

Hypergammaglobulinemia in treated and untreated people with HIV



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Background

B cell abnormalities are an early feature of HIV infection, resulting in elevated immunoglobulin G (IgG) levels. These antibodies are largely non-specific and do not represent a virus-specific humoral response.

We evaluated plasma levels of IgG and inflammatory biomarkers in a large cohort of people with HIV (PWH).

Method

The study is a cross-sectional analysis of 750 blood samples, of which 267 were collected from virologically suppressed participants on antiretroviral therapy (ART) and 483 from untreated participants. The HIV-negative control group consisted of 44 individuals receiving HIV preexposure prophylaxis (PrEP) with tenofovir disoproxil fumarate (TDF)/emtricitabine (FTC) and 27 participants without PrEP.

Results

The most pronounced hypergammaglobulinemia was seen in participants with low CD4⁺ T cell counts (50-349 cells/ μ L). Elevated IgG concentrations prevailed in 24 % of participants on ART. Women had higher IgG levels than men in both treated and untreated study groups. The inflammatory biomarkers neopterin and β 2-microglobulin were abnormally elevated in one-third of ART suppressed participants.

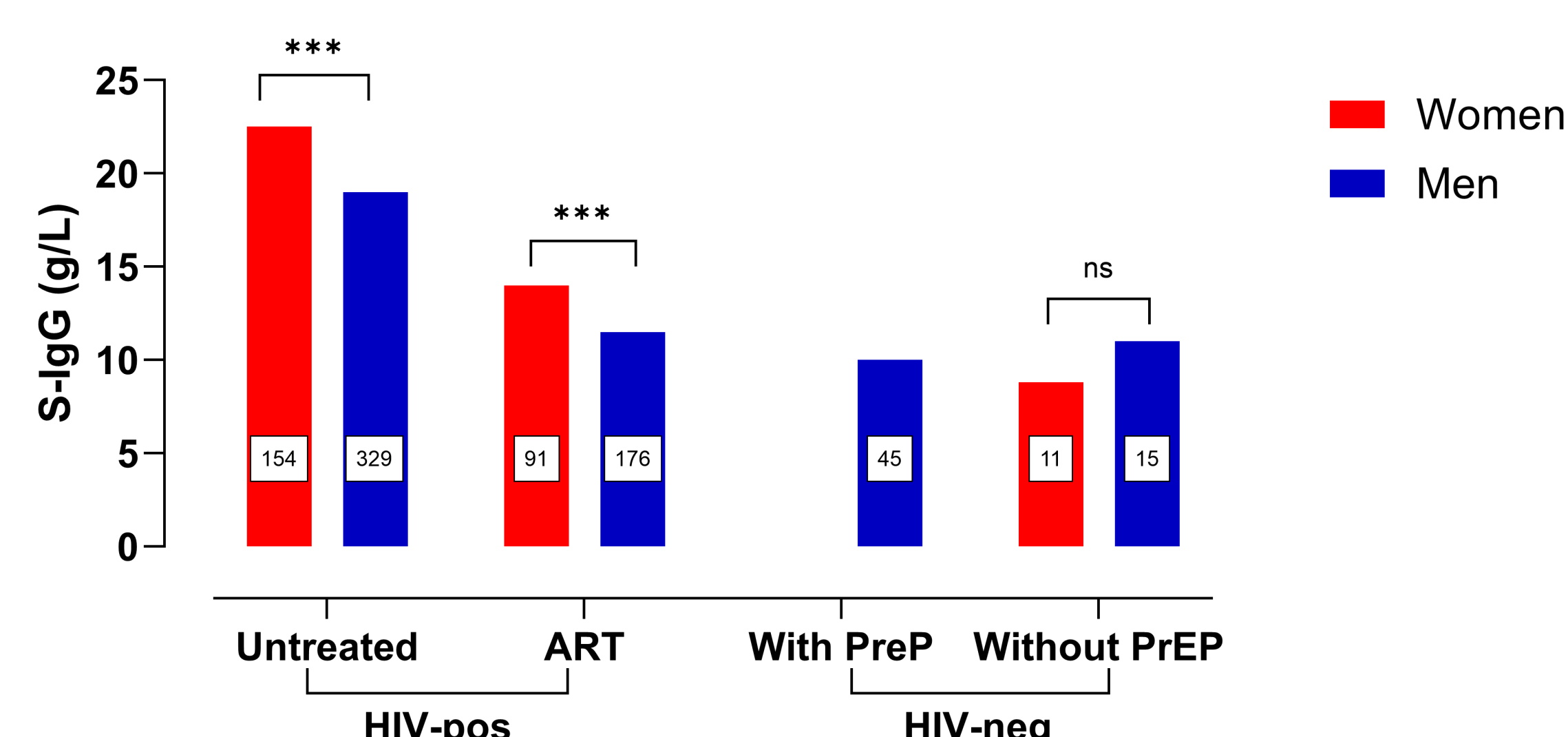


Fig 2. Median serum IgG concentrations in men and women. The number of participant samples is enclosed in the bars. *** $P < 0.001$.

