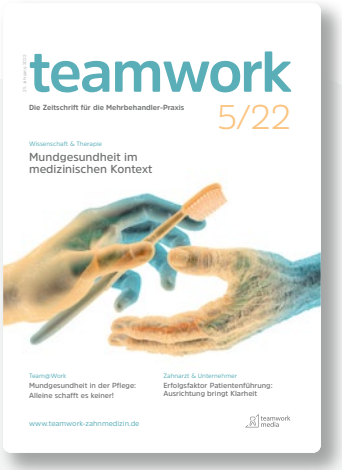

Parodontitis und Entzündungsanämie bei älteren Patienten

Mundgesundheit im medizinischen Kontext

Ein Beitrag von Alicia Maria Blasi, PD Dr. Gabriele Röhrig-Herzog, Prof. Dr. Michal Noack und PD Dr. Dr. Greta Barbe, alle Köln

Literaturangabe

1. Lampert, T. and J. Hoebel, [Socioeconomic differences in health and need for care among the elderly]. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz, 2019. 62(3): p. 238-246.
2. Blanc, B.F. and C.A.H. , L., Nutritional anaemias. Report of a WHO scientific group. World Health Organ Tech Rep Ser, 1968. 405: p. 5-37.
3. Schrier, S.L., Hematology, ASH, and the anemia of the aged. Blood, 2005. 106(10): p. 3341-2.
4. Röhrig, G., et al., Red blood cell counts and indices in the elderly German population. LaboratoriumsMedizin, 2018. 42(4): p. 131-139.
5. Beutler, E. and J. Waalen, The definition of anemia: what is the lower limit of normal of the blood hemoglobin concentration? Blood, 2006. 107(5): p. 1747-50.
6. Guralnik, J.M., et al., Prevalence of anemia in persons 65 years and older in the United States: evidence for a high rate of unexplained anemia. Blood, 2004. 104(8): p. 2263-8.
7. Juarez-Cedillo, T., et al., Prevalence of anemia and its impact on the state of frailty in elderly people living in the community: SADEM study. Ann Hematol, 2014. 93(12): p. 2057-62.
8. Gaskell, H., et al., Prevalence of anaemia in older persons: systematic review. BMC Geriatr, 2008. 8: p. 1.
9. Sahin, S., et al., Prevalence of anemia and malnutrition and their association in elderly nursing home residents. Aging Clin Exp Res, 2016. 28(5): p. 857-62.
10. Zilinski, J., et al., Prevalence of anemia among elderly inpatients and its association with multidimensional loss of function. Ann Hematol, 2014. 93(10): p. 1645-54.
11. Romero-Ruperto, S., et al., [Anemia in elderly patients admitted to an acute geriatric ward]. Rev Esp Geriatr Gerontol, 2015. 50(3): p. 122-5.
12. Rohrig, G., et al., Association of anemia with functional and nutritional status in the German multicenter study „GeriAnaemie2013“. Z Gerontol Geriatr, 2017. 50(6): p. 532-537.
13. Lanier, J.B., J.J. Park, and R.C. Callahan, Anemia in Older Adults. Am Fam Physician, 2018. 98(7): p. 437-442.
14. Chaves, P.H., et al., What constitutes normal hemoglobin concentration in community-dwelling disabled older women? J Am Geriatr Soc, 2004. 52(11): p. 1811-6.
15. Zakai, N.A., et al., Hemoglobin decline, function, and mortality in the elderly: the cardiovascular health study. Am J Hematol, 2013. 88(1): p. 5-9.
16. Culleton, B.F., et al., Impact of anemia on hospitalization and mortality in older adults. Blood, 2006. 107(10): p. 3841-6.
17. Penninx, B.W., et al., Late-life anemia is associated with increased risk of recurrent falls. J Am Geriatr Soc, 2005. 53(12): p. 2106-11.
18. Wallerstein, R.O., Jr., Laboratory evaluation of anemia. West J Med, 1987. 146(4): p. 443-51.
19. Bach, V., et al., Prevalence and possible causes of anemia in the elderly: a cross-sectional analysis of a large European university hospital cohort. Clin Interv Aging, 2014. 9: p. 1187-96.
20. Rohrig, G., et al., Association between hematologic parameters and functional impairment among geriatric inpatients: Data of a prospective cross-sectional multicenter study („GeriPravalenz2013“). Maturitas, 2016. 90: p. 37-41.
21. Nibali, L., et al., Anemia of inflammation associated with periodontitis: Analysis of two clinical studies. J Periodontol, 2019. 90(11): p. 1252-1259.
22. Wu, D., et al., Decreased Hemoglobin Concentration and Iron Metabolism Disorder in Periodontitis: Systematic Review and Meta-Analysis. Front Physiol, 2019. 10: p. 1620.
23. Weiss, G. and L.T. Goodnough, Anemia of chronic disease. N Engl J Med, 2005. 352(10): p. 1011-23.
24. Ganz, T. and E. Nemeth, Hepcidin and iron homeostasis. Biochim Biophys Acta, 2012. 1823(9): p. 1434-43.
25. Anand, P.S., et al., Association of aggressive periodontitis with reduced erythrocyte counts and reduced hemoglobin levels. J Periodontal Res, 2014. 49(6): p. 719-28.
26. Nemeth, E. and T. Ganz, Anemia of inflammation. Hematol Oncol Clin North Am, 2014. 28(4): p. 671-81, vi.
27. Tran, T.N., et al., Secretion of ferritin by rat hepatoma cells and its regulation by inflammatory cytokines and iron. Blood, 1997. 90(12): p. 4979-86.
28. Meyle, J. and I. Chapple, Molecular aspects of the pathogenesis of periodontitis. Periodontol 2000, 2015. 69(1): p. 7-17.
29. Sanz, M., et al., Treatment of stage I-III periodontitis-The EFP S3 level clinical practice guideline. J Clin Periodontol, 2020. 47 Suppl 22: p. 4-60.

