.V., Gerhold, M., Hauptmann, K., Ingold-Heppner, B., Miller, F., Herbst, H., Corman, V.M., Martin, H., Radbruch, H., Heppner, F.L., Horst, D., 2021. Causes of death and comorbidities in hospitalized patients with COVID-19. Sci Rep 11, 4263. <https://doi.org/10.1038/s41598-021-82862-5>

Ellulu, M.S., Patimah, I., Khaza'ai, H., Rahmat, A., Abed, Y., 2017. Obesity and inflammation: the linking mechanism and the complications. Arch Med Sci 13, 851–863. <https://doi.org/10.5114/aoms.2016.58928>

Emami, A., Javanmardi, F., Akbari, A., Yeganeh, B.S., Rezaei, T., Bakhtiari, H., Pirbonyeh, N., 2022. Liver Biomarkers Assay in COVID-19 Cases: A Comparison Study between Alive and Dead Patients. Iran J Public Health 51, 172–177. <https://doi.org/10.18502/ijph.v51i1.8309>

Fadel, R., Morrison, A.R., Vahia, A., Smith, Z.R., Chaudhry, Z., Bhargava, P., Miller, J., Kenney, R.M., Alangaden, G., Ramesh, M.S., 2020. Early Short-Course Corticosteroids in Hospitalized Patients With COVID-19. Clin Infect Dis 71, 2114–2120. <https://doi.org/10.1093/cid/ciaa601>

Fajgenbaum, D.C., June, C.H., 2020. Cytokine Storm. N Engl J Med 383, 2255–2273. <https://doi.org/10.1056/NEJMra2026131>

- Fan, Z., Chen, L., Li, J., Cheng, X., Yang, J., Tian, C., Zhang, Y., Huang, S., Liu, Z., Cheng, J., 2020. Clinical Features of COVID-19-Related Liver Functional Abnormality. *Clin Gastroenterol Hepatol* 18, 1561–1566. <https://doi.org/10.1016/j.cgh.2020.04.002>
- Fara, A., Mitrev, Z., Rosalia, R.A., Assas, B.M., 2020. Cytokine storm and COVID-19: a chronicle of pro-inflammatory cytokines. *Open Biol* 10, 200160. <https://doi.org/10.1098/rsob.200160>
- Favalli, E.G., Ingegnoli, F., De Lucia, O., Cincinelli, G., Cimaz, R., Caporali, R., 2020. COVID-19 infection and rheumatoid arthritis: Faraway, so close! *Autoimmun Rev* 19, 102523. <https://doi.org/10.1016/j.autrev.2020.102523>
- Feldmann, M., Maini, R.N., Woody, J.N., Holgate, S.T., Winter, G., Rowland, M., Richards, D., Hussell, T., 2020. Trials of anti-tumour necrosis factor therapy for COVID-19 are urgently needed. *Lancet* 395, 1407–1409. [https://doi.org/10.1016/S0140-6736\(20\)30858-8](https://doi.org/10.1016/S0140-6736(20)30858-8)
- Feng, Y., Ling, Y., Bai, T., Xie, Y., Huang, J., Li, J., Xiong, W., Yang, D., Chen, R., Lu, F., Lu, Y., Liu, X., Chen, Y., Li, X., Li, Y., Summah, H.D., Lin, H., Yan, J., Zhou, M., Lu, H., Qu, J., 2020. COVID-19 with Different Severities: A Multicenter Study of Clinical Features. *Am J Respir Crit Care Med* 201, 1380–1388. <https://doi.org/10.1164/rccm.202002-0445OC>
- Ferron, P.-J., Gicquel, T., Mégarbane, B., Clément, B., Fromenty, B., 2020. Treatments in Covid-19 patients with pre-existing metabolic dysfunction-associated fatty liver disease: A potential threat for drug-induced liver injury? *Biochimie* 179, 266–274. <https://doi.org/10.1016/j.biochi.2020.08.018>
- Fialek, B., Pruc, M., Smereka, J., Jas, R., Rahnama-Hezavah, M., Denegri, A., Szarpak, A., Jaguszewski, M.J., Peacock, F.W., Szarpak, L., 2022. Diagnostic value of lactate dehydrogenase in COVID-19: A systematic review and meta-analysis. *Cardiol J* 29, 751–758. <https://doi.org/10.5603/CJ.a2022.0056>
- Friedel, D.M., Cappell, M.S., 2023. Diarrhea and Coronavirus Disease 2019 Infection. *Gastroenterol Clin North Am* 52, 59–75. <https://doi.org/10.1016/j.gtc.2022.11.001>
- Fu, L., Wang, B., Yuan, T., Chen, X., Ao, Y., Fitzpatrick, T., Li, P., Zhou, Y., Lin, Y.-F., Duan, Q., Luo, G., Fan, S., Lu, Y., Feng, A., Zhan, Y., Liang, B., Cai, W., Zhang, L., Du, X., Li, L., Shu, Y., Zou, H., 2020. Clinical characteristics of coronavirus disease 2019 (COVID-19) in China: A systematic review and meta-analysis. *J Infect* 80, 656–665. <https://doi.org/10.1016/j.jinf.2020.03.041>
- Galeotti, C., Kaveri, S.V., Bayry, J., 2017. IVIG-mediated effector functions in

autoimmune and inflammatory diseases. *Int Immunol* 29, 491–498.
<https://doi.org/10.1093/intimm/dxx039>

Gao, Y., Li, T., Han, M., Li, X., Wu, D., Xu, Y., Zhu, Y., Liu, Y., Wang, X., Wang, L., 2020. Diagnostic utility of clinical laboratory data determinations for patients with the severe COVID-19. *J Med Virol* 92, 791–796.
<https://doi.org/10.1002/jmv.25770>

Gasparyan, A.Y., Misra, D.P., Yessirkepov, M., Zimba, O., 2020. Perspectives of Immune Therapy in Coronavirus Disease 2019. *J Korean Med Sci* 35, e176.
<https://doi.org/10.3346/jkms.2020.35.e176>

Genga, K.R., Russell, J.A., 2017. Update of Sepsis in the Intensive Care Unit. *J Innate Immun* 9, 441–455. <https://doi.org/10.1159/000477419>

Gorbalenya, A.E., Baker, S.C., Baric, R.S., Groot, R.J. de, Drosten, C., Gulyaeva, A.A., Haagmans, B.L., Lauber, C., Leontovich, A.M., Neuman, B.W., Penzar, D., Perlman, S., Poon, L.L.M., Samborskiy, D., Sidorov, I.A., Sola, I., Ziebuhr, J., 2020. Severe acute respiratory syndrome-related coronavirus: The species and its viruses – a statement of the Coronavirus Study Group. <https://doi.org/10.1101/2020.02.07.937862>

Green, W.D., Beck, M.A., 2017. Obesity altered T cell metabolism and the response to infection. *Curr Opin Immunol* 46, 1–7.
<https://doi.org/10.1016/j.coi.2017.03.008>

Guan, W., Liang, W., Zhao, Y., Liang, H., Chen, Zi-sheng, Li, Y., Liu, X., Chen, R., Tang, C., Wang, T., Ou, C., Li, L., Chen, P., Sang, L., Wang, W., Li, J., Li, C., Ou, L., Cheng, B., Xiong, S., Ni, Z., Xiang, J., Hu, Yu, Liu, L., Shan, H., Lei, C., Peng, Y., Wei, L., Liu, Y., Hu, Ya-hua, Peng, P., Wang, J., Liu, J., Chen, Zhong, Li, G., Zheng, Z., Qiu, S., Luo, J., Ye, C., Zhu, S., Cheng, L., Ye, F., Li, S., Zheng, J., Zhang, N., Zhong, N., He, J., 2020a. Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. *Eur Respir J* 55, 2000547. <https://doi.org/10.1183/13993003.00547-2020>

Guan, W., Ni, Z., Hu, Yu, Liang, W., Ou, C., He, J., Liu, L., Shan, H., Lei, C., Hui, D.S.C., Du, B., Li, L., Zeng, G., Yuen, K.-Y., Chen, R., Tang, C., Wang, T., Chen, P., Xiang, J., Li, S., Wang, Jin-lin, Liang, Z., Peng, Y., Wei, L., Liu, Y., Hu, Ya-hua, Peng, P., Wang, Jian-ming, Liu, J., Chen, Z., Li, G., Zheng, Z., Qiu, S., Luo, J., Ye, C., Zhu, S., Zhong, N., 2020b. Clinical Characteristics of Coronavirus Disease 2019 in China. *New England Journal of Medicine* 382, 1708–1720. <https://doi.org/10.1056/NEJMoa2002032>

