

BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

1. Berdasarkan hasil penelitian yang berjudul Studi Penggunaan Insulin pada Pasien Penyakit Ginjal Kronik Rawat Inap di Rumah Sakit Bhayangkara Surabaya periode Januari 2016 – Maret 2018 diperoleh kesimpulan sebagai berikut :

- a. Penggunaan insulin kombinasi *Dextrose* sebanyak 10 pasien (100%) dengan jenis, dosis, frekuensi dan rute pemberian secara IV.
- b. Penggunaan kombinasi adalah D40 + 4 UI insulin dengan kalitake PO dan kalsium glukonat sebanyak 1 pasien (7 %), D40 + 4 UI insulin dengan kalitake (3 x 1 Sachet) PO sebanyak 2 pasien (13%), D40 + 4 UI insulin dengan kalsium glukonat sebanyak 4 pasien (26%). Kombinasi D10 + 6 UI dengan kalitake (3 x 1 Sachet) PO dan kalsium glukonat sebanyak 1 pasien (7%). Kombinasi D5 + 10 UI dengan Kalitake (3 x 1 Sachet) PO kalsium glukonat sebanyak 1 orang (7%).
- c. Kombinasi insulin dengan *dextrose* menurunkan kadar kalium pada pasien PGK-Hiperkalemia.

2. Penggunaan insulin yang diberikan pada pasien penyakit ginjal kronik hiperkalemia rawat inap RS Bhayangkara Surabaya, terkait dosis, frekuensi, interval dan lama pemberian sudah sesuai pustaka.

5.2 Saran

Diperlukan penelitian lanjutan dengan menggunakan metode yang dapat memberikan hasil yang baik dan juga agar peneliti dapat lebih

mencermati kondisi pasien secara langsung sehingga dapat menganalisis berbagai permasalahan yang dapat muncul ketika pemberian terapi obat bersamaan dengan hemodialisis pada pasien, dapat berinteraksi dengan tenaga kesehatan lainnya sehingga pada akhirnya dapat memperoleh profil penggunaan obat antihipertensi yang lebih baik dan efektif.

DAFTAR PUSTAKA

- Allon, M., and Copkney, C., 1990, Albuterol and insulin for treatment of hyperkalemia in hemodialysis patients, *Kidney international*, **38(5)**: 869-872.
- Bjornstad, P., Maahs, D.M., Rivard, C.J., Pyle, L., Rewers, M., Johnson, R.J., and Snell-Bergeon, J.K., 2014, Serum uric acid predicts vascular complications in adults with type 1 diabetes: the coronary artery calcification in type 1 diabetes study, *Acta Diabetol*, **51**:783–791.
- Brophy, D.F., Gehr T.W.B., 2005, ‘Disorders of Potassium and Magnesium Homeostasis’, in DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G., Posey, L.M., *Pharmacotherapy a Pathophysiologic Approach*, 6th ed., McGraw Hill Medical Publishing Division, New York, pp. 967-979
- Brunner, S., 2014, *Keperawatan Medikal Bedah Edisi 12*, EGC, Jakarta.
- Brunton, L.L., Chabner, B.A., Knollmann, B.C., 2011, *Goodman & Gillman’s The Pharmacological Basis of Therapy*, 12th ed., The McGraw-Hill Company, New York.
- Calcium Resonium, 2008, *Fact Sheets*. Diakses pada 11 Oktober 2015, http://www.ipga.in/uploaded_files/member_documents/doc_2013_09_07_02_02_11.pdf.
- Collins, A.J., Herzog, C.A., and Foley, R.N., 2002, Blood pressure and long-term mortality in United States hemodialysis patients: USRDS Waves 3 and 4 Study 1, *Kidney international*, **62(5)**: 1784-1790.
- DiPiro, C.V., 2015. ‘Renal Disorders: Chronic Kidney Disease’, in DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., *Pharmacotherapy Handbook: A Approach*, 9th ed., MC Graw-Hill, New York, pp 787-788.

