

Rheumatoid Arthritis Protocol: Restoring Joint Function

Introduction

It is estimated that 300,000 Canadians have rheumatoid arthritis (RA).¹

Assessment

1. Thorough physical exam focusing on:
 - a. Mild-to-moderate joint swelling.
 - b. Crepitus on movement.
 - c. Pain with movement of joint and in particular at the end of its range of motion.
 - d. Joint tenderness.
 - e. Mild inflammation and warmth over the joint.
 - f. See American College of Rheumatology Guidelines for RA diagnosis.²
 - g. Patients may also present with fatigue, weight loss, and anemia on initial presentation. Additionally, many non-joint signs/symptoms may be overlooked, including accelerated atherosclerosis (leading cause of death among individuals with RA), episcleritis, neuropathy, vasculitis with severe RA, etc. (See Wasserman 2018 for a complete list of extra-articular manifestations).
2. Laboratory – the target population for testing are patients with at least one joint with definite clinical synovitis, not better explained by another disease:
 - a. High-sensitivity CRP (hs-CRP) and ESR.
 - b. Rheumatoid factor and anti-citrullinated protein antibody.
 - Upon initial diagnosis, CRP is elevated in 39%, rheumatoid factor (IgM) in 44%, and anti-citrullinated protein antibody in 39%.³
 - c. Vitamin D: 1,25-(OH)₂ Vitamin D levels have been shown to be inversely associated with disease activity.⁴ Meta-analysis of 25 (OH) vitamin D levels has also been shown to be inversely related to disease activity.⁵ Polymorphisms within the vitamin D receptor (VDR) gene also appear to influence risk, even in the presence of normal vitamin D serum levels.⁶
 - d. Radiological assessment: X-ray, MRI. Note that radiography may be helpful if the typical erosions are present, but rheumatoid nodules and radiographic erosive changes are no longer criteria for diagnosis, as they are less likely to be present in early disease.
 - e. Joint aspiration of synovial fluid.

General Recommendations

1. Monitor progress of patients using:
 - a. RA activity score using DAS 28 at <http://www.das-score.nl/das28/en/contact.html> or <http://www.4s-dawn.com/DAS28/>
 - b. Clinical Disease Activity Index for RA at <https://bit.ly/2X5gXNV>

Specific Treatment Plan*

	Mild	Moderate	Severe
Rheumatoid Arthritis	<ul style="list-style-type: none"> Tai chi^{7,8} Yoga^{9,10} Mediterranean^{11,12} and/or vegetarian/vegan diet^{13,14} Theracurmin® 2X: 1 capsule QD^{15,16} BioFoundation-G®: 1 tablet TID¹⁷ 	<ul style="list-style-type: none"> Tai chi^{7,8} Yoga^{9,10} Mediterranean^{11,12} and/or vegetarian/vegan diet^{13,14} OptiMega-3®: 5 softgels per day^{18,19} Theracurmin 2X: 1 capsule QD^{15,16} BioFoundation-G: 1 tablet TID¹⁷ Ubiquinol: 100 mg QD^{20,21} Vitamin D3: 1000 IU QD (up to 5000 IU QD in those with low serum levels) OR Calcitriol 500 IU per day²² PEA: 1 capsule TID²³ 	<ul style="list-style-type: none"> May require the use of prescription medications as part of the integrated protocol Tai chi^{7,8} Yoga^{9,10} Mediterranean^{11,12} and/or vegetarian/vegan diet^{13,14} OptiMega-3: 130 mg/kg QD (6-8 softgels per day, based off weight)²⁴ Theracurmin 2X: 1 capsule BID^{15,16} BioFoundation-G: 1 tablet TID¹⁷ Ubiquinol: 100 mg QD^{20,21} Vitamin D3 plus calcium, especially for patients using corticosteroid therapy²⁵ PEA: 1 capsule TID²³

QD: daily; BID: two times per day; TID: three times per day; QID: four times per day; PEA: Palmitoylethanolamide

*Caution: Contraindications exist for patients taking warfarin.

Re-Assessment

Repeat clinical and laboratory measurements as indicated.

REFERENCES:

- Arthritis Society. (2020). Rheumatoid Arthritis. Retrieved from [https://arthritis.ca/about-arthritis/arthritis-types-\(a-z\)/types/rheumatoid-arthritis](https://arthritis.ca/about-arthritis/arthritis-types-(a-z)/types/rheumatoid-arthritis)
- Wasserman, A. (2018). Rheumatoid arthritis: common questions about diagnosis and management. *American Family Physician*, 97(7), 455-462.
- Combe, B., Benessiano, J., Berenbaum, F., et al. (2007). The ESPOIR cohort: a ten-year follow-up of early arthritis in France: methodology and baseline characteristics of the 813 included patients. *Joint Bone Spine*, 74(5), 440-445.
- Herly, M., Stengaard-Pedersen, K., Vestergaard, P., et al. (2018). The D-vitamin metabolite 1,25(OH)2 D in serum is associated with disease activity and anti-citrullinated protein antibodies in active and treatment naïve, early rheumatoid arthritis patients. *Scandinavian Journal of Immunology*, 88(3), e12704.
- Lee, Y.H., & Bae, S.C. (2016). Vitamin D level in rheumatoid arthritis and its correlation with the disease activity: a meta-analysis. *Clinical and Experimental Rheumatology*, 34(5), 827-833.
- Mukhtar, M., Sheikh, N., Suqaina, S.K., et al. (2019). Vitamin D receptor gene polymorphism: an important predictor of arthritis development. *Biomed Research International*, 2019, 8326246.
- Wang, C. (2008). Tai Chi improves pain and functional status in adults with rheumatoid arthritis: results of a pilot single-blinded randomized controlled trial. *Medicine and Sport Science*, 52, 218-229.
- Mudano, A.S., Tugwell, P., Wells, G.A., et al. (2019). Tai Chi for rheumatoid arthritis. *Cochrane Database Systematic Reviews*, 9(9), CD004849.
- Badsha, H., Chhabra, V., Leibman, C., et al. (2009). The benefits of yoga for rheumatoid arthritis: results of a preliminary, structured 8-week program. *Rheumatology International*, 29, 1417-1421.
- Gautam, S., Tolahunase, M., Kumar, U., et al. (2019). Impact of yoga based mind-body intervention on systemic inflammatory markers and co-morbid depression in active Rheumatoid arthritis patients: A randomized controlled trial. *Restorative Neurology and Neuroscience*, 37(1), 41-59.
- García-Morales, J.M., Lozada-Mellado, M., Hinojosa-Azaola, A., et al. (2019). Effect of a Dynamic Exercise Program in Combination With Mediterranean Diet on Quality of Life in Women With Rheumatoid Arthritis. *Journal of Clinical Rheumatology*. 10.1097
- Badsha, H. (2018). Role of Diet in Influencing Rheumatoid Arthritis Disease Activity. *Open Rheumatology Journal*, 12, 19-28.
- Kjeldsen-Kragh, J. (1999). Rheumatoid arthritis treated with vegetarian diets. *American Journal of Clinical Nutrition*, 70(3 Suppl), 594S-600S.
- Alwarith, J., Kahleova, H., Rembert, E., et al. (2019). Nutrition interventions in rheumatoid arthritis: the potential use of plant-based diets. A review. *Frontiers in Nutrition*, 6, 141.
- Chandran, B., & Goel, A. (2012). A randomized, pilot study to assess the efficacy and safety of curcumin in patients with active rheumatoid arthritis. *Phytotherapy Research*, 26, 1719-1725.
- Daily, J.W., Yang, M., & Park, S. (2016). Efficacy of turmeric extracts and curcumin for alleviating the symptoms of joint arthritis: a systematic review and meta-analysis of randomized clinical trials. *Journal of Medicinal Food*, 19(8), 717-729.
- Kremer, J.M., & Bigaouette, J. (1996). Nutrient intake of patients with rheumatoid arthritis is deficient in pyridoxine, zinc, copper, and magnesium. *Journal of Rheumatology*, 23(6), 990-994.
- Goldberg, R.J., & Katz, J. (2007). A meta-analysis of the analgesic effects of omega-3 polyunsaturated fatty acid supplementation for inflammatory joint pain. *Pain*, 129, 210-223.
- Rajaei, E., Mowla, K., Ghorbani, A., et al. (2015). The effect of omega-3 fatty acids in patients with active rheumatoid arthritis receiving DMARDS therapy: double-blind randomized controlled trial. *Global Journal of Health Sciences*, 8(7), 18-25.
- Nachvak, S.M., Alipour, B., Mahdavi, A.M., et al. (2019). Effects of coenzyme Q10 supplementation on matrix metalloproteinases and DAS-28 in patients with rheumatoid arthritis: a randomized, double-blind, placebo-controlled clinical trial. *Clinical Rheumatology*, 38(12), 3367-3374.
- Abdollahzad, H., Aghdashi, M.A., Asghari Jafarabadi, M., et al. (2015). Effects of coenzyme Q10 supplementation on inflammatory cytokines (TNF-α, IL-6) and oxidative stress in rheumatoid arthritis patients: A randomized controlled trial. *Archives of Medical Research*, 46(7), 527-533.
- Gopinath, K., & Danda, D. (2011). Supplementation of 1,25 dihydroxy vitamin D3 in patients with treatment naïve early rheumatoid arthritis: a randomised controlled trial. *International Journal of Rheumatoid Disorders*, 14, 332-339.
- Artukoglu, B.B., Beyer, C., Zuloff-Shani, A., et al. (2017). Efficacy of palmitoylethanolamide for pain: A meta-analysis. *Pain Physician*, 20(5), 353-362.
- Kremer, J.M., Lawrence, D.A., Pettrillo, G.F., et al. (1995). Effects of high-dose fish oil on rheumatoid arthritis after stopping nonsteroidal antiinflammatory drugs. Clinical and immune correlates. *Arthritis & Rheumatology*, 38, 1107-1114.
- Buckley, L.M., Leib, E.S., Cartularo, K.S., et al. (1996). Calcium and vitamin D3 supplementation prevents bone loss in the spine secondary to low-dose corticosteroids in patients with rheumatoid arthritis. A randomized, double-blind, placebo-controlled trial. *Annals of Internal Medicine*, 125, 961-968.