Guines, A., Hutapea, A.N., Kelmaskosu, R.M., 2022. Gambaran Karakteristik Klinis Penderita Covid-19 di Satu Rumah Sakit Rujukan Covid-19 di

Tangerang: Studi Dokumentasi. *Journal of Bionursing* 4, 92–103.
<https://doi.org/10.20884/1.bion.2022.4.2.138>

- Gupta, A., Madhavan, M.V., Sehgal, K., Nair, N., Mahajan, S., Sehrawat, T.S., Bikdeli, B., Ahluwalia, N., Ausiello, J.C., Wan, E.Y., Freedberg, D.E., Kirtane, A.J., Parikh, S.A., Maurer, M.S., Nordvig, A.S., Accili, D., Bathon, J.M., Mohan, S., Bauer, K.A., Leon, M.B., Krumholz, H.M., Uriel, N., Mehra, M.R., Elkind, M.S.V., Stone, G.W., Schwartz, A., Ho, D.D., Bilezikian, J.P., Landry, D.W., 2020. Extrapulmonary manifestations of COVID-19. *Nat Med* 26, 1017–1032. <https://doi.org/10.1038/s41591-020-0968-3>
- Gupta, G.S., 2022. The Lactate and the Lactate Dehydrogenase in Inflammatory Diseases and Major Risk Factors in COVID-19 Patients. *Inflammation* 45, 2091–2123. <https://doi.org/10.1007/s10753-022-01680-7>
- Hahn, W.-H., Song, J.-H., Kim, H., Park, S., 2018. Is procalcitonin to C-reactive protein ratio useful for the detection of late onset neonatal sepsis? *J Matern Fetal Neonatal Med* 31, 822–826. <https://doi.org/10.1080/14767058.2017.1297410>
- Han, H., Ma, Q., Li, C., Liu, R., Zhao, L., Wang, W., Zhang, P., Liu, X., Gao, G., Liu, F., Jiang, Y., Cheng, X., Zhu, C., Xia, Y., 2020. Profiling serum cytokines in COVID-19 patients reveals IL-6 and IL-10 are disease severity predictors. *Emerg Microbes Infect* 9, 1123–1130. <https://doi.org/10.1080/22221751.2020.1770129>
- Han, S., 2015. Clinical pharmacology review for primary health care providers: II. Steroids. *Translational and Clinical Pharmacology* 23, 15–20. <https://doi.org/10.12793/tcp.2015.23.1.15>
- He, X., Cheng, X., Feng, X., Wan, H., Chen, S., Xiong, M., 2021. Clinical Symptom Differences Between Mild and Severe COVID-19 Patients in China: A Meta-Analysis. *Frontiers in Public Health* 8.
- HE, Y., SUN, J., DING, X., WANG, Q., 2021. Mechanisms in Which Smoking Increases the Risk of COVID-19 Infection: A Narrative Review. *Iran J Public Health* 50, 431–437. <https://doi.org/10.18502/ijph.v50i3.5582>
- Hoffmann, M., Kleine-Weber, H., Schroeder, S., Krüger, N., Herrler, T., Erichsen, S., Schiergens, T.S., Herrler, G., Wu, N.-H., Nitsche, A., Müller, M.A., Drosten, C., Pöhlmann, S., 2020. SARS-CoV-2 Cell Entry Depends on ACE2 and TMPRSS2 and Is Blocked by a Clinically Proven Protease Inhibitor. *Cell* 181, 271. <https://doi.org/10.1016/j.cell.2020.02.052>
- Hu, B., Huang, S., Yin, L., 2021. The cytokine storm and COVID-19. *J Med Virol*

93, 250–256. <https://doi.org/10.1002/jmv.26232>

- Hu, R., Han, C., Pei, S., Yin, M., Chen, X., 2020. Procalcitonin levels in COVID-19 patients. *Int J Antimicrob Agents* 56, 106051. <https://doi.org/10.1016/j.ijantimicag.2020.106051>
- Hu, Z., Song, C., Xu, C., Jin, G., Chen, Y., Xu, X., Ma, H., Chen, W., Lin, Y., Zheng, Y., Wang, J., Hu, Zhibin, Yi, Y., Shen, H., 2020. Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China. *Sci China Life Sci* 63, 706–711. <https://doi.org/10.1007/s11427-020-1661-4>
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., Xiao, Y., Gao, H., Guo, L., Xie, J., Wang, G., Jiang, R., Gao, Z., Jin, Q., Wang, J., Cao, B., 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet* 395, 497–506. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5)
- Hung, I.F.N., To, K.K.W., Lee, C.-K., Lee, K.-L., Yan, W.-W., Chan, K., Chan, W.-M., Ngai, C.-W., Law, K.-I., Chow, F.-L., Liu, R., Lai, K.-Y., Lau, C.C.Y., Liu, S.-H., Chan, K.-H., Lin, C.-K., Yuen, K.-Y., 2013. Hyperimmune IV immunoglobulin treatment: a multicenter double-blind randomized controlled trial for patients with severe 2009 influenza A(H1N1) infection. *Chest* 144, 464–473. <https://doi.org/10.1378/chest.12-2907>
- Iannaccone, G., Scacciavillani, R., Del Buono, M.G., Camilli, M., Ronco, C., Lavie, C.J., Abbate, A., Crea, F., Massetti, M., Aspromonte, N., 2020. Weathering the Cytokine Storm in COVID-19: Therapeutic Implications. *CRM* 10, 277–287. <https://doi.org/10.1159/000509483>
- Ikram, A.S., Pillay, S., 2022. Admission vital signs as predictors of COVID-19 mortality: a retrospective cross-sectional study. *BMC Emergency Medicine* 22, 68. <https://doi.org/10.1186/s12873-022-00631-7>
- Instiaty, Darmayani, I.G.A.A.P.S., Marzuki, J.E., Angelia, F., William, Siane, A., Sary, L.D., Yohanes, L., Widyastuti, R., Nova, R., Simorangkir, D.S., Lonah, Safitri, Y., Aliska, G., Gayatri, A., 2020. Antiviral treatment of COVID-19: a clinical pharmacology narrative review. *Medical Journal of Indonesia* 29, 332–45. <https://doi.org/10.13181/mji.rev.204652>
- Jafarzadeh, A., Jafarzadeh, S., Nozari, P., Mokhtari, P., Nemati, M., 2021. Lymphopenia an important immunological abnormality in patients with COVID-19: Possible mechanisms. *Scandinavian Journal of Immunology* 93, e12967. <https://doi.org/10.1111/sji.12967>

- Jaillon, S., Berthenet, K., Garlanda, C., 2019. Sexual Dimorphism in Innate Immunity. *Clinic Rev Allerg Immunol* 56, 308–321. <https://doi.org/10.1007/s12016-017-8648-x>
- Jayanama, K., Srichatrapimuk, S., Thammavaranucupt, K., Kirdlarp, S., Suppadungsuk, S., Wongsinin, T., Nanthatanti, N., Phusanti, S., Pitidhamabhorn, D., Sungkanuparph, S., 2021. The association between body mass index and severity of Coronavirus Disease 2019 (COVID-19): A cohort study. *PLoS One* 16, e0247023. <https://doi.org/10.1371/journal.pone.0247023>
- Jiang, S.-Q., Huang, Q.-F., Xie, W.-M., Lv, C., Quan, X.-Q., 2020. The association between severe COVID-19 and low platelet count: evidence from 31 observational studies involving 7613 participants. *Br J Haematol* 190, e29–e33. <https://doi.org/10.1111/bjh.16817>
- Joseph, A., Zafrani, L., Mabrouki, A., Azoulay, E., Darmon, M., 2020. Acute kidney injury in patients with SARS-CoV-2 infection. *Annals of Intensive Care* 10, 117. <https://doi.org/10.1186/s13613-020-00734-z>
- Kalinina, O., Golovkin, A., Zaikova, E., Aquino, A., Bezrukikh, V., Melnik, O., Vasilieva, E., Karonova, T., Kudryavtsev, I., Shlyakhto, E., 2022. Cytokine Storm Signature in Patients with Moderate and Severe COVID-19. *Int J Mol Sci* 23, 8879. <https://doi.org/10.3390/ijms23168879>
- Kaushal, K., Kaur, H., Sarma, P., Bhattacharyya, A., Sharma, D.J., Prajapat, M., Pathak, M., Kothari, A., Kumar, S., Rana, S., Kaur, M., Prakash, A., Mirza, A.A., Panda, P.K., Vivekanandan, S., Omar, B.J., Medhi, B., Naithani, M., 2022. Serum ferritin as a predictive biomarker in COVID-19. A systematic review, meta-analysis and meta-regression analysis. *J Crit Care* 67, 172–181. <https://doi.org/10.1016/j.jcrc.2021.09.023>
- Kaya, G., Kaya, A., Saurat, J.-H., 2020. Clinical and Histopathological Features and Potential Pathological Mechanisms of Skin Lesions in COVID-19: Review of the Literature. *Dermatopathology (Basel)* 7, 3–16. <https://doi.org/10.3390/dermatopathology7010002>
- Kellum, J.A., van Till, J.W.O., Mulligan, G., 2020. Targeting acute kidney injury in COVID-19. *Nephrol Dial Transplant* 35, 1652–1662. <https://doi.org/10.1093/ndt/gfaa231>
- Kernan, K.F., Carcillo, J.A., 2017. Hyperferritinemia and inflammation. *International Immunology* 29, 401–409. <https://doi.org/10.1093/intimm/dxx031>
- Kloc, M., Ghobrial, R.M., Kuchar, E., Lewicki, S., Kubiak, J.Z., 2020.

