Hepatitis-B Associated Cryoglobulinemia Presenting as Pseudoleucocytosis

Sir,

Cryoglobulins are serum immunoglobulin (Ig) or immunoglobulin complexes that undergo reversible precipitation at low temperatures.[1] Cryoglobulins may interfere with automated cell counting when immunoglobulins precipitate.[2] This results in spuriously high leukocyte counts, platelet count and false values for red blood cell parameters.[2] Pseudoleukocytosis may be the first indication of the presence of a cryoglobulinemia.
Letters to Editor

Total leucocyte count, platelet count along with red cell parameters like mean corpuscular volume, strengthened the suspicion of the presence of cryoprotein interference [Figure 1]. Use of citrate-anticoagulated blood gives the same results as prewarmed blood at 37°C.

Final diagnosis was made on biochemical analysis of the serum; its isolation, purification, and immunochemical analysis. IgG fraction was polyclonal along with monoclonal IgM (type II). The final diagnosis was made as hepatitis-B with type II cryoglobulinemia with stage IV hepatic encephalopathy.

In 1974, Brouet et al.[1] classified cryoglobulinemia into three types (I, II, and III). Types II and III are associated with hepatitis B virus infection. Other causes of cryoglobulinemia include various infectious, renal disorders, autoimmune disorders, hematological (especially multiple myeloma and lymphoproliferative disorders), and neoplastic diseases.[4] Cryoglobulinemia may be diagnosed several years before the underlying cause, especially for hematological diseases.[1,3] They can also occur in the absence of any apparent relevant disease.[4] Cryoglobulins,
on precipitation, form particles of various sizes ranging from 3µm to 24 µm. This size range interferes with blood cell counts ascertained by automated cell counters (Sysmex kx 21). It has been demonstrated that cryoglobulin containing plasma might induce the generation of neutrophil inclusions in neutrophils from a healthy donor. Ultrastructural and immunofluorescence studies have shown that the cytoplasmic inclusions in neutrophils corresponded to the cryoglobulin, likely phagocytosed by these cells.

Recognition of the cryoglobulin is important to correct factitious results with automated blood cell counters. Leukocytosis and thrombocytosis unsubstantiated by examination of a peripheral blood film and manual count should raise the suspicion of cryoglobulinemia. Cryoglobulin-induced laboratory artifacts and pseudoleukocytosis on automated counters may be the first factors prompting the assessment for cryoglobulinemia and the diagnosis of the underlying cause.

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REFERENCES

1. Brouet JC, Clauvel JP, Danon F, Klein M, Seligmann M. Biologic and clinical significance of cryoglobulins: A report of 86 cases. Am J Med 1974;57:775-88.
2. Keshgegian AA, Van Tran N. (Lankenau Hospital case conference) Mixed cryoglobulinemia causing pseudoleukocytosis. Clin Chem 1985;31:769-73.
3. Lesesve JF, Goasguen J. Cryoglobulin detection from a blood smear leading to the diagnosis of multiple myeloma. Eur J Haematol 2000;65:77.
4. Barnett EV, Bluestone R, Craecliolo A, Goldberg LS, Kantor GL, McIntosh RM. Cryoglobulinemia and disease. Ann Intern Med 1971;73:95-107.
5. Maitra A, Ward PC, Kroft SH, Levinson BS, Jamal S, Fishleder AJ, et al. Cytoplasmic inclusions in leukocytes: An unusual manifestation of cryoglobulinemia. Am J Clin Pathol 2000;113:107-12.

Letters to Editor

Seroprevalence of Hepatitis B and C in HIV Seropositive and Chronic Renal Failure Patients in North India

Sir,

The significant burden of human immunodeficiency virus/hepatitis B virus (HIV/HBV) or HIV/hepatitis C virus (HIV/HCV) coinfection is increasingly being recognized worldwide and in particular within the Asia-Pacific region. Coinfected individuals are at risk from accelerated liver disease and consequently cirrhosis, liver failure, and hepatocellular carcinoma. Also these individuals have altered immunological responses to highly active antiretroviral therapy (HAART) and are at increased risk of drug-related hepatotoxicity. HBV and HCV infections pose increased risk in renal dialysis unit due to the frequent use of blood, blood products and multiple invasive medical procedures. Thus, there is a need to screen for these viruses in HIV seropositive and chronic renal failure (CRF) patients. The present study describes the results of screening for HBV and HCV in 391 HIV individuals and 201 CRF patients. As a control group, 511 antenatal women were also screened for these viruses. The results are shown in Figure 1.

In the HIV group, 8 (2.04%) were HBsAg and 24 (6.1%) were anti-HCV positive. In CRF group, 12 (5.97%) were HBsAg and 7 (3.48%) were anti-HCV positive. Significantly higher seroprevalence of anti-HCV was seen in both the HIV and CRF group as compared to control group. Similarly HBsAg positivity was higher in both the groups.

Figure 1:

Bar diagram showing mean age ± SD and percentage positivity of HBsAg and anti-HCV in the HIV, CRF, and control group.

Anti HCV antibody in HIV infected vs healthy controls ($P < 0.0001$)

***. In CRF, vs healthy controls, HBsAg ($P < 0.0001$) ***, anti-HCV ($P < 0.005$), ** respectively. In HIV vs. CRF seroprevalence of HBsAg was significantly higher in CRF ($P = 0.0123$)*. The male:female ratio in HIV and CRF group was 1.7:1 and 3:1, respectively.