

References

1. Miller RG, Jackson CE, Kasarskis EJ, England JD, Forshew D, Johnston W, et al. Practice parameter update: the care of the patient with amyotrophic lateral sclerosis: drug, nutritional, and respiratory therapies (an evidence-based review): report of the quality standards subcommittee of the American academy of neurology. *Neurology*. 2009;73:1218–26.
2. Andersen PM, Abrahams S, Borasio GD, de Carvalho M, Chio A, Van Damme P, et al. EFNS guidelines on the Clinical Management of Amyotrophic Lateral Sclerosis (MALS) — revised report of an EFNS task force. *Eur J Neurol*. 2012;19:360–75.
3. Ferrero E, Antón A, Egea CJ, Almaraz MJ, Masa JF, Utrabo I, et al. Normativa sobre el manejo de las complicaciones respiratorias de los pacientes con enfermedad neuromuscular. *Arch Bronconeumol*. 2013;49:306–13.
4. Bokolo AJ. Exploring the adoption of telemedicine and virtual software for care of outpatients during and after COVID-19 pandemic. *Ir J Med Sci*. 2021;190:1–10.
5. Ambrosino N, Vitacca M, Dreher M, Isetta V, Montserrat JM, Tonia T, et al. Tele-monitoring of ventilator-dependent patients: a European Respiratory Society Statement. *Eur Respir J*. 2016;48:648–63.
6. Guía SEPPA para la teleconsulta de pacientes respiratorios. <https://www.separ.es/node/1974>.
7. Jiang W, Wang L, Song YL. Titration and follow-up for home noninvasive positive pressure ventilation in chronic obstructive



Vitamin D and myasthenia gravis

Vitamina D y miastenia gravis

Dear Editor:

I read with great interest the article published in *Neurología* under the title “Epidemiology of myasthenia gravis in the province of Ourense (Galicia, Spain),” which reports that 85.1% of patients diagnosed with myasthenia gravis (MG) present vitamin D deficiency (< 30 ng/mL).¹ In recent years, growing emphasis has been placed on the importance of vitamin D due to its influence in several processes, such as immunity. Vitamin D is known to play a significant role in the homeostasis of calcium and phosphorus, in the regulation of functional hormones, and in the activation of regulatory T cells and B cells.²

Kang et al.³ observed that serum vitamin D levels were significantly lower in patients with MG than in healthy controls. Furthermore, an improvement in muscle weakness has been observed after cholecalciferol supplementation in patients with low vitamin D levels.⁴ However, the most remarkable finding is the report of a patient showing remission of recurrent MG after administration of megadoses of vitamin D (80 000–120 000 IU/day).⁵ Nevertheless, megadoses are reported to be harmful to health due to an increase in the risk of falls, and consequently the rate of fractures.⁶

pulmonary disease: the potential role of tele-monitoring and the Internet of things. *Clin Respir J*. 2021;15:705–15.

8. Ambrosino N, Fracchia C. The role of tele-medicine in patients with respiratory diseases. *Expert Rev Respir Med*. 2017;11:893–900.
9. Chaet D, Clearfield R, Sabin JE, Skimming K. Ethical practice in Telehealth and Telemedicine. *J Gen Intern Med*. 2017;32:1136–40.

A. Balañá^{a,b}, M.Á. Rubio^{a,b}, B. Bertran^{a,b},
J. Martínez Llorens^{a,b,c,d,*}

^a Servicio de Neurología, Hospital del Mar, Cataluña, Spain

^b Unidad Multidisciplinar de ELA, Cataluña, Spain

^c CEXS, Universitat Pompeu Fabra, Cataluña, Spain

^d CIBER de Enfermedades Respiratorias (CIBERES), ISC III, Madrid, Spain

*Corresponding author.

E-mail address: jmartinezl@parcdesalutmar.cat (J. Martínez Llorens).