Development of child immunity in the context of COVID-19 pandemic.
Clinical Immunology 217, 108510.
<https://doi.org/10.1016/j.clim.2020.108510>

Kolahchi, Z., Sohrabi, H., Ekrami Nasab, S., Jelodari Mamaghani, H., Keyfari Alamdari, M., Rezaei, N., 2021. Potential therapeutic approach of intravenous immunoglobulin against COVID-19. *Allergy, Asthma & Clinical Immunology* 17, 105. <https://doi.org/10.1186/s13223-021-00609-3>

Laguna-Goya, R., Utrero-Rico, A., Talayero, P., Lasa-Lazaro, M., Ramirez-Fernandez, A., Naranjo, L., Segura-Tudela, A., Cabrera-Marante, O., Frias, E.R. de, Garcia-Garcia, R., Fernández-Ruiz, M., Aguado, J.M., Martinez-Lopez, J., Lopez, E.A., Catalan, M., Serrano, A., Paz-Artal, E., 2020. IL-6–based mortality risk model for hospitalized patients with COVID-19. *Journal of Allergy and Clinical Immunology* 146, 799-807.e9. <https://doi.org/10.1016/j.jaci.2020.07.009>

Landstra, C.P., de Koning, E.J.P., 2021. COVID-19 and Diabetes: Understanding the Interrelationship and Risks for a Severe Course. *Front Endocrinol (Lausanne)* 12, 649525. <https://doi.org/10.3389/fendo.2021.649525>

Lee, D.W., Gardner, R., Porter, D.L., Louis, C.U., Ahmed, N., Jensen, M., Grupp, S.A., Mackall, C.L., 2014. Current concepts in the diagnosis and management of cytokine release syndrome. *Blood* 124, 188–195. <https://doi.org/10.1182/blood-2014-05-552729>

Lee, D.W., Santomasso, B.D., Locke, F.L., Ghobadi, A., Turtle, C.J., Brudno, J.N., Maus, M.V., Park, J.H., Mead, E., Pavletic, S., Go, W.Y., Eldjrou, L., Gardner, R.A., Frey, N., Curran, K.J., Peggs, K., Pasquini, M., DiPersio, J.F., van den Brink, M.R.M., Komanduri, K.V., Grupp, S.A., Neelapu, S.S., 2019. ASTCT Consensus Grading for Cytokine Release Syndrome and Neurologic Toxicity Associated with Immune Effector Cells. *Biology of Blood and Marrow Transplantation* 25, 625–638. <https://doi.org/10.1016/j.bbmt.2018.12.758>

Lee, K.-Y., 2015. A common immunopathogenesis mechanism for infectious diseases: the protein-homeostasis-system hypothesis. *Infect Chemother* 47, 12–26. <https://doi.org/10.3947/ic.2015.47.1.12>

Lee, K.-Y., Rhim, J.-W., Kang, J.-H., 2011. Hyperactive immune cells (T cells) may be responsible for acute lung injury in influenza virus infections: a need for early immune-modulators for severe cases. *Med Hypotheses* 76, 64–69. <https://doi.org/10.1016/j.mehy.2010.08.032>

Lei, F., Liu, Y.-M., Zhou, F., Qin, J.-J., Zhang, P., Zhu, L., Zhang, X.-J., Cai, J., Lin, L., Ouyang, S., Wang, X., Yang, C., Cheng, X., Liu, W., Li, Haomiao,

Xie, J., Wu, B., Luo, H., Xiao, F., Chen, J., Tao, L., Cheng, G., She, Z.-G., Zhou, Jianghua, Wang, H., Lin, J., Luo, P., Fu, S., Zhou, Jihui, Ye, P., Xiao, B., Mao, W., Liu, Liming, Yan, Y., Liu, Ling, Chen, G., Li, Hongliang, Huang, X., Zhang, B.-H., Yuan, Y., 2020. Longitudinal Association Between Markers of Liver Injury and Mortality in COVID-19 in China. *Hepatology* 72, 389–398. <https://doi.org/10.1002/hep.31301>

Leidman, E., Duca, L.M., Omura, J.D., Proia, K., Stephens, J.W., Sauber-Schatz, E.K., 2021. COVID-19 Trends Among Persons Aged 0-24 Years - United States, March 1-December 12, 2020. *MMWR Morb Mortal Wkly Rep* 70, 88–94. <https://doi.org/10.15585/mmwr.mm7003e1>

Leisman, D.E., Ronner, L., Pinotti, R., Taylor, M.D., Sinha, P., Calfee, C.S., Hirayama, A.V., Mastroiani, F., Turtle, C.J., Harhay, M.O., Legrand, M., Deutschman, C.S., 2020. Cytokine elevation in severe and critical COVID-19: a rapid systematic review, meta-analysis, and comparison with other inflammatory syndromes. *The Lancet Respiratory Medicine* 8, 1233–1244. [https://doi.org/10.1016/S2213-2600\(20\)30404-5](https://doi.org/10.1016/S2213-2600(20)30404-5)

Leng, J., Goldstein, D.R., 2010. Impact of aging on viral infections. *Microbes Infect* 12, 1120–1124. <https://doi.org/10.1016/j.micinf.2010.08.009>

Li, B., Yang, J., Zhao, F., Zhi, L., Wang, X., Liu, L., Bi, Z., Zhao, Y., 2020. Prevalence and impact of cardiovascular metabolic diseases on COVID-19 in China. *Clin Res Cardiol* 109, 531–538. <https://doi.org/10.1007/s00392-020-01626-9>

Li, J., Fan, J.-G., 2020. Characteristics and Mechanism of Liver Injury in 2019 Coronavirus Disease. *J Clin Transl Hepatol* 8, 13–17. <https://doi.org/10.14218/JCTH.2020.00019>

Liakopoulos, V., Roumeliotis, S., Papachristou, S., Papanas, N., 2022. COVID-19 and the kidney: time to take a closer look. *Int Urol Nephrol* 54, 1053–1057. <https://doi.org/10.1007/s11255-021-02976-7>

Liang, D., Shi, L., Zhao, J., Liu, P., Sarnat, J.A., Gao, S., Schwartz, J., Liu, Y., Ebel, S.T., Scovronick, N., Chang, H.H., 2020. Urban Air Pollution May Enhance COVID-19 Case-Fatality and Mortality Rates in the United States. *The Innovation* 1, 100047. <https://doi.org/10.1016/j.xinn.2020.100047>

Liao, Y.-C., Liang, W.-G., Chen, F.-W., Hsu, J.-H., Yang, J.-J., Chang, M.-S., 2002. IL-19 induces production of IL-6 and TNF-alpha and results in cell apoptosis through TNF-alpha. *J Immunol* 169, 4288–4297. <https://doi.org/10.4049/jimmunol.169.8.4288>

Libert, C., Dejager, L., Pinheiro, I., 2010. The X chromosome in immune functions:

- when a chromosome makes the difference. *Nat Rev Immunol* 10, 594–604. <https://doi.org/10.1038/nri2815>
- Lim, M.A., Pranata, R., 2020. Worrying situation regarding the use of dexamethasone for COVID-19. *Ther Adv Respir Dis* 14, 1753466620942131. <https://doi.org/10.1177/1753466620942131>
- Lin, G.-L., McGinley, J.P., Drysdale, S.B., Pollard, A.J., 2018. Epidemiology and Immune Pathogenesis of Viral Sepsis. *Front Immunol* 9, 2147. <https://doi.org/10.3389/fimmu.2018.02147>
- Lippi, G., Plebani, M., 2020. Procalcitonin in patients with severe coronavirus disease 2019 (COVID-19): A meta-analysis. *Clin Chim Acta* 505, 190–191. <https://doi.org/10.1016/j.cca.2020.03.004>
- Lippi, G., Plebani, M., Henry, B.M., 2020. Thrombocytopenia is associated with severe coronavirus disease 2019 (COVID-19) infections: A meta-analysis. *Clin Chim Acta* 506, 145–148. <https://doi.org/10.1016/j.cca.2020.03.022>
- Liu, Fang, Li, L., Xu, M., Wu, J., Luo, D., Zhu, Y., Li, B., Song, X., Zhou, X., 2020. Prognostic value of interleukin-6, C-reactive protein, and procalcitonin in patients with COVID-19. *J Clin Virol* 127, 104370. <https://doi.org/10.1016/j.jcv.2020.104370>
- Liu, Yang, Gao, W., Guo, W., Guo, Y., Shi, M., Dong, G., Ge, Q., Zhu, J., Lu, J., 2020. Prominent coagulation disorder is closely related to inflammatory response and could be as a prognostic indicator for ICU patients with COVID-19. *J Thromb Thrombolysis* 50, 825–832. <https://doi.org/10.1007/s11239-020-02174-9>
- Liu, Yingxia, Zhang, C., Huang, F., Yang, Y., Wang, F., Yuan, J., Zhang, Z., Qin, Y., Li, X., Zhao, D., Li, S., Tan, S., Wang, Z., Li, Jinxiu, Shen, C., Li, Jianming, Peng, L., Wu, W., Cao, M., Xing, L., Xu, Z., Chen, L., Zhou, C., Liu, W.J., Liu, L., Jiang, C., 2020. Elevated plasma levels of selective cytokines in COVID-19 patients reflect viral load and lung injury. *National Science Review* 7, 1003–1011. <https://doi.org/10.1093/nsr/nwaa037>
- Long, H., Nie, L., Xiang, X., Li, H., Zhang, X., Fu, X., Ren, H., Liu, W., Wang, Q., Wu, Q., 2020. D-Dimer and Prothrombin Time Are the Significant Indicators of Severe COVID-19 and Poor Prognosis. *Biomed Res Int* 2020, 6159720. <https://doi.org/10.1155/2020/6159720>
- Luo, H.-C., You, C.-Y., Lu, S.-W., Fu, Y.-Q., 2021. Characteristics of coagulation alteration in patients with COVID-19. *Ann Hematol* 100, 45–52. <https://doi.org/10.1007/s00277-020-04305-x>

- Maddur, M.S., Rabin, M., Hegde, P., Bolgert, F., Guy, M., Vallat, J.-M., Magy, L., Bayry, J., Kaveri, S.V., 2014. Intravenous immunoglobulin exerts reciprocal regulation of Th1/Th17 cells and regulatory T cells in Guillain-Barré syndrome patients. *Immunol Res* 60, 320–329. <https://doi.org/10.1007/s12026-014-8580-6>
- Mao, L., Jin, H., Wang, M., Hu, Y., Chen, S., He, Q., Chang, J., Hong, C., Zhou, Y., Wang, D., Miao, X., Li, Y., Hu, B., 2020. Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. *JAMA Neurol* 77, 683–690. <https://doi.org/10.1001/jamaneurol.2020.1127>
- Marco Cascella, Michael Rajnik, Abdul Aleem, Scott C. Dulebohn, Rafaela Di Napoli, 2023. Features, Evaluation, and Treatment of Coronavirus (COVID-19) - PubMed [WWW Document]. URL <https://pubmed.ncbi.nlm.nih.gov/32150360/> (accessed 7.8.23).
- Masyeni, S., Nelwan, E.J., Fatawy, R.M., Wibawa, S., Nugraha, P.A., Antara, J., Suparta, A., Asmara, D.G.W., Yenny, L.G.S., Budhitresna, A. a. G., Arimas, D., Indriani, D., Parwata, K., Sutarjana, K., Sugiarta, E., Kahari, S., Wardhana, C.A., Indraningrat, A. a. G., Mulyantari, K., Pasek, A.W., Putrawan, O., Yustiani, N.T., Wardana, G., Wijaya, M.I., Aryana, S., Gayatri, Y., Sukmawati, D.D., Suastika, K., Merati, T.P., Bakta, M., Widiana, R., 2022. Clinical characteristics and outcomes of COVID-19 patients in Bali, Indonesia. *PLOS ONE* 17, e0269026. <https://doi.org/10.1371/journal.pone.0269026>
- Mauvais, F., 2020. Aging, Male Sex, Obesity, and Metabolic Inflammation Create the Perfect Storm for COVID-19 | Diabetes | American Diabetes Association [WWW Document]. URL <https://diabetesjournals.org/diabetes/article/69/9/1857/39412/Aging-Male-Sex-Obesity-and-Metabolic-Inflammation> (accessed 1.20.23).
- Mauvais-Jarvis, F., Klein, S.L., Levin, E.R., 2020. Estradiol, Progesterone, Immunomodulation, and COVID-19 Outcomes. *Endocrinology* 161, bqaa127. <https://doi.org/10.1210/endo/bqaa127>
- McArdle, M., Finucane, O., Connaughton, R., McMorrow, A., Roche, H., 2013. Mechanisms of Obesity-Induced Inflammation and Insulin Resistance: Insights into the Emerging Role of Nutritional Strategies. *Frontiers in Endocrinology* 4.
- McCarty, D., Robinson, A., 2018. Efficacy and safety of sarilumab in patients with active rheumatoid arthritis. *Ther Adv Musculoskelet Dis* 10, 61–67. <https://doi.org/10.1177/1759720X17752037>
- Media Kompas Cyber, 2021. RSUP Dr Sardjito Saring Pasien Covid-19 yang Butuh

Perawatan [WWW Document]. KOMPAS.com. URL <https://regional.kompas.com/read/2021/06/28/173035878/rsup-dr-sardjito-saring-pasien-covid-19-yang-butuh-perawatan> (accessed 2.22.23).

Melo, A.K.G., Milby, K.M., Caparroz, A.L.M.A., Pinto, A.C.P.N., Santos, R.R.P., Rocha, A.P., Ferreira, G.A., Souza, V.A., Valadares, L.D.A., Vieira, R.M.R.A., Pileggi, G.S., Trevisani, V.F.M., 2021. Biomarkers of cytokine storm as red flags for severe and fatal COVID-19 cases: A living systematic review and meta-analysis. *PLOS ONE* 16, e0253894. <https://doi.org/10.1371/journal.pone.0253894>

Mollarasouli, F., Zare-Shehneh, N., Ghaedi, M., 2022. A review on corona virus disease 2019 (COVID-19): current progress, clinical features and bioanalytical diagnostic methods. *Microchim Acta* 189, 103. <https://doi.org/10.1007/s00604-022-05167-y>

Montazersaheb, S., Hosseiniyan Khatibi, S.M., Hejazi, M.S., Tarhriz, V., Farjami, A., Ghasemian Sorbeni, F., Farahzadi, R., Ghasemnejad, T., 2022. COVID-19 infection: an overview on cytokine storm and related interventions. *Virology Journal* 19, 92. <https://doi.org/10.1186/s12985-022-01814-1>

Mooiweer, E., Luijk, B., Bonten, M.J.M., Ekkelenkamp, M.B., 2011. C-Reactive protein levels but not CRP dynamics predict mortality in patients with pneumococcal pneumonia. *J Infect* 62, 314–316. <https://doi.org/10.1016/j.jinf.2011.01.012>

Mordwinkin, N.M., Meeks, C.J., Jadhav, S.S., Espinoza, T., Roda, N., diZerega, G.S., Louie, S.G., Rodgers, K.E., 2012. Angiotensin-(1-7) administration reduces oxidative stress in diabetic bone marrow. *Endocrinology* 153, 2189–2197. <https://doi.org/10.1210/en.2011-2031>

Morra, M.E., Van Thanh, L., Kamel, M.G., Ghazy, A.A., Altibi, A.M.A., Dat, L.M., Thy, T.N.X., Vuong, N.L., Mostafa, M.R., Ahmed, S.I., Elabd, S.S., Fathima, S., Le Huy Vu, T., Omrani, A.S., Memish, Z.A., Hirayama, K., Huy, N.T., 2018. Clinical outcomes of current medical approaches for Middle East respiratory syndrome: A systematic review and meta-analysis. *Rev Med Virol* 28, e1977. <https://doi.org/10.1002/rmv.1977>

Mourad, A., Thibault, D., Holland, T.L., Yang, S., Young, A.R., Arnold Egloff, S.A., Thomas, L.E., 2023. Dexamethasone for Inpatients With COVID-19 in a National Cohort. *JAMA Network Open* 6, e238516. <https://doi.org/10.1001/jamanetworkopen.2023.8516>

Muhamad, S.-A., Ugusman, A., Kumar, J., Skiba, D., Hamid, A.A., Aminuddin, A., 2021. COVID-19 and Hypertension: The What, the Why, and the How. *Frontiers in Physiology* 12.

