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