- Einhorn, L.M., Zhan, M., and Hsu, V.D., 2009, The frequency of hyperkalemia and its significance in chronic kidney disease, *Archives of Internal Medicine*, **169**: 1156-1162.
- Ganong, W.F., 2012, *Review of Medical Physiology*, 24th ed., McGraw Hill Companies Inc., New York, pp. 673-676.
- Gross, J.L., de Azevedo, M.J., Silveiro, S.P., Canani, L.H., Caramori, M.L., Zelmanovitz, T., 2005, Diabetic nephropathy: diagnosis, prevention, and treatment, *Diabetes Care*, **28**(1): 164-76.
- Guyton, A.C., and Hall, J.E., 2016, 'The Urinary System: Functional Anatomy and Urine Formation by The Kidneys', in : Guyton, A.C., and Hall, J.E., *Textbook of Medical Physiology*, 13th ed., Elsevier Saunders Inc., Philadelphia, p. 325.
- Harel, Z., and Kamel, K.S., 2016, Optimal dose and method of administration of intravenous insulin in the management of emergency hyperkalemia: a systematic review, *Plos one*, **11**(5): 7-9.
- Ho, K.A., 2011, Critically swift response: insulin-stimulated potassium and glucose transport in skeletal muscle, *Clinical Journal of the American Society of Nephrology (CJASN)*, **6**(7): 1513-1516.
- Joy, M.S., Kshirsagar, A., and Franceschini, N., 2008, 'Chronic Kidney Disease: Progression-Modifying Therapies', in DiPiro, T.J., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G., and Posey, L.M., *Pharmacotherapy: a Pathophysiologic Approach*, 7th ed., McGraw-Hill Companies Inc., New York, p.745.
- Kamel, K.S., Schreiber, M., and Halperin, M.L., 2014, Integration of the response to a dietary potassium load: a paleolithic perspective, *Nephrology Dialysis Transplantation*, **29**(5): 982-989.
- Kasper, D.L., 2005, *Harrison's Principles of Internal Medicine*, 16th ed., McGraw-Hill Companies Inc, New York.
- Katzung, B.G., 2010, *Farmakologi Dasar dan Klinik (terjemahan)*, Edisi 10, Penerbit Buku Kedokteran EGC., Jakarta.
- Kautzky, W.A., Kosi, L., Lin, J., and Mihaljevic, R., 2015, Gender based differences in glycaemic control and hypoglycaemia prevalence in

patients with type 2 diabetes: results from patient level pooled data of six randomized controlled trials, *Diabetes, Obesity and Metabolism*, **17(6)**: 533-540.

KDIGO, 2013, Clinical practice guideline for the evaluation and management of chronic kidney disease, *Journal of the International Society of Nephrology*, **3**: 1-150.

Kovesdy, C.P., 2014, Management of hyperkalaemia in chronic kidney disease, *Nature Review Nephrology*, **3(1)**: 4-6.

Krol, G.D., 2011, *Chronic Kidney Disease: Clinical Practice Recommendations for Primary Care Physicians and Healthcare Providers*, 6th ed., Divisions of Nephrology and Hypertension and General Internal Medicine, Los Angeles, pp. 4-5.

Kroon, L.A. dan Williams, C., 2013, 'Diabetes Mellitus', dalam *Koda-Kimble and Young's Applied Therapeutics: the Clinical Use of Drugs*, Lippincott Williams and Wolters Kluwer, New York, pp. 1223–1300.

Lay, L.A., 2016, 'Studi Penggunaan Natrium Bikarbonat Pada Pasien Gagal Ginjal Kronik Rawat Inap di RSUD Kabupaten Sidoarjo', *Skripsi*, Sarjana Farmasi, Universitas Katolik Widya Mandala, Surabaya.

Levey, A. S., Coresh, J., Bolton, K., Culeton, B., Harvey, K. S., Ikizler, T. A., Levin, A., 2002, KDOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. *American Journal of Kidney Diseases*, **39**: 2-7.

Longo, D. L., Fauci, A. S., Kasper, D. L., Hauser, S. L., Jameson, J. L., & Loscalzo, J., 2013, *Harrison's principles of internal medicine Korean language edition*.

Mahajan, S.K., Mangla, M., and Kishore, K., 2001, Comparison of aminophylline and insulin-dextrose infusions in acute therapy of hyperkalemia in end-stage renal disease patients, *The Journal of the Association of Physicians of India*, **49**: 1082-1085.