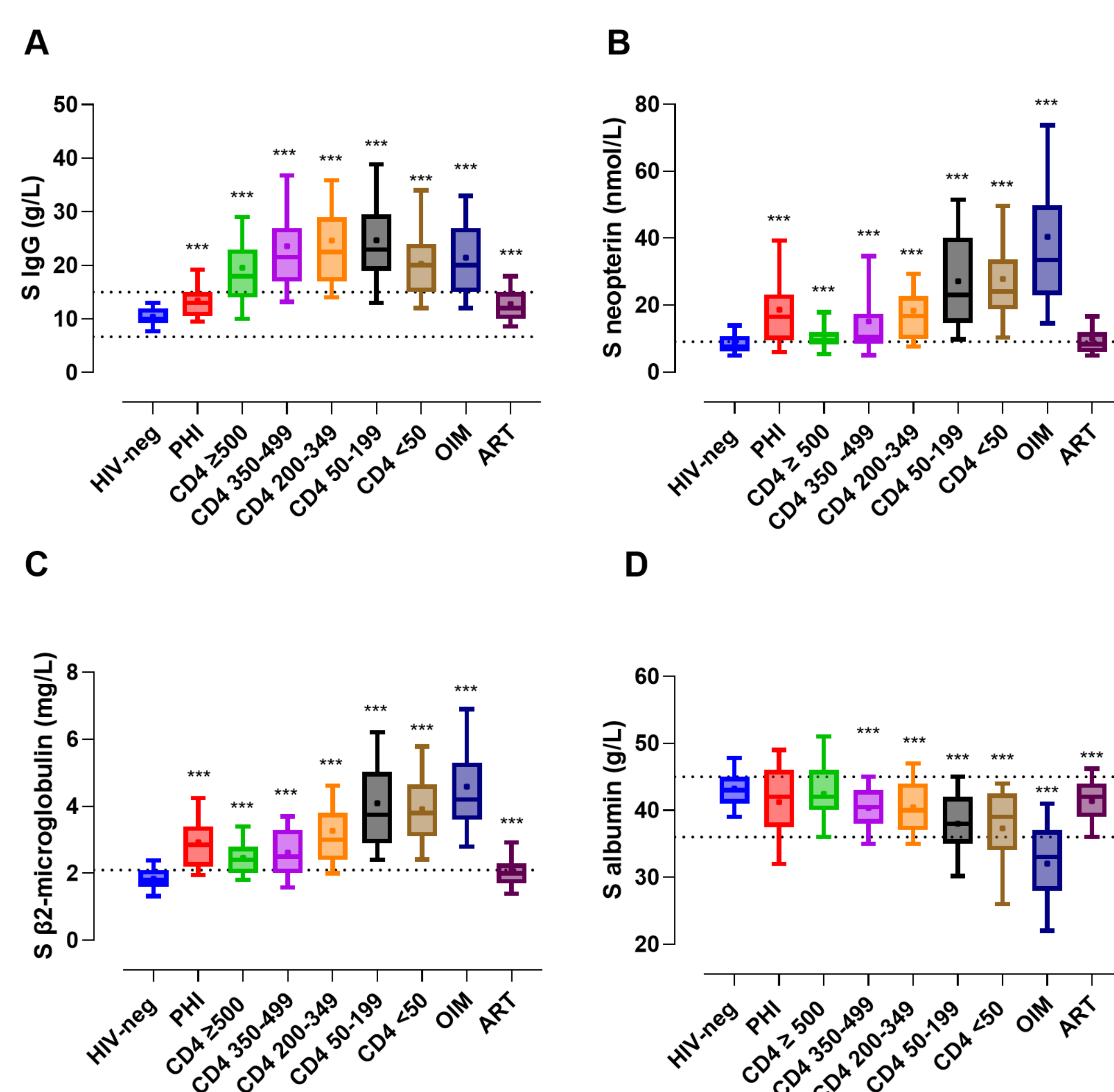


Fig 1. Serum immunoglobulin G (IgG) concentrations and inflammatory biomarkers in different study groups. PHI, primary HIV-1 infection; OIM, ongoing infection or malignancy; ART, antiretroviral treatment. The dotted horizontal lines indicate the reference interval (A, D) and the upper reference level (B, C), respectively. *** $P < 0.001$.

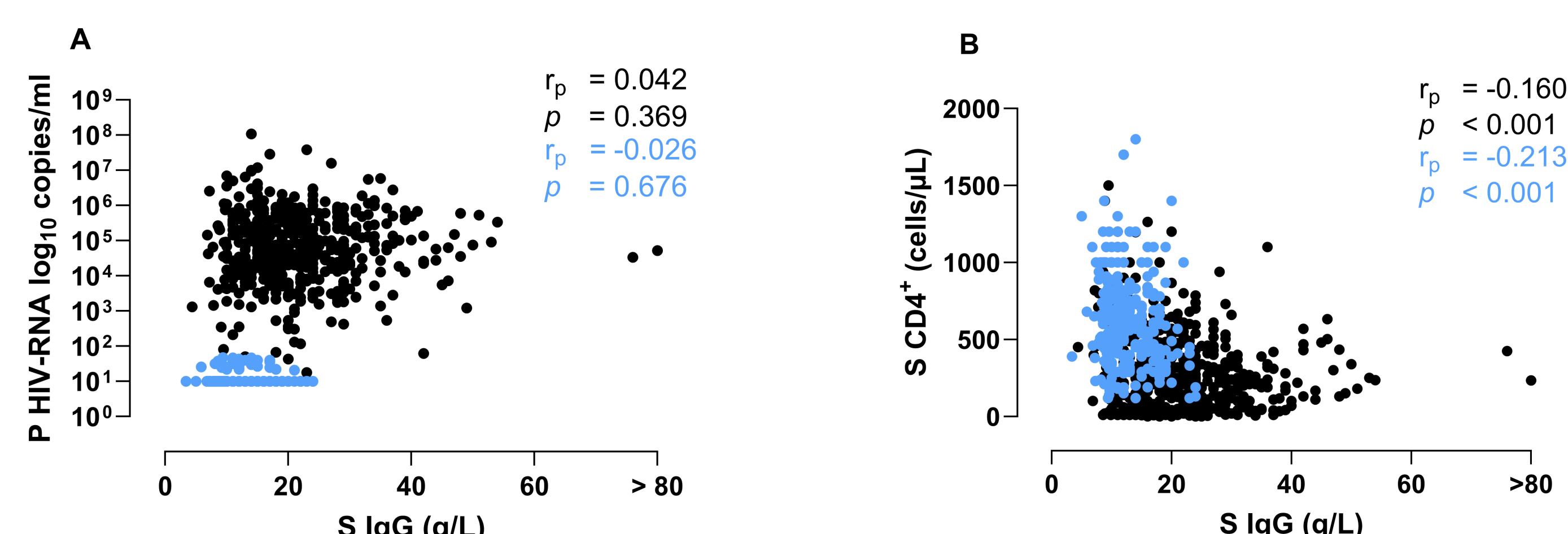


Fig 3. Correlations between serum IgG concentrations and HIV-RNA (A) and CD4⁺ (B) with partial correlation for age. Samples from participants on ART are indicated in blue, samples from participants without ART in black.

Conclusion

Although IgG levels were normalized in most participants on ART, hypergammaglobulinemia prevailed in about a quarter of cases. This, along with the findings of elevated inflammatory biomarkers despite ART suppression, enhances the picture of persisting inflammatory activity in virally suppressed PWH.

Take home message

Hypergammaglobulinemia is commonly seen in PWH and may persist despite ART suppression.