- Muñoz-Durango, N., Fuentes, C.A., Castillo, A.E., González-Gómez, L.M., Vecchiola, A., Fardella, C.E., Kalergis, A.M., 2016. Role of the Renin-Angiotensin-Aldosterone System beyond Blood Pressure Regulation: Molecular and Cellular Mechanisms Involved in End-Organ Damage during Arterial Hypertension. *Int J Mol Sci* 17, 797. <https://doi.org/10.3390/ijms17070797>
- Naeem, M., Bano, N., Manzoor, S., Ahmad, A., Munawar, N., Razak, S.I.A., Lee, T.Y., Devaraj, S., Hazafa, A., 2023. Pathogenetic Mechanisms of Liver-Associated Injuries, Management, and Current Challenges in COVID-19 Patients. *Biomolecules* 13, 99. <https://doi.org/10.3390/biom13010099>
- Nguyen, H.M.-H., Torres, J.A., Agrawal, S., Agrawal, A., 2020. Nicotine Impairs the Response of Lung Epithelial Cells to IL-22. *Mediators Inflamm* 2020, 6705428. <https://doi.org/10.1155/2020/6705428>
- Ni, Y.-N., Chen, G., Sun, J., Liang, B.-M., Liang, Z.-A., 2019. The effect of corticosteroids on mortality of patients with influenza pneumonia: a systematic review and meta-analysis. *Crit Care* 23, 99. <https://doi.org/10.1186/s13054-019-2395-8>
- Nieman, D.C., Wentz, L.M., 2019. The compelling link between physical activity and the body's defense system. *J Sport Health Sci* 8, 201–217. <https://doi.org/10.1016/j.jshs.2018.09.009>
- Norfai, 2022. ANALISIS DATA PENELITIAN (Analisis Univariat, Bivariat dan Multivariat). Penerbit Qiara Media.
- Ocaranza, M.P., Michea, L., Chiong, M., Lagos, C.F., Lavandero, S., Jalil, J.E., 2014. Recent insights and therapeutic perspectives of angiotensin-(1-9) in the cardiovascular system. *Clin Sci (Lond)* 127, 549–557. <https://doi.org/10.1042/CS20130449>
- Orsi, F.A., De Paula, E.V., Santos, F. de O., Teruchkin, M.M., Campêlo, D.H.C., Mello, T.T., Chindamo, M.C., Macedo, A.V.S., Rocha, A.T., Ramacciotti, E., Nascimento, A.C.K., Annichino-Bizzacchi, J., Lourenco, D.M., Guerra, J.C. de C., Rezende, S.M., Cavaleiro Filho, C., 2020. Guidance on diagnosis, prevention and treatment of thromboembolic complications in COVID-19: a position paper of the Brazilian Society of Thrombosis and Hemostasis and the Thrombosis and Hemostasis Committee of the Brazilian Association of Hematology, Hemotherapy and Cellular Therapy. *Hematol Transfus Cell Ther* 42, 300–308. <https://doi.org/10.1016/j.htct.2020.06.001>
- Palta, S., Saroa, R., Palta, A., 2014. Overview of the coagulation system. *Indian J Anaesth* 58, 515–523. <https://doi.org/10.4103/0019-5049.144643>

- Parackova, Z., Zentsova, I., Bloomfield, M., Vrabcova, P., Smetanova, J., Klocperk, A., Mesežnikov, G., Casas Mendez, L.F., Vymazal, T., Sediva, A., 2020. Disharmonic Inflammatory Signatures in COVID-19: Augmented Neutrophils' but Impaired Monocytes' and Dendritic Cells' Responsiveness. *Cells* 9, 2206. <https://doi.org/10.3390/cells9102206>
- Park, H.S., Park, J.Y., Yu, R., 2005. Relationship of obesity and visceral adiposity with serum concentrations of CRP, TNF-alpha and IL-6. *Diabetes Res Clin Pract* 69, 29–35. <https://doi.org/10.1016/j.diabres.2004.11.007>
- Patel, S.K., Velkoska, E., Freeman, M., Wai, B., Lancefield, T.F., Burrell, L.M., 2014. From gene to protein—experimental and clinical studies of ACE2 in blood pressure control and arterial hypertension. *Front Physiol* 5, 227. <https://doi.org/10.3389/fphys.2014.00227>
- Patil, M., Singh, S., Henderson, J., Krishnamurthy, P., 2021. Mechanisms of COVID-19-induced cardiovascular disease: Is sepsis or exosome the missing link? *J Cell Physiol* 236, 3366–3382. <https://doi.org/10.1002/jcp.30109>
- Penna, C., Mercurio, V., Tocchetti, C.G., Pagliaro, P., 2020. Sex-related differences in COVID-19 lethality. *Br J Pharmacol* 177, 4375–4385. <https://doi.org/10.1111/bph.15207>
- Pepys, M.B., Hirschfield, G.M., 2003. C-reactive protein: a critical update. *J Clin Invest* 111, 1805–1812. <https://doi.org/10.1172/JCI18921>
- Petrie, J.R., Guzik, T.J., Touyz, R.M., 2018. Diabetes, Hypertension, and Cardiovascular Disease: Clinical Insights and Vascular Mechanisms. *Can J Cardiol* 34, 575–584. <https://doi.org/10.1016/j.cjca.2017.12.005>
- Poggiali, E., Zaino, D., Immovilli, P., Rovero, L., Losi, G., Dacrema, A., Nuccetelli, M., Vadacca, G.B., Guidetti, D., Vercelli, A., Magnacavallo, A., Bernardini, S., Terracciano, C., 2020. Lactate dehydrogenase and C-reactive protein as predictors of respiratory failure in CoVID-19 patients. *Clin Chim Acta* 509, 135–138. <https://doi.org/10.1016/j.cca.2020.06.012>
- Pranata, R., Lim, M.A., Yonas, E., Vania, R., Lukito, A.A., Siswanto, B.B., Meyer, M., 2021. Body mass index and outcome in patients with COVID-19: A dose-response meta-analysis. *Diabetes Metab* 47, 101178. <https://doi.org/10.1016/j.diabet.2020.07.005>
- Promptchara, E., Ketloy, C., Palaga, T., 2020. Immune responses in COVID-19 and potential vaccines: Lessons learned from SARS and MERS epidemic. *Asian Pac J Allergy Immunol* 38, 1–9. <https://doi.org/10.12932/AP-200220-0772>

