



E-ISSN: 2706-9575
P-ISSN: 2706-9567
IJARM 2023; 5(2): 46-48
Received: 21-04-2023
Accepted: 30-05-2023

Meisam Haghmoradi
Department of Orthopedics,
Imam Khomeini Hospital,
Urmia University of Medical
Sciences, Urmia, Iran

Osteomyelitis following infection with SARS-CoV-2 (COVID-19): A mini-review

Meisam Haghmoradi

DOI: <https://doi.org/10.22271/27069567.2023.v5.i2a.479>

Abstract

Osteomyelitis or bone infection is due to bacteria like *Staphylococcus aureus* and during the COVID-19 pandemic; there are some reports of COVID-19. Sudden onset knee pain without a history of injury can make you suspect COVID-19. It is recommended to pay attention to the history of infection with COVID-19 in patients with osteomyelitis and to use Magnetic Resonance Imaging for diagnosis and treatment (drugs with or without debridement). It seems logical that any infection in the differential diagnosis should also include COVID-19 because it also affects the eyes, kidneys, lungs and other organs.

Keywords: SARS-CoV-2, COVID-19, infection, osteomyelitis

Introduction

Osteomyelitis means bone inflammation following infection in most cases that is why osteomyelitis means bone infection. Osteomyelitis or bone infection is a serious and dangerous disease that requires immediate treatment with antibiotics and usually surgery. The main symptom of bone infection is bone pain. The bone infection has two types, acute and chronic ^[1,2].

Acute osteomyelitis refers to cases where the patient's symptoms develop and intensify within a few days. Osteomyelitis is more common in children and teenagers and mostly in boys. Unlike acute osteomyelitis, chronic osteomyelitis is often multi-microbial, and in addition to *Staphylococcus aureus*, there is a possibility of Gram-negative and anaerobic bacteria. There are some symptoms of chronic osteomyelitis such as the discharge of pus through the sinus on the involved bone, pain, tenderness and other inflammatory manifestations at the site of the lesion and mild fever in some patients ^[3]. Chronic recurrent multifocal osteomyelitis (CRMO) is often the most severe form of chronic non-bacterial osteomyelitis in children and adolescents along with inflammatory lesions mainly that involve the metaphysis of long bones and lesions can occur in any area of long bones. In addition, other organs such as skin, eyes and digestive system may also be involved. There is no gender difference in the incidence of CRMO ^[4].

Some causes of osteomyelitis include fractures or bleeding inside the bone, the presence of a metal prosthesis or screw and plate inside the bone following previous surgery, recent surgery on the bone, a weak immune system such as AIDS, taking chemotherapy drugs or containing a corticosteroid or chronic kidney, liver or heart failure, injecting drug use or alcoholism, previous history of bone infection, disturbance in the sense of touch of the skin followed by skin wounds and then bone infection like in diabetes ^[5]. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections may result in osteonecrosis in which Malinowski *et al.* reported two cases of sudden onset knee pain without a history of injury ^[6]. So, sudden knee pain without trauma following SARS-CoV-2 should be considered alarming. Jain and Sawant reported a case report of osteomyelitis following COVID-19 infection in the hips. The use of corticosteroids in patients with COVID-19 must be associated with osteonecrosis ^[7].

Corresponding Author:
Meisam Haghmoradi
Department of Orthopedics,
Imam Khomeini Hospital,
Urmia University of Medical
Sciences, Urmia, Iran

Paying attention to the "moderate to severe pain in the infected bone, purulent discharge from the skin near the infected bone, severe inflammation and swelling, redness of the skin above the infected bone, having sensitivity to touching the injured area, limping of the leg and causing difficulty in walking normally if you have an infection of the thigh bones, fever and chills caused by infection in the body, fatigue and anorexia and having nausea are some differential symptoms in the patients with osteomyelitis [6, 9, 10]. Soroa *et al.* reported a case of osteomyelitis after SARS-CoV-2 development. The probable reason is thrombosis of small-caliber vessels [10]. Also, de Guimarães *et al.* reported two calvarial osteomyelitis case reports in diabetic patients after one month being developed COVID-19 [11]. Due to severe consequence of osteomyelitis and low response to pharmaceutical agents, in some case like diabetic patients, imputation is a way to reduce mortality (12).

Therefore, it is recommended to pay attention to the history of infection with COVID-19 in patients with osteomyelitis and to use Magnetic Resonance Imaging for diagnosis and treatment (drugs with or without debridement). Early treatment of COVID-19 with approved drugs to cleanse the SARS-CoV-2 should be considered, especially in diabetic patients. Of course, during this type of pandemic, the vaccine still plays a significant role in COVID-19 development and subsequently osteomyelitis. Considering the multi-organ failure following infection with COVID-19, it seems logical that any infection in the differential diagnosis should also include COVID-19 because it also affects the eyes, kidneys, lungs and other organs [13-18].

Conclusion

During COVID-19, any infection in the bones, can be relate to SARS-CoV-2 but its approval needs more laboratory assessment and physical examination to rule out some differential diagnosis. Osteomyelitis can be happen following COVID-19, so previous medical history is of great importance to detect the reason of osteomyelitis. Paying attention to sudden onset knee pain without a history of injury can make you suspect COVID-19.