Mahmoud, M.A., 2008, 'Drug Therapy Problems and Quality of Life in Patients with Chronic Kidney Disease', *Thesis*, Departement of Pharmacist, University Sains Malaysia, Kuala Lumpur.

- McPhee, Stephen J., William F., Ganong, M.D., 2007, *Pathophysiology of Disease*, McGraw Hill Companies Inc., San Fransisco.
- Musyahida, R.A., 2016, ‘Studi Penggunaan Terapi Furosemid Pada Pasien Penyakit Ginjal Kronik (PGK) Stadium V Di Rumkital Dr. Ramelan Surabaya’, *Skripsi*, Sarjana Farmasi, Universitas Airlangga, Surabaya.
- Neliya, S.W., 2012, Hubungan pengetahuan tentang asupan cairan dan pengendalian asupan cairan terhadap penambahan berat badan, *Journal Nursing Studies.*, **1**: 2-5.
- Ngarung, Y.S., 2016, ‘Studi Penggunaan Asam Folat Pada Pasien Gagal Ginjal Kronik Anemia Rawat Inap di RSUD Kabupaten Sidoarjo’, *Skripsi*, Sarjana Farmasi, Universitas Katolik Widya Mandala, Surabaya.
- Ngugi, N.N., McLigeyo, S.O., and Kayima, J.K., 1997, Treatment of hyperkalemia by altering the transcellular gradient in patients with renal failure: effect of various therapeutic approaches, *East African Medical Journal*, **74(8)**: 503-509.
- Nguyen, T.Q., Maalouf, N.M., Sakhaee, K., Moe, O.W., 2011, Comparison of insulin action on glucose versus potassium uptake in humans, *Clinical Journal of the American Society of Nephrology: (CJASN)*, **6(7)**:1533-1539.
- Parham, W.A., Mehdirad, A.A., Biermann, K.M., and Fredman, C.S., 2006, Hyperkalemia revisited, *Texas Heart Institute Journal*, **33(1)**: 40.
- PERNEFRI, 2012, *Fifth Report Of Indonesian Renal*, Diakses tanggal 17 September 2016, www.pernefriinasn.org/gallery.html.
- Sherwood, L.L., 2011, *Fisiologi Manusia: dari Sel ke Sistem*, Edisi 6, EGC, Jakarta.
- Silverthorn, D.U., 2013, *Fisiologi Manusia: Sebuah Pendekatan Terintegrasi*, Edisi 6, EGC, Jakarta.
- Sorensen, M.V., Matos, J.E., and Praetorius, H.A., 2010, Colonic potassium handling, *Pflugers Arch*, **459(5)**: 645–656.

- Strange, B., 2010, Prehospital treatment of hyperkalaemia, *Journal of Paramedic Practice*, **2(5)**: 194-199.
- Sunaryo, 2009, *Psikologi untuk Keperawatan*, EGC, Jakarta.
- Tang, J., and Linas, S.L., 2015, 'The Patient with Hypokalemia or Hyperkalemia', in Robert W.S., *Manual of Nephrology*, 8th ed., Wolters Kluwer Health, Philadelphia, pp 48-60.
- Tortora, G.J., and Bryan, D., 2014, *Principles of anatomy and physiology*, 14th ed., Wiley, New York.
- Trisna, A.P., 2015, 'Evaluasi *Drug Related Problem* Pada Pasien Gagal Ginjal Kronik di Rumah Sakit Pelabihan Jakarta Utara', *Skripsi*, Sarjana Farmasi, Universitas Islam Negeri Syarif Hidayatullah, Jakarta.
- Weiner, I.D., Wingo, C.S., 1998, Hyperkalemia: a potential silent killer, *Journal America Social Nephrology*, **9**: 1535.
- Wells, B. G., DiPiro, J. T., Schwinghammer, T. L., and DiPiro, C. V., 2016, *Manual de Farmacoterapia*. McGraw Hill, Brasil.
- Yaswir, R., and Ferawati, I., 2012, Fisiologi dan gangguan keseimbangan natrium, kalium dan klorida serta pemeriksaan laboratorium, *Jurnal Kesehatan Andalas*, **1(2)**: 17-20.