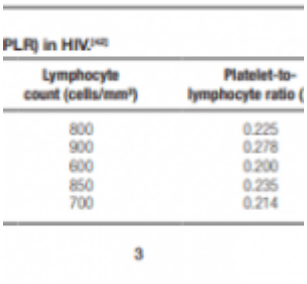
Emerging Biomarkers in HIV Care: The Role of Platelet Index Ratios



PLR) in HIV.[45]

Lymphocyte count (cells/mm³)	Platelet-to-lymphocyte ratio (
800	0.225
900	0.278
600	0.200
850	0.235
700	0.214

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In the evolving landscape of HIV research and treatment, traditional markers like CD4 cell counts and viral loads have been essential. However, new research highlights the potential of platelet index ratios as emerging biomarkers for assessing immune health and managing HIV-related complications.

The study aimed to investigate the utility of platelet index ratios as emerging biomarkers for HIV (Table 1). Specifically, it sought to determine the correlation between PIRs and HIV disease progression, assess the potential of PIRs to predict clinical outcomes in HIV-infected individuals, compare PIRs in HIV patients with and without antiretroviral therapy (ART), and identify specific PIRs that could serve as reliable indicators of immune status and inflammation in HIV.

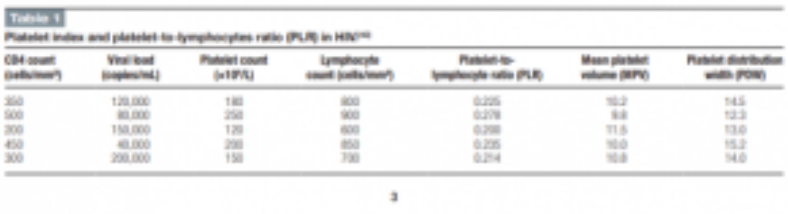

Table 1

Platelet index and platelet-to-lymphocytes ratio (PLR) in HIV[45]

CD4 count (cells/mm³)	Viral load (copies/mL)	Platelet count (×10³/L)	Lymphocyte count (cells/mm³)	Platelet-to-lymphocyte ratio (PLR)	Mean platelet volume (MPV)	Platelet distribution width (PDW)
350	120,000	180	800	0.225	10.2	14.5
500	80,000	250	900	0.278	9.8	12.3
300	150,000	120	600	0.200	11.5	13.0
450	40,000	200	850	0.235	10.0	15.2
300	200,000	150	700	0.214	10.8	14.0

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Platelet index ratios, including the platelet-to-lymphocyte ratio (PLR) and mean platelet volume-to-lymphocyte ratio (MPV/PC), offer valuable insights into the immune status of individuals living with HIV. These ratios reflect the interplay between platelets and lymphocytes, indicating the

dynamic nature of the immune response and inflammation during HIV infection.

Early Detection and Monitoring: Platelet indices exhibit dynamic changes that can detect immune dysfunction early, often before significant changes in CD4 counts. This allows for timely intervention and adjustment of antiretroviral therapy (ART).

Inflammation and Immune Activation: PLR and MPV/PC ratios are indicative of systemic inflammation and immune activation, common in HIV. Elevated PLR may correlate with lower CD4 counts, signalling immune suppression and guiding treatment decisions.

Predictive Value: These ratios can predict disease progression and the risk of opportunistic infections. Changes in platelet indices might indicate treatment response or failure, aiding in the evaluation of ART effectiveness.

Accessibility and Cost-Effectiveness: Platelet indices can be derived from routine blood tests, making them accessible and cost-effective compared to specialized tests for CD4 counts. This facilitates regular monitoring of immune health.

As research continues, platelet index ratios may revolutionize HIV care by providing a more nuanced understanding of immune health. These biomarkers could enhance personalized treatment strategies, improving health outcomes for individuals with HIV.

Platelet index ratios represent promising biomarkers for evaluating immune health and managing HIV-related complications. Integrating these ratios into routine clinical practice could lead to more precise disease prognosis and personalized treatment strategies, ultimately improving the quality of life for those living with HIV.

Journal article: Obeagu EI, et al., 2024. Platelet index

ratios in HIV: Emerging biomarkers for immune health and disease management. Medicine.

Summary by Faith Oluwamakinde