Acknowledgement

Not available

Author's Contribution

Not available

Conflict of Interest

Not available

Financial Support

Not available

References

- Schmitt SK. Osteomyelitis. *Infectious Disease Clinics*. 2017 Jun 1;31(2):325-38.
- Hogan A, Heppert VG, Suda AJ. Osteomyelitis. *Archives of Orthopaedic and trauma surgery*. 2013;133:1183-96.
- Chiappini E, Mastrangelo G, Lazzeri S. A case of acute osteomyelitis: an update on diagnosis and treatment. *International journal of environmental research and public health*. 2016;13(6):539.
- Wipff J, Adamsbaum C, Kahan A, Job-Deslandre C. Chronic recurrent multifocal osteomyelitis. *Joint Bone Spine*. 2011 Dec 1;78(6):555-60.
- Schepalov AV, Antonov DV, Belokrylov AN, Zhuzhgov EA. On the question of osteomyelitis and its consequences in children: literature review. *Perm Medical Journal*. 2020 Sep 16;37(3):40-57.
- Bhowmik D, Bhanot R, Gautam D, Rai P, Kumar KP. Osteomyelitis-symptoms, causes and treatment. *Research Journal of Science and Technology*. 2018;10(2):165-77.
- Malinowski K, Skowronek P, Hirschmann M, Kim DW, Henry BM, Ebisz M, *et al.* Transient spontaneous osteonecrosis of the knee (SONK) shortly after SARS-CoV-2 infection: A report of 2 cases. *Advances in Clinical and Experimental Medicine*. 2022;31(9):1035-41.
- Jain S, Sawant T. Osteonecrosis with Concomitant Bacterial Osteomyelitis of Both Hips and a Knee in a Post-COVID-19 Patient: A Case Report. *JBJS Case Connector*. 2022;12(1):e21.
- Hatzenbuehler J, Pulling TJ. Diagnosis and management of osteomyelitis. *American family physician*. 2011 Nov 1;84(9):1027-33.
- Momodu II, Savaliya V. Osteomyelitis. *InStatPearls [Internet]* 2022 May 12. StatPearls Publishing.
- Soroa G, Álvarez A, Monge I, Navarro D, Roca O. Osteonecrosis and Osteomyelitis of the Proximal Third of Tibia as a Late Sequela of COVID-19: A Case Report. *Plastic and Aesthetic Nursing*. 2022;42(4):190-6.
- Walsh TP, Yates BJ. Calcaneotomy: avoiding major amputation in the presence of calcaneal osteomyelitis-a case series. *The Foot*. 2013 Dec 1;23(4):130-5.
- de Guimarães JA, Boasquevisque GS, Gaspar GG, Podolsky-Gondim GG, Mello FL, Valera FC, *et al.* Progressive chronic calvarial osteomyelitis in rhino-orbital mucormycosis associated with COVID-19. *Orbit*. 2022 Jun 2:1-7.
- Tabatabaie SA, Soltani P, Khanbabaee G, Sharma D. SARS Coronavirus 2, Severe Acute Respiratory Syndrome, and Middle East Respiratory Syndrome in Children: A Review on Epidemiology, Clinical Presentation, and Diagnosis. *Arch Pediatr Infect Dis*. 8(4):e104860.
- Besharat SAN, Dadashzadeh N, Talaie R, Mousavi SS, Barzegar A, Tavana S, *et al.* Clinical and Demographic Characteristics of Patients with COVID-19 Who Died in Modarres Hospital. *Open Access Maced. J Med Sci*. 2020;8(T1):144-9.
- Barzegar A, Ghadipasha M, Rezaei N, Forouzesh M. New hope for treatment of respiratory involvement following COVID-19 by bromhexine. *J Nephroarmacol*. 2021;10(2):e11.
- Sadeghi S, Kalantari Y, Shokri S, Fallahpour M, Nafissi N, Goodarzi A, *et al.* Immunologic response, Efficacy, and Safety of Vaccines against COVID-19 Infection in Healthy and immunosuppressed Children and Adolescents Aged 2 - 21 years old: A Systematic Review and Meta-analysis. *Journal of clinical virology*. 2022;153:105196.
- Dadashzadeh N, Farshid S, Valizadeh R, Nanbakhsh M, Mohammad Rahimi M. Acute respiratory distress

- syndrome in COVID-19. *Immunopathol Persa.* 2020;6(2):e16.
19. Lotfi B, Farshid S, Dadashzadeh N, Valizadeh R, Rahimi MM. Is Coronavirus Disease 2019 (COVID-19) Associated with Renal Involvement? A Review of Century Infection. Jundishapur. *J Microbiol.* 2020;13(4):e102899.

How to Cite This Article

Haghmoradi M. Osteomyelitis following infection with SARS-CoV-2 (COVID-19): A mini-review. *International Journal of Advanced Research in Medicine.* 2023;5(2):46-48

Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.