

Caution against corticosteroid-based COVID-19 treatment

In December, 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan, Hubei province, China, and COVID-19 has become a threat to global public health.¹

Use of corticosteroid-based therapy to reduce inflammatory-induced lung injury has been described for patients with severe COVID-19,^{2,3} similar to the use of corticosteroids to treat severe acute respiratory syndrome (SARS) during the SARS outbreak in 2003.⁴ However, improper use of systemic corticosteroids can increase the risk of osteonecrosis of the femoral head (ONFH).

In a retrospective study of 539 patients with SARS who received corticosteroid therapy,⁵ the incidence of steroid-induced ONFH was 24%, and increased incidence of steroid-induced ONFH was associated with total corticosteroid dose and the use of more than one type of corticosteroid. Improper or delayed treatment of steroid-induced ONFH can cause hip pain, claudication, and even disability of the lower limbs.

Overall, we call for caution in the use of corticosteroids for COVID-19 and do not recommend this as a routine treatment. To prevent steroid-induced ONFH, corticosteroids should be considered only for patients undergoing septic shock, or in critical cases.^{6,7} Corticosteroids should be minimised in dose and duration, and the use of multiple types should be avoided. We believe that bisphosphonates and vitamin E should be prescribed to patients who are undergoing corticosteroid treatment; anticoagulants, vasodilators, and traditional Chinese medicine could also be considered.⁸⁻¹⁰ Close follow-up should be conducted after discharged, with MRI as the best option for early detection of ONFH. Physical therapy

and combined pharmacotherapy have been recommended for patients with early-stage steroid-induced ONFH.¹¹

We declare no competing interests.

Chong Tang, Yichuan Wang, Houshan Lv, *Zhenpeng Guan, Jin Gu
guanzenpeng@qq.com

Department of Orthopedics, Peking University Shougang Hospital, Beijing 100144, China (CT, YW, ZG); Arthritis Clinic & Research Center, Peking University People's Hospital, Beijing, China (HL); Gastrointestinal Cancer Center, Peking University Cancer Hospital, Key Laboratory of Carcinogenesis and Translational Research (Ministry of Education), Beijing, China (JG); and Department of Gastrointestinal Surgery, Peking University Shougang Hospital, Shijingshan District, Beijing, China (JG)

- 1 WHO. Coronavirus disease (COVID-19) situation report - 119. May 18, 2020. https://www.who.int/docs/default-source/coronavirus/situation-reports/20200518-covid-19-sitrep-119.pdf?sfvrsn=4bd9de25_4 (accessed May 19, 2020).
- 2 Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020; **395**: 497–506.
- 3 Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020; **395**: 507–13.
- 4 Chen RC, Tang XP, Tan SY, et al. Treatment of severe acute respiratory syndrome with glucocorticoids: the Guangzhou experience. *Chest* 2006; **129**: 1441–52.
- 5 Guo KJ, Zhao FC, Guo Y, Li FL, Zhu L, Zheng W. The influence of age, gender and treatment with steroids on the incidence of osteonecrosis of the femoral head during the management of severe acute respiratory syndrome: a retrospective study. *Bone Joint J* 2014; **96-B**: 259–62.
- 6 Russell CD, Millar JE, Baillie JK. Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury. *Lancet* 2020; **395**: 473–75.
- 7 Shang L, Zhao J, Hu Y, Du R, Cao B. On the use of corticosteroids for 2019-nCoV pneumonia. *Lancet* 2020; **395**: 683–84.
- 8 Lai KA, Shen WJ, Yang CY, Shao CJ, Hsu JT, Lin RM. The use of alendronate to prevent early collapse of the femoral head in patients with nontraumatic osteonecrosis. A randomized clinical study. *J Bone Joint Surg Am* 2005; **87**: 2155–59.
- 9 Jia YB, Jiang DM, Ren YZ, Liang ZH, Zhao ZQ, Wang YX. Inhibitory effects of vitamin E on osteocyte apoptosis and DNA oxidative damage in bone marrow hemopoietic cells at early stage of steroid-induced femoral head necrosis. *Mol Med Rep* 2017; **15**: 1585–92.
- 10 Liu LH, Zhang QY, Sun W, Li ZR, Gao FQ. Corticosteroid-induced osteonecrosis of the femoral head: detection, diagnosis, and treatment in earlier stages. *Chin Med J (Engl)* 2017; **130**: 2601–07.
- 11 Wang W, Zhang N, Guo W, Gao F. Combined pharmacotherapy for osteonecrosis of the femoral head after severe acute respiratory syndrome and interstitial pneumonia: two and a half to fourteen year follow-up. *Int Orthop* 2018; **42**: 1551–56.



Published Online
 May 25, 2020
[https://doi.org/10.1016/S0140-6736\(20\)30749-2](https://doi.org/10.1016/S0140-6736(20)30749-2)

Submissions should be made via our electronic submission system at <http://ees.elsevier.com/thelancet/>