

Detection of HIV-I DNA/RNA in Peripheral Blood, Bone Marrow and Femoral Head of Patients with Osteonecrosis of the Femoral Head [Letter]

Hasta Handayani Idrus^{✉*}, Fitriana*, Setyo Adiningsih*

Center for Biomedical Research, Research Organization for Health, National Research and Innovation Agency (BRIN), Cibinong Science Center, Cibinong-Bogor, West Java, Indonesia

*These authors contributed equally to this work

Correspondence: Hasta Handayani Idrus, Center for Biomedical Research, Research Organization for Health, National Research and Innovation Agency (BRIN), Cibinong Science Center, Jl.Raya Bogor No. 490, Cibinong-Bogor, West Java, Indonesia, Email hastahandayani99@gmail.com; hast006@brin.go.id

Dear editor

We have read the paper by Kang Peng Li et al on Detection of HIV-1 DNA/RNA in Peripheral Blood, Bone Marrow and Femoral Head of Patients with Osteonecrosis of the Femoral Head.¹ We congratulate the authors for providing new information regarding The profile of necrotic viral infection in the bone marrow and femur in people living with HIV (PLWH) has not been characterized to date. Cases of osteonecrosis of the femoral head are often found in patients treated with excessive corticosteroids, so it is important to investigate impaired immune responses in osteonecrosis because excessive corticosteroid therapy is one of the therapies that can induce osteonecrosis of the femoral head and also interfere with the immune response which plays a role in the pathogenesis of osteonecrosis.²

A study conducted by Kang Peng Li et al showed that HIV RNA in the blood decreased significantly in 8 patients and HIV DNA in necrotic areas amounted to about half of the DNA in sclerotic areas and HIV RNA was about twice the normal value.¹ However, it should be noted that patients who have received DNA immunization can induce a cytolytic immune response that recognizes single amino acids including drug-resistant (DR) mutations, thereby encouraging the application of therapeutic DNA vaccines to DR HIV-1 patients. In addition, DNA immunization with HIV-1 protease (PR) is an advancement in immunotherapy of HIV-1 infection to reduce the number of infected cells that produce drug-resistant viruses.³ Bone marrow is a complex multicellular environment that functions in haematopoietic maintenance stem/progenitor cells (HSPC). HSPCs help regulate chemical and molecular signals as well as cell-cell interactions where HIV proteins have a direct suppressive effect on HSPC function.⁴

A study conducted by Kang Peng Li et al identified the femoral head and bone marrow taken from 15 PLWH who underwent total hip arthroplasty. Each femoral head was obtained from subchondral, necrotic, sclerotic, and normal areas.¹ The method used is appropriate, however the method used to detect HIV is also another important factor that must be considered when conducting this research. Proviral DNA, viral transcripts, or viral proteins are the main targets in every detection method.⁴

In conclusion we agree that despite the use of antiretroviral therapy, there is still a large and potentially active HIV reservoir in the bone marrow. Viral transcription is most active in the necrotic area of the femoral head which is directly involved in osteonecrosis of the femoral head.¹ We therefore recommend a deeper investigation of the bone marrow of chronically HIV-infected individuals who are not receiving antiretroviral therapy because of bone marrow plasma cells are the main source of HIV-1 serum specific antibodies in chronically infected individuals. There is a strong correlation between specific HIV-1 serum antibodies and specific bone marrow-derived plasma cells, but not circulating plasmablasts or memory B cells.⁵

Disclosure

All authors report no conflicts of interest in this communication.

References

1. Li K, Liu B, Ma R, Zhang Q. Detection of HIV-1 DNA / RNA in Peripheral Blood, Bone Marrow and Femoral Head of Patients with Osteonecrosis of the Femoral Head. *Infect Drug Resist.* 2024;17(January):551–559. doi:10.2147/IDR.S449615
2. Tian L, Wen Q, Dang X, You W, Fan L, Wang K. Immune response associated with Toll-like receptor 4 signaling pathway leads to steroid-induced femoral head osteonecrosis. *BMC Musculoskelet Disord.* 2022;15(1):1–12. doi:10.1186/1471-2474-15-18
3. Petkov S, Kilpeläinen A, Bayurova E, et al. HIV-1 Protease as DNA Immunogen against Drug Resistance in HIV-1 Infection: DNA Immunization with Drug Resistant HIV-1 Protease Protects Mice from Challenge with Protease-Expressing Cells. *Cancers.* 2023;15(1). doi:10.3390/cancers15010238
4. Herd CL, Mellet J, Mashigaidze T, Durandt C, Pepper MS. Consequences of HIV infection in the bone marrow niche. *Front Immunol.* 2023;14(July):1–17. doi:10.3389/fimmu.2023.1163012
5. Montezuma-rusca JM, Moir S, Kardava L, et al. Bone marrow plasma cells are a primary source of serum HIV-1- specific antibodies in chronically infected individuals. *HHS Public Access.* 2023;194(6):2561–2568. doi:10.4049/jimmunol.1402424.Bone

Dove Medical Press encourages responsible, free and frank academic debate. The content of the Infection and Drug Resistance 'letters to the editor' section does not necessarily represent the views of Dove Medical Press, its officers, agents, employees, related entities or the Infection and Drug Resistance editors. While all reasonable steps have been taken to confirm the content of each letter, Dove Medical Press accepts no liability in respect of the content of any letter, nor is it responsible for the content and accuracy of any letter to the editor.

Infection and Drug Resistance

Dovepress

Publish your work in this journal

Infection and Drug Resistance is an international, peer-reviewed open-access journal that focuses on the optimal treatment of infection (bacterial, fungal and viral) and the development and institution of preventive strategies to minimize the development and spread of resistance. The journal is specifically concerned with the epidemiology of antibiotic resistance and the mechanisms of resistance development and diffusion in both hospitals and the community. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/infection-and-drug-resistance-journal>

<https://doi.org/10.2147/IDR.S464127>