

# Comparison of Bone Marrow Abnormalities of Two HIV/AIDS Patient Populations

Erica Syklawer, MD, Ashok Tholpady, MD, MSPH, Lei Chen, MD, Andy Nguyen, MD  
The University of Texas Health Science Center at Houston

## Background

•Bone marrow aspirate and biopsy from human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) patients have been known to exhibit various abnormalities including trilineage dysplasia and plasmacytosis. However, quantitative data on the degree of abnormalities is sparse. Further, no studies have reported on the variation observed among different HIV/AIDS populations.

## Design

•Under IRB approval, a retrospective chart review was conducted on all bone marrows performed on HIV/AIDS patients from 2009 to 2011 at two hospitals. Hospital 'A' serves a population without ready access to care in an HIV-prevalent area while Hospital 'B' serves a population opposite to this. Data collected include demographics, CD4 T-cell counts, and bone marrow findings including erythrocyte and megakaryocyte dysplasia, and plasma cell count. Plasma cell percentage of 3 or more was considered increased. Exclusion criteria were patients with active primary hematologic neoplasms. The Fisher's exact test and Mann-Whitney *U* test were employed for statistical analysis.

## Results

	Hospital A patients (n=21)	Hospital B patients (n=19)
Age (mean, in years)	32.3	38.9
Gender		
Male	12	13
Female	9	6
Race		
Caucasian	1	7
African American	16	10
Hispanic	4	1
Other	0	1
CD4 count (mean absolute counts)	72.7	77.9
Biopsy findings		
Plasma cell count* (mean %, % patients with increase)	8.6%, 76.2%	4%, 52.6%
Erythrocyte dysplasia (number of patients, %)	10 (47.8%)	11 (57.9%)
Megakaryocyte dysplasia (number of patients, %)	11 (52.4%)	11 (57.9%)

\*The only statistically significant difference observed between the two hospitals is the degree of plasmacytosis

- There is a statistically significant difference in the degree of plasmacytosis between patients in the two populations
- There are no significant differences in:
  - Number of patients with erythrocyte and megakaryocyte dysplasia
  - Age of patients
  - CD4 counts
  - Number of patients with increased plasma cell numbers

## Conclusions

•The difference in plasmacytosis at Hospital 'A' versus Hospital 'B' without corresponding differences in cellular dysplasia suggests that these bone marrow abnormalities may be unrelated in pathogenesis. Indeed, the plasmacytosis associated with HIV could be related to an extrinsic factor such as lack of medication compliance or other factors related to inaccessibility to medical care. Further studies would be needed to consider the degree of plasmacytosis as a marker in monitoring HIV patients.

## References

- Tripathi AK, Kalra P, Misra R, Kumar A, Gupta N. Study of Bone Marrow Abnormalities in Patients with HIV Disease. *J of the Assoc of Physicians of India* 2005; 53: 105-110.
- Henry K. Costello C. HIV associated bone marrow changes. *Curr Diag Pathol* 1994;1:131-141.
- Treacy M, Lai L, Costello C, et al. Peripheral blood and bone marrow abnormalities in patients with HIV related disease. *Br J Haematol* 1987;65:289-94.
- Spivak JL, Bender BS, Quinn TC. Haematologic abnormalities in the acquired immune deficiency syndrome. *Am J Med* 1984;77:224-8.
- Pande A, Bhattacharyya M, Pain S, Samanta A. Study of bone marrow changes in antiretroviral naïve human immunodeficiency virus-infected anemic patients. *In J of Path and Micro* 2011; 54: 542-546.