<https://doi.org/10.1016/j.nrleng.2022.01.006>

2173-5808/ © 2022 Sociedad Española de Neurología. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A recent randomised controlled trial did not observe a clinically significant improvement in patients treated with vitamin D with respect to those receiving placebo; however, the dose administered was 800 IU/day, which is much lower than that reported in previous studies.⁷

It is currently unclear whether low serum vitamin D levels are associated with a higher risk of MG, as has been described in other such diseases as multiple sclerosis.⁸ Therefore, further studies are needed on the influence of vitamin D on the onset and progression of MG. We should also mention that between 42% and 82% of patients with MG experience central fatigue; even patients in remission or with mild symptoms show mild fatigue.^{9,10} As central fatigue seems not to improve with immunosuppressant treatment, it is important to establish the role of vitamin D in the fatigue perceived by these patients.⁹ Therefore, I agree with Kang et al.³ in recommending that healthcare professionals monitor vitamin D levels in patients with MG in order to maintain optimal serum concentrations.

Funding

This study received no funding of any kind.

Conflicts of interest

The authors have no conflicts of interest to declare.

References

1. García DA, López LM, Pardo M, Pérez G, Sabbagh NA, Ozaita G, et al. Epidemiología de la miastenia gravis en la provincia de Ourense. *Neurología*. 2020; <http://dx.doi.org/10.1016/j.nrl.2020.06.011>. S0213-4853(20):30215–2.
2. Gómez Piña JJ. Función de la vitamina D en la prevención de enfermedades. *Med Interna Mex*. 2020;36:68–76, <http://dx.doi.org/10.24245/mim.v36i1.2805>.
3. Kang SY, Kang JH, Choi JC, Song SK, Oh JH. Low serum vitamin D levels in patients with myasthenia gravis. *J Clin Neurosci*. 2018;50:294–7, <http://dx.doi.org/10.1016/j.jocn.2018.01.047>.
4. Askmark H, Haggård L, Nygren I, Punga AR. Vitamin D deficiency in patients with myasthenia gravis and improvement of fatigue after supplementation of vitamin D3: a pilot study. *Eur J Neurol*. 2012;19:1554–60, <http://dx.doi.org/10.1111/j.1468-1331.2012.03773.x>.
5. Cadegiani FA. Remission of severe myasthenia gravis after massive-dose Vitamin D treatment. *Am J Case Rep*. 2016;17:51–4, <http://dx.doi.org/10.12659/ajcr.894849>.
6. Quesada J, Sosa M. Vitamina D y función muscular. *Rev Osteoporos Metab Min*. 2019;11:3–5, <http://dx.doi.org/10.4321/s1889-836x2019000100001>.
7. Okparasta A, Indrasyah MI, Haddani H, Bahar E. Effect of vitamin D3 supplementation towards vitamin D serum levels and Myasthenia Gravis Composite Score (MGCS). *J Phys Conf Ser*. 2019;1246:012032, <http://dx.doi.org/10.1088/1742-6596/1246/1/012032>.
8. Matías-Guío J, Oreja-Guevara C, Matias-Guiu JA, Gomez-Pinedo U. Vitamin D and remyelination in multiple sclerosis. *Neurol*. 2018;33:177–86, <http://dx.doi.org/10.1016/j.nrleng.2016.05.010>.
9. Ruiters AM, Verschuuren JJGM, Tannemaat MR. Fatigue in patients with myasthenia gravis. A systematic review of the literature. *Neuromuscul Disord*. 2020;30:631–9, <http://dx.doi.org/10.1016/j.nmd.2020.06.010>.
10. Tran C, Brill V, Katzberg HD, Barnett C. Fatigue is a relevant outcome in patients with myasthenia gravis. *Muscle Nerve*. 2018;58:197–203, <http://dx.doi.org/10.1002/mus.26069>.

M. Larrosa-Domínguez

Universitat Rovira i Virgili, Departament de Enfermeria, Facultat de Enfermeria, Tarragona, Spain

E-mail address: mireia.larrosa@estudiants.urv.cat

<https://doi.org/10.1016/j.nrleng.2021.11.006>
2173-5808/ © 2022 Sociedad Española de Neurología. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).