30. Muller, F., M. Naharro, and G.E. Carlsson, What are the prevalence and incidence of tooth loss in the adult and elderly population in Europe? Clin Oral Implants Res, 2007. 18 Suppl 3: p. 2-14.
31. Jordan, R.A., et al., The Fifth German Oral Health Study (Funfte Deutsche Mundgesundheitsstudie, DMS V) - rationale, design, and methods. BMC Oral Health, 2014. 14: p. 161.
32. Zenthofer, A., et al., Increasing dependency of older people in nursing homes is associated with need for dental treatments. Neuropsychiatr Dis Treat, 2014. 10: p. 2285-90.
33. Zenthofer, A., et al., Comparison of oral health among older people with and without dementia. Community Dent Health, 2014. 31(1): p. 27-31.
34. Fredriksson, M.I., et al., Effect of periodontitis and smoking on blood leukocytes and acute-phase proteins. J Periodontol, 1999. 70(11): p. 1355-60.
35. Cullinan, M.P. and G.J. Seymour, Periodontal disease and systemic illness: will the evidence ever be enough? Periodontol 2000, 2013. 62(1): p. 271-86.
36. Aw, D., A.B. Silva, and D.B. Palmer, Immunosenescence: emerging challenges for an ageing population. Immunology, 2007. 120(4): p. 435-46.
37. Franceschi, C. and J. Campisi, Chronic inflammation (inflammaging) and its potential contribution to age-associated diseases. J Gerontol A Biol Sci Med Sci, 2014. 69 Suppl 1: p. S4-9.
38. Ebersole, J.L., et al., Aging, inflammation, immunity and periodontal disease. Periodontol 2000, 2016. 72(1): p. 54-75.
39. Zhang, P., et al., Hyperglycemia-induced inflamm-aging accelerates gingival senescence via NLRC4 phosphorylation. J Biol Chem, 2019. 294(49): p. 18807-18819.
40. Albandar, J.M., C. Susin, and F.J. Hughes, Manifestations of systemic diseases and conditions that affect the periodontal attachment apparatus: Case definitions and diagnostic considerations. J Periodontol, 2018. 89 Suppl 1: p. S183-S203.
41. Matsushita, K., et al., Periodontal Disease and Periodontal Disease-Related Bacteria Involved in the Pathogenesis of Alzheimer's Disease. J Inflamm Res, 2020. 13: p. 275-283.
42. Lainson, P.A., P.P. Brady, and C.M. Fraleigh, Anemia, a systemic cause of periodontal disease? J Periodontol, 1968. 39(1): p. 35-8.
43. Hutter, J.W., et al., Lower numbers of erythrocytes and lower levels of hemoglobin in periodontitis patients compared to control subjects. J Clin Periodontol, 2001. 28(10): p. 930-6.
44. Gokhale, S.R., S. Sumanth, and A.M. Padhye, Evaluation of blood parameters in patients with chronic periodontitis for signs of anemia. J Periodontol, 2010. 81(8): p. 1202-6.
45. Naik, V., et al., Generalized, severe, chronic periodontitis is associated with anemia of chronic disease: a pilot study in urban, Indian males. J Investig Clin Dent, 2010. 1(2): p. 139-43.
46. Kolte, R.A., A.P. Kolte, and N.M. Deshpande, Assessment and comparison of anemia of chronic disease in healthy subjects and chronic periodontitis patients: A clinical and hematological study. J Indian Soc Periodontol, 2014. 18(2): p. 183-6.
47. Patel, M.D., Q.J. Shakir, and A. Shetty, Interrelationship between chronic periodontitis and anemia: A 6-month follow-up study. J Indian Soc Periodontol, 2014. 18(1): p. 19-25.
48. Khan, N.S., et al., Qualitative assessment of red blood cell parameters for signs of anemia in patients with chronic periodontitis. J Int Soc Prev Community Dent, 2015. 5(6): p. 476-81.
49. Anumolu, V.N., A. Srikanth, and K. Paidi, Evaluation of the relation between anemia and periodontitis by estimation of blood parameters: A cross-sectional study. J Indian Soc Periodontol, 2016. 20(3): p. 265-72.