- Ramatillah, D.L., Gan, S.H., Pratiwy, I., Syed Sulaiman, S.A., Jaber, A.A.S., Jusnita, N., Lukas, S., Abu Bakar, U., 2022. Impact of cytokine storm on severity of COVID-19 disease in a private hospital in West Jakarta prior to vaccination. *PLoS ONE* 17, e0262438. <https://doi.org/10.1371/journal.pone.0262438>
- Raoufinia, R., Mota, A., Keyhanvar, N., Safari, F., Shamekhi, S., Abdolalizadeh, J., 2016. Overview of Albumin and Its Purification Methods. *Adv Pharm Bull* 6, 495–507. <https://doi.org/10.15171/apb.2016.063>
- RECOVERY Collaborative Group, Horby, P., Lim, W.S., Emberson, J.R., Mafham, M., Bell, J.L., Linsell, L., Staplin, N., Brightling, C., Ustianowski, A., Elmahi, E., Prudon, B., Green, C., Felton, T., Chadwick, D., Rege, K., Fegan, C., Chappell, L.C., Faust, S.N., Jaki, T., Jeffery, K., Montgomery, A., Rowan, K., Juszczak, E., Baillie, J.K., Haynes, R., Landray, M.J., 2021. Dexamethasone in Hospitalized Patients with Covid-19. *N Engl J Med* 384, 693–704. <https://doi.org/10.1056/NEJMoa2021436>
- Rello, J., Valenzuela-Sánchez, F., Ruiz-Rodriguez, M., Moyano, S., 2017. Sepsis: A Review of Advances in Management. *Adv Ther* 34, 2393–2411. <https://doi.org/10.1007/s12325-017-0622-8>
- Richman, D.D., Whitley, R.J., Hayden, F.G., 2020. *Clinical Virology*. John Wiley & Sons.
- Robinson, P.C., Liew, D.F.L., Liew, J.W., Monaco, C., Richards, D., Shivakumar, S., Tanner, H.L., Feldmann, M., 2020. The Potential for Repurposing Anti-TNF as a Therapy for the Treatment of COVID-19. *Med (N Y)* 1, 90–102. <https://doi.org/10.1016/j.medj.2020.11.005>
- Rodriguez-Morales, A.J., Cardona-Ospina, J.A., Gutiérrez-Ocampo, E., Villamizar-Peña, R., Holguin-Rivera, Y., Escalera-Antezana, J.P., Alvarado-Arnez, L.E., Bonilla-Aldana, D.K., Franco-Paredes, C., Henao-Martinez, A.F., Paniz-Mondolfi, A., Lagos-Grisales, G.J., Ramírez-Vallejo, E., Suárez, J.A., Zambrano, L.I., Villamil-Gómez, W.E., Balbin-Ramon, G.J., Rabaan, A.A., Harapan, H., Dhama, K., Nishiura, H., Kataoka, H., Ahmad, T., Sah, R., 2020. Clinical, laboratory and imaging features of COVID-19: A systematic review and meta-analysis. *Travel Medicine and Infectious Disease* 34, 101623. <https://doi.org/10.1016/j.tmaid.2020.101623>
- Roncon, L., Zuin, M., Rigatelli, G., Zuliani, G., 2020. Diabetic patients with COVID-19 infection are at higher risk of ICU admission and poor short-term outcome. *J Clin Virol* 127, 104354. <https://doi.org/10.1016/j.jcv.2020.104354>
- Ruan, Q., Yang, K., Wang, W., Jiang, L., Song, J., 2020. Correction to: Clinical

predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China. *Intensive Care Med* 46, 1294–1297. <https://doi.org/10.1007/s00134-020-06028-z>

Ruggieri, A., Gagliardi, M.C., Anticoli, S., 2018. Sex-Dependent Outcome of Hepatitis B and C Viruses Infections: Synergy of Sex Hormones and Immune Responses? *Front Immunol* 9, 2302. <https://doi.org/10.3389/fimmu.2018.02302>

Rumende, C.M., Susanto, E.C., Sitorus, T.P., 2020. The Management of Cytokine Storm in COVID-19. *Acta Med Indones* 52, 306–313.

Santa Cruz, A., Mendes-Frias, A., Oliveira, A.I., Dias, L., Matos, A.R., Carvalho, A., Capela, C., Pedrosa, J., Castro, A.G., Silvestre, R., 2021. Interleukin-6 Is a Biomarker for the Development of Fatal Severe Acute Respiratory Syndrome Coronavirus 2 Pneumonia. *Frontiers in Immunology* 12.

Sarkar, D., Jung, M.K., Wang, H.J., 2015. Alcohol and the Immune System. *Alcohol Res* 37, 153–155.

Sarkar, M., Madabhavi, I.V., Quy, P.N., Govindagoudar, M.B., 2021. COVID-19 and coagulopathy. *Clin Respir J* 15, 1259–1274. <https://doi.org/10.1111/crj.13438>

Satuan Tugas Penanganan COVID-19, 2023. Analisis Data COVID-19 Indonesia (Update per 12 February 2023) | Covid19.go.id [WWW Document]. URL <https://covid19.go.id/artikel/2023/02/17/analisis-data-covid-19-indonesia-update-12-february-2023> (accessed 2.22.23).

Seif, F., Aazami, H., Khoshmirsafa, M., Kamali, M., Mohsenzadegan, M., Pornour, M., Mansouri, D., 2020. JAK Inhibition as a New Treatment Strategy for Patients with COVID-19. *Int Arch Allergy Immunol* 181, 467–475. <https://doi.org/10.1159/000508247>

Selvaraj, V., Dapaah-Afryie, K., Finn, A., Flanigan, T.P., 2020. Short-Term Dexamethasone in Sars-CoV-2 Patients. *R I Med J* (2013) 103, 39–43.

Shang, W., Dong, J., Ren, Y., Tian, M., Li, W., Hu, J., Li, Y., 2020. The value of clinical parameters in predicting the severity of COVID-19. *J Med Virol* 92, 2188–2192. <https://doi.org/10.1002/jmv.26031>

Sharun, K., Tiwari, R., Dhama, J., Dhama, K., 2020. Dexamethasone to combat cytokine storm in COVID-19: Clinical trials and preliminary evidence. *Int J Surg* 82, 179–181. <https://doi.org/10.1016/j.ijsu.2020.08.038>

Shorr, A.F., Thomas, S.J., Alkins, S.A., Fitzpatrick, T.M., Ling, G.S., 2002. D-

dimer Correlates With Proinflammatory Cytokine Levels and Outcomes in Critically Ill Patients. *Chest* 121, 1262–1268. <https://doi.org/10.1378/chest.121.4.1262>

Siddiqi, H.K., Mehra, M.R., 2020. COVID-19 illness in native and immunosuppressed states: A clinical-therapeutic staging proposal. *J Heart Lung Transplant* 39, 405–407. <https://doi.org/10.1016/j.healun.2020.03.012>

Simonnet, A., Chetboun, M., Poissy, J., Raverdy, V., Noulette, J., Duhamel, A., Labreuche, J., Mathieu, D., Pattou, F., Jourdain, M., LICORN and the Lille COVID-19 and Obesity study group, 2020. High Prevalence of Obesity in Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) Requiring Invasive Mechanical Ventilation. *Obesity (Silver Spring)* 28, 1195–1199. <https://doi.org/10.1002/oby.22831>

Singh, S., Sharma, A., Arora, S.K., 2014. High producer haplotype (CAG) of -863C/A, -308G/A and -238G/A polymorphisms in the promoter region of TNF- α gene associate with enhanced apoptosis of lymphocytes in HIV-1 subtype C infected individuals from North India. *PLoS One* 9, e98020. <https://doi.org/10.1371/journal.pone.0098020>

Siyoto, S., Sodik, M.A., 2015. DASAR METODOLOGI PENELITIAN. Literasi Media Publishing.

Soeters, P.B., Wolfe, R.R., Shenkin, A., 2019. Hypoalbuminemia: Pathogenesis and Clinical Significance. *JPEN J Parenter Enteral Nutr* 43, 181–193. <https://doi.org/10.1002/jpen.1451>

Sonnweber, T., Boehm, A., Sahanic, S., Pizzini, A., Aichner, M., Sonnweber, B., Kurz, K., Koppelstätter, S., Haschka, D., Petzer, V., Hilbe, R., Theurl, M., Lehner, D., Nairz, M., Puchner, B., Luger, A., Schwabl, C., Bellmann-Weiler, R., Wöll, E., Widmann, G., Tancevski, I., Judith-Löffler-Ragg, Weiss, G., 2020. Persisting alterations of iron homeostasis in COVID-19 are associated with non-resolving lung pathologies and poor patients' performance: a prospective observational cohort study. *Respiratory Research* 21, 276. <https://doi.org/10.1186/s12931-020-01546-2>

Soraya, G.V., Ulhaq, Z.S., 2020. Crucial laboratory parameters in COVID-19 diagnosis and prognosis: An updated meta-analysis. *Med Clin (Engl Ed)* 155, 143–151. <https://doi.org/10.1016/j.medcle.2020.05.004>

Sparks, M.A., Crowley, S.D., Gurley, S.B., Mirotsoy, M., Coffman, T.M., 2014. Classical Renin-Angiotensin system in kidney physiology. *Compr Physiol* 4, 1201–1228. <https://doi.org/10.1002/cphy.c130040>

Sproston, N.R., Ashworth, J.J., 2018. Role of C-Reactive Protein at Sites of

Inflammation and Infection. Front Immunol 9, 754.
<https://doi.org/10.3389/fimmu.2018.00754>

Stefan, N., Birkenfeld, A.L., Schulze, M.B., Ludwig, D.S., 2020. Obesity and impaired metabolic health in patients with COVID-19. *Nat Rev Endocrinol* 16, 341–342. <https://doi.org/10.1038/s41574-020-0364-6>

Surbatovic, M., Popovic, N., Vojvodic, D., Milosevic, I., Acimovic, G., Stojicic, M., Veljovic, M., Jevdjic, J., Djordjevic, D., Radakovic, S., 2015. Cytokine profile in severe Gram-positive and Gram-negative abdominal sepsis. *Sci Rep* 5, 11355. <https://doi.org/10.1038/srep11355>

Syam, A.F., Pitoyo, C.W., Suhendro, S., Zulkarnain, B., Indrasari, N.D., Aditiansih, D., Irawan, C., Susilo, A., Rumende, C.M., Wijaya, I.P., Ibrahim, F., Rasmin, M., Alwi, I., Makmun, D., 2021. Tocilizumab as a Treatment for “Cytokine Storm Syndrome” in COVID-19: A Case Report. *Acta Med Indones* 53, 194–201.

