

Risks of medication-related osteonecrosis of the jaw in older patients with COVID-19

Abstract

Coronavirus disease can cause respiratory complications and a systemic hyper inflammation. One of the most proposed treatments for COVID-19 still is the use of corticosteroids or antiresorptive drugs. Despite these drugs have positive effects to COVID-19 patients, they also are associated with medication-related osteonecrosis of the jaw. Therefore, older adults requiring procedures involving bone need detailed anamnesis to avoid osteonecrosis of the jaw after infection with COVID-19.

Keywords: covid-19, bone, osteonecrosis, inflammation, SARS-Cov-2

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Abbreviations: COVID-19, coronavirus disease 2019; MRONJ, medication-related osteonecrosis of the jaw

Introduction

The lungs are the structures most affected by coronavirus disease 2019 (COVID-19). Though COVID-19 affect respiratory tissue, patients with severe COVID-19 have symptoms of an extensive inflammation.¹ The use of corticosteroid is positively recommended to reduce the inflammation and consequent risk of death in severe cases.² With the spread use of corticoid and another drugs, it is critical to comprehend their consequences on alveolar bone. The possibility of osteonecrosis of the jaw after COVID-19 treatment with high doses of corticoids or antiresorptive drugs in older adults needs to be clearly evaluated.

Medication-Related Osteonecrosis of the Jaw (MRONJ) is an infectious complication of antiresorptive and antiangiogenic drugs.³ Besides bisphosphonates, corticosteroids also increase the risk of MRONJ.³ Despite the use of corticoids has favorable effect on COVID-19 treatment, their use can cause bone abnormalities⁴ as well as MRONJ.⁵ A recent study supported decreased bone mineral density caused by steroids after coronavirus infection.⁵ Reports already advised osteonecrosis of hip, femur, knee⁵ and tibia⁶ or jaws⁷ in patients with severe acute respiratory syndrome. The authors linked bone complications with high-dose of steroid treatment.⁴⁻⁷

Monoclonal antibodies including tocilizumab is also suggested for treatment of COVID-19.⁸ Tocilizumab stimulate interleukin-6 receptor blockade and it can reduce the risk of mortality.⁸ Even though the positive therapeutic for COVID-19, tocilizumab was associated with MRONJ.⁸ Another monoclonal antibody Denosumab is very correlated with MRONJ.⁹ Curiously, denosumab have been recommended for treat consequent of osteoporosis after COVID-19.⁴⁻¹⁰

Previous studies have described COVID-19 patients with MRONJ after usage of high doses of oral or intravenous corticosteroids.^{7,11}

A case series mentioned four patients with MRONJ caused by use of dexamethasone or prednisolone during 2 weeks.¹¹ All patients presented pain, facial swelling, and tooth mobility within 2 weeks after COVID-19 treatment.¹¹ The other series report also included twelve cases of MRONJ after dexamethasone for ten days, in addition the symptoms started spontaneous at three and twelve weeks.⁷ Both case series signaled radiography features with osteolytic areas mainly using computed tomography.^{7,11}

Therefore, older patients requiring dentoalveolar procedures such as tooth extraction, periodontal treatment, bone grafts or dental implants can have an increased risk of MRONJ after coronavirus disease following the use of drugs associated with MRONJ. Moreover, a cautiously clinical exam and medical history investigation is required in patients who claim of tooth mobility, pain, facial swelling and present osteolytic radiograph areas after COVID-19 treatment. Further studies are required to elucidate the medication-related osteonecrosis of the jaw in patients with COVID-19.

Conclusion

In conclusion, a detailed anamnesis about the drugs used for coronavirus treatment is crucial to avoid osteonecrosis of the jaw in older patients with recent COVID-19. Therefore, this short communication highlighted the risk of high doses of corticosteroids or monoclonal antibodies to causes MRONJ in COVID-19 patients.

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Conflicts of interest

The authors declare any conflict of interest.

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