50. Carvalho, R.C., et al., Chronic periodontitis and serum levels of hepcidin and hemoglobin. Oral Dis, 2016. 22(1): p. 75-6.
51. Leite, S.A.M., et al., The effect of nonsurgical periodontal therapy on hepcidin and on inflammatory and iron marker levels. Braz Oral Res, 2019. 33: p. e055.
52. Guo, L.N., Y.Z. Yang, and Y.Z. Feng, Serum and salivary ferritin and Hepcidin levels in patients with chronic periodontitis and type 2 diabetes mellitus. BMC Oral Health, 2018. 18(1): p. 63.
53. Han, Y., et al., Pro-inflammatory cytokine interleukin-6-induced hepcidin, a key mediator of periodontitis-related anemia of inflammation. J Periodontal Res, 2021.
54. Huang, W., et al., Up-regulated ferritin in periodontitis promotes inflammatory cytokine expression in human periodontal ligament cells through transferrin receptor via ERK/P38 MAPK pathways. Clin Sci (Lond), 2019. 133(1): p. 135-148.
55. Shirmohamadi, A., et al., Effect of non-surgical periodontal treatment on transferrin serum levels in patients with chronic periodontitis. J Dent Res Dent Clin Dent Prospects, 2016. 10(3): p. 169-75.
56. Cartwright, G.E., The anemia of chronic disorders. Semin Hematol, 1966. 3(4): p. 351-75.
57. Agarwal, N., V.S. Kumar, and S.A. Gujjari, Effect of periodontal therapy on hemoglobin and erythrocyte levels in chronic generalized periodontitis patients: An interventional study. J Indian Soc Periodontol, 2009. 13(1): p. 6-11.
58. Chakraborty, S., et al., Effect of non-surgical periodontal therapy on serum ferritin levels: an interventional study. J Periodontol, 2014. 85(5): p. 688-96.
59. Malhotra, R., et al., Effect of scaling and root planing on erythrocyte count, hemoglobin and hematocrit in patients with chronic periodontal disease. J Dent Hyg, 2012. 86(3): p. 195-203.
60. Wu, Y.C., et al., Oral manifestations and blood profile in patients with iron deficiency anemia. J Formos Med Assoc, 2014. 113(2): p. 83-7.
61. Auerbach, M. and J.W. Adamson, How we diagnose and treat iron deficiency anemia. Am J Hematol, 2016. 91(1): p. 31-8.
62. Kim, J., M.J. Kim, and H.S. Kho, Oral manifestations in vitamin B12 deficiency patients with or without history of gastrectomy. BMC Oral Health, 2016. 16(1): p. 60.
63. Field, E.A., et al., Oral signs and symptoms in patients with undiagnosed vitamin B12 deficiency. J Oral Pathol Med, 1995. 24(10): p. 468-70.
64. Hammersley, N., Mandibular infarction occurring during a sickle cell crisis. Br J Oral Maxillofac Surg, 1984. 22(2): p. 103-14.
65. Friedlander, A.H., L. Genser, and M. Swerdloff, Mental nerve neuropathy: a complication of sickle-cell crisis.

Oral Surg Oral Med Oral Pathol, 1980. 49(1): p. 15-7.
66. Alves, P.V., et al., Orthodontic treatment of patients with sickle-cell anemia. Angle Orthod, 2006. 76(2): p. 269-73.
67. Lopes, C.M.I., et al., Enamel defects and tooth eruption disturbances in children with sickle cell anemia. Braz Oral Res, 2018. 32: p. e87.

68. Chekroun, M., et al., Oral manifestations of sickle cell disease. Br Dent J, 2019. 226(1): p. 27-31.
69. Muncie, H.L., Jr. and J. Campbell, Alpha and beta thalassemia. Am Fam Physician, 2009. 80(4): p. 339-44.
70. Kaplan, R.I., R. Werther, and F.A. Castano, Dental and Oral Findings in Cooley's Anemia: A Study of Fifty Cases. Ann N Y Acad Sci, 1964. 119: p. 664-6.
71. Wang, Y.P., et al., Oral manifestations and blood profile in patients with thalassemia trait. J Formos Med Assoc, 2013. 112(12): p. 761-5.