Szarpak, L., Ruetzler, K., Safiejko, K., Hampel, M., Pruc, M., Kanczuga-Koda, L., Filipiak, K.J., Jaguszewski, M.J., 2021. Lactate dehydrogenase level as a COVID-19 severity marker. *Am J Emerg Med* 45, 638–639. <https://doi.org/10.1016/j.ajem.2020.11.025>

Tan, L., Wang, Qi, Zhang, D., Ding, J., Huang, Q., Tang, Y.-Q., Wang, Qiongshu, Miao, H., 2020. Lymphopenia predicts disease severity of COVID-19: a descriptive and predictive study. *Sig Transduct Target Ther* 5, 1–3. <https://doi.org/10.1038/s41392-020-0148-4>

Tang, L., Yin, Z., Hu, Y., Mei, H., 2020. Controlling Cytokine Storm Is Vital in COVID-19. *Frontiers in Immunology* 11.

Tang, Y., Liu, J., Zhang, D., Xu, Z., Ji, J., Wen, C., 2020. Cytokine Storm in COVID-19: The Current Evidence and Treatment Strategies. *Front Immunol* 11, 1708. <https://doi.org/10.3389/fimmu.2020.01708>

Temiz, M.Z., Hacibey, I., Yazar, R.O., Sevdi, M.S., Kucuk, S.H., Alkurt, G., Doganay, L., Dinler Doganay, G., Dincer, M.M., Yuruk, E., Erkalp, K., Muslumanoglu, A.Y., n.d. Altered kidney function induced by SARS-CoV-2 infection and acute kidney damage markers predict survival outcomes of COVID-19 patients: a prospective pilot study. *Ren Fail* 44, 233–240. <https://doi.org/10.1080/0886022X.2022.2032743>

Theoharides, T.C., Conti, P., 2020. Dexamethasone for COVID-19? Not so fast. *J Biol Regul Homeost Agents* 34, 1241–1243. https://doi.org/10.23812/20-EDITORIAL_1-5

- Tian, J., Yuan, X., Xiao, J., Zhong, Q., Yang, C., Liu, B., Cai, Y., Lu, Z., Wang, Jing, Wang, Y., Liu, S., Cheng, B., Wang, Jin, Zhang, M., Wang, L., Niu, S., Yao, Z., Deng, X., Zhou, F., Wei, W., Li, Q., Chen, X., Chen, W., Yang, Q., Wu, S., Fan, J., Shu, B., Hu, Z., Wang, S., Yang, X.-P., Liu, W., Miao, X., Wang, Z., 2020. Clinical characteristics and risk factors associated with COVID-19 disease severity in patients with cancer in Wuhan, China: a multicentre, retrospective, cohort study. *Lancet Oncol* 21, 893–903. [https://doi.org/10.1016/S1470-2045\(20\)30309-0](https://doi.org/10.1016/S1470-2045(20)30309-0)
- Tisoncik, J.R., Korth, M.J., Simmons, C.P., Farrar, J., Martin, T.R., Katze, M.G., 2012. Into the Eye of the Cytokine Storm. *Microbiol Mol Biol Rev* 76, 16–32. <https://doi.org/10.1128/MMBR.05015-11>
- Torti, F.M., Torti, S.V., 2002. Regulation of ferritin genes and protein. *Blood* 99, 3505–3516. <https://doi.org/10.1182/blood.v99.10.3505>
- Trinath, J., Hegde, P., Sharma, M., Maddur, M.S., Rabin, M., Vallat, J.-M., Magy, L., Balaji, K.N., Kaveri, S.V., Bayry, J., 2013. Intravenous immunoglobulin expands regulatory T cells via induction of cyclooxygenase-2-dependent prostaglandin E2 in human dendritic cells. *Blood* 122, 1419–1427. <https://doi.org/10.1182/blood-2012-11-468264>
- Venkatachalam, M.A., Weinberg, J.M., 2012. The tubule pathology of septic acute kidney injury: a neglected area of research comes of age. *Kidney Int* 81, 338–340. <https://doi.org/10.1038/ki.2011.401>
- Verdecchia, P., Cavallini, C., Spanevello, A., Angeli, F., 2020. The pivotal link between ACE2 deficiency and SARS-CoV-2 infection. *Eur J Intern Med* 76, 14–20. <https://doi.org/10.1016/j.ejim.2020.04.037>
- Vieira, C., Nery, L., Martins, L., Jabour, L., Dias, R., Simões E Silva, A.C., 2021. Downregulation of Membrane-bound Angiotensin Converting Enzyme 2 (ACE2) Receptor has a Pivotal Role in COVID-19 Immunopathology. *Curr Drug Targets* 22, 254–281. <https://doi.org/10.2174/1389450121666201020154033>
- Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., Wang, B., Xiang, H., Cheng, Z., Xiong, Y., Zhao, Y., Li, Y., Wang, X., Peng, Z., 2020. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA* 323, 1061–1069. <https://doi.org/10.1001/jama.2020.1585>
- Wang, J., Jiang, M., Chen, X., Montaner, L.J., 2020. Cytokine storm and leukocyte changes in mild versus severe SARS-CoV-2 infection: Review of 3939 COVID-19 patients in China and emerging pathogenesis and therapy concepts. *Journal of Leukocyte Biology* 108, 17–41.

<https://doi.org/10.1002/JLB.3COVR0520-272R>

Webb, B.J., Peltan, I.D., Jensen, P., Hoda, D., Hunter, B., Silver, A., Starr, N., Buckel, W., Grisel, N., Hummel, E., Snow, G., Morris, D., Stenehjem, E., Srivastava, R., Brown, S.M., 2020. Clinical criteria for COVID-19-associated hyperinflammatory syndrome: a cohort study. *Lancet Rheumatol* 2, e754–e763. [https://doi.org/10.1016/S2665-9913\(20\)30343-X](https://doi.org/10.1016/S2665-9913(20)30343-X)

Weiss, G., Ganz, T., Goodnough, L.T., 2019. Anemia of inflammation. *Blood* 133, 40–50. <https://doi.org/10.1182/blood-2018-06-856500>

Widjaja, J.T., Kwee, L., Giantara, A.K., Suabgiyo, H.A., Edwin, C., Putri, R.L., 2021. Karakteristik Pasien COVID-19 Rawat Inap di RS Immanuel Bandung, Indonesia. *Journal of Medicine and Health* 3. <https://doi.org/10.28932/jmh.v3i2.3781>

Widysanto, A., Kurniawan, A., Lugito, N.P.H., Yuniarti, M., Gunawan, C., Angela, Wiryanto, J., Levinna, Pradhana, T.M., 2021. Experience of using tocilizumab for treatment in Indonesian patients with severe COVID-19. *Cytokine* 138, 155393. <https://doi.org/10.1016/j.cyto.2020.155393>

Williams, D.M., 2018. Clinical Pharmacology of Corticosteroids. *Respiratory Care* 63, 655–670. <https://doi.org/10.4187/respcare.06314>

Williams, N.P., Ostridge, K., Devaster, J.-M., Kim, V., Coombs, N.A., Bourne, S., Clarke, S.C., Harden, S., Abbas, A., Aris, E., Lambert, C., Tuck, A., Williams, A., Wootton, S., Staples, K.J., Wilkinson, T.M.A., AERIS Study Group, 2018. Impact of radiologically stratified exacerbations: insights into pneumonia aetiology in COPD. *Respir Res* 19, 143. <https://doi.org/10.1186/s12931-018-0842-8>

World Health Organization, 2021. COVID-19 clinical management: living guidance, 25 January 2021 (No. WHO/2019-nCoV/clinical/2021.1). World Health Organization.

World Health Organization, 2020a. Alcohol and COVID-19: What You Need to Know [WWW Document]. URL <https://www.issup.net/knowledge-share/resources/2020-04/alcohol-and-covid-19-what-you-need-know> (accessed 12.10.22).

World Health Organization, 2020b. Clinical management of COVID-19: interim guidance, 27 May 2020 (No. WHO/2019-nCoV/clinical/2020.5). World Health Organization.

Wu, C., Chen, X., Cai, Y., Xia, J., Zhou, Xing, Xu, S., Huang, H., Zhang, L., Zhou, Xia, Du, C., Zhang, Y., Song, J., Wang, S., Chao, Y., Yang, Z., Xu, J., Zhou,

- Xin, Chen, D., Xiong, W., Xu, L., Zhou, F., Jiang, J., Bai, C., Zheng, J., Song, Y., 2020. Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China. *JAMA Intern Med* 180, 934–943. <https://doi.org/10.1001/jamainternmed.2020.0994>
- Wu, L., Mayeux, P.R., 2007. Effects of the inducible nitric-oxide synthase inhibitor L-N(6)-(1-iminoethyl)-lysine on microcirculation and reactive nitrogen species generation in the kidney following lipopolysaccharide administration in mice. *J Pharmacol Exp Ther* 320, 1061–1067. <https://doi.org/10.1124/jpet.106.117184>
- Wunderink, R.G., 2017. Other Community Respiratory Viruses. *Clin Chest Med* 38, 37–43. <https://doi.org/10.1016/j.ccm.2016.11.003>
- Xu, H., Zhong, L., Deng, J., Peng, J., Dan, H., Zeng, X., Li, T., Chen, Q., 2020. High expression of ACE2 receptor of 2019-nCoV on the epithelial cells of oral mucosa. *Int J Oral Sci* 12, 8. <https://doi.org/10.1038/s41368-020-0074-x>
- Xu, Y., Yang, H., Wang, J., Li, X., Xue, C., Niu, C., Liao, P., 2021. Serum Albumin Levels are a Predictor of COVID-19 Patient Prognosis: Evidence from a Single Cohort in Chongqing, China. *IJGM* 14, 2785–2797. <https://doi.org/10.2147/IJGM.S312521>
- Yang, B.Y., Barnard, L.M., Emert, J.M., Drucker, C., Schwarcz, L., Counts, C.R., Murphy, D.L., Guan, S., Kume, K., Rodriguez, K., Jacinto, T., May, S., Sayre, M.R., Rea, T., 2020. Clinical Characteristics of Patients With Coronavirus Disease 2019 (COVID-19) Receiving Emergency Medical Services in King County, Washington. *JAMA Network Open* 3, e2014549. <https://doi.org/10.1001/jamanetworkopen.2020.14549>
- Yang, L., Xie, X., Tu, Z., Fu, J., Xu, D., Zhou, Y., 2021. The signal pathways and treatment of cytokine storm in COVID-19. *Sig Transduct Target Ther* 6, 255. <https://doi.org/10.1038/s41392-021-00679-0>
- Yang, M., Ng, M.H.L., Li, C.K., 2005. Thrombocytopenia in patients with severe acute respiratory syndrome (review). *Hematology* 10, 101–105. <https://doi.org/10.1080/10245330400026170>
- Yang, X., Yang, Q., Wang, Y., Wu, Y., Xu, J., Yu, Y., Shang, Y., 2020. Thrombocytopenia and its association with mortality in patients with COVID-19. *J Thromb Haemost* 18, 1469–1472. <https://doi.org/10.1111/jth.14848>
- Yao, Y., Cao, J., Wang, Q., Shi, Q., Liu, K., Luo, Z., Chen, X., Chen, S., Yu, K., Huang, Z., Hu, B., 2020. D-dimer as a biomarker for disease severity and

- mortality in COVID-19 patients: a case control study. *Journal of Intensive Care* 8, 49. <https://doi.org/10.1186/s40560-020-00466-z>
- Ye, M., Wysocki, J., William, J., Soler, M.J., Cokic, I., Batlle, D., 2006. Glomerular localization and expression of Angiotensin-converting enzyme 2 and Angiotensin-converting enzyme: implications for albuminuria in diabetes. *J Am Soc Nephrol* 17, 3067–3075. <https://doi.org/10.1681/ASN.2006050423>
- Ye, Q., Wang, B., Mao, J., 2020. The pathogenesis and treatment of the 'Cytokine Storm' in COVID-19. *J Infect* 80, 607–613. <https://doi.org/10.1016/j.jinf.2020.03.037>
- Yu, P., Xia, P., Li, Z., Zhang, J., Ma, J., Xu, M., Zhou, Y., Shen, Y., Liu, X., 2022. White Blood Cell Variability and Clinical Outcomes in Hospitalized Patients With COVID-1. <https://doi.org/10.21203/rs.3.rs-1289810/v1>
- Zahid, U., Ramachandran, P., Spitalewitz, S., Alasadi, L., Chakraborti, A., Azhar, M., Mikhalina, G., Sherazi, A., Narh, J.T., Khattar, P., Bedi, P., 2020. Acute Kidney Injury in COVID-19 Patients: An Inner City Hospital Experience and Policy Implications. *Am J Nephrol* 51, 786–796. <https://doi.org/10.1159/000511160>
- Zhang, G., Hu, C., Luo, L., Fang, F., Chen, Y., Li, J., Peng, Z., Pan, H., 2020. Clinical features and short-term outcomes of 221 patients with COVID-19 in Wuhan, China. *J Clin Virol* 127, 104364. <https://doi.org/10.1016/j.jcv.2020.104364>
- Zhang, J.-J., Dong, X., Cao, Y.-Y., Yuan, Y.-D., Yang, Y.-B., Yan, Y.-Q., Akdis, C.A., Gao, Y.-D., 2020. Clinical characteristics of 140 patients infected with SARS-CoV-2 in Wuhan, China. *Allergy* 75, 1730–1741. <https://doi.org/10.1111/all.14238>
- Zhao, Q., Meng, M., Kumar, R., Wu, Y., Huang, J., Deng, Y., Weng, Z., Yang, L., 2020. Lymphopenia is associated with severe coronavirus disease 2019 (COVID-19) infections: A systemic review and meta-analysis. *Int J Infect Dis* 96, 131–135. <https://doi.org/10.1016/j.ijid.2020.04.086>
- Zheng, Z., Peng, F., Xu, B., Zhao, J., Liu, H., Peng, J., Li, Q., Jiang, C., Zhou, Y., Liu, S., Ye, C., Zhang, P., Xing, Y., Guo, H., Tang, W., 2020. Risk factors of critical & mortal COVID-19 cases: A systematic literature review and meta-analysis. *J Infect* 81, e16–e25. <https://doi.org/10.1016/j.jinf.2020.04.021>
- Zhong, J., Tang, J., Ye, C., Dong, L., 2020. The immunology of COVID-19: is immune modulation an option for treatment? *Lancet Rheumatol* 2, e428–e436. [https://doi.org/10.1016/S2665-9913\(20\)30120-X](https://doi.org/10.1016/S2665-9913(20)30120-X)

Zhonghua et al., 2020. [An update on the epidemiological characteristics of novel coronavirus pneumonia (COVID-19)]. *Zhonghua Liu Xing Bing Xue Za Zhi* 41, 139–144. <https://doi.org/10.3760/cma.j.issn.0254-6450.2020.02.002>

Zhu, J., Ji, P., Pang, J., Zhong, Z., Li, H., He, C., Zhang, J., Zhao, C., 2020. Clinical characteristics of 3062 COVID-19 patients: A meta-analysis. *J Med Virol* 92, 1902–1914. <https://doi.org/10.1002/jmv.25884>

Zhu, X., Yang, L., Huang, K., 2020. COVID-19 and Obesity: Epidemiology, Pathogenesis and Treatment. *Diabetes Metab Syndr Obes* 13, 4953–4959. <https://doi.org/10.2147/DMSO.S285197>

Zhu, Z., Cai, T., Fan, L., Lou, K., Hua, X., Huang, Z., Gao, G., 2020. Clinical value of immune-inflammatory parameters to assess the severity of coronavirus disease 2019. *International Journal of Infectious Diseases* 95, 332–339. <https://doi.org/10.1016/j.ijid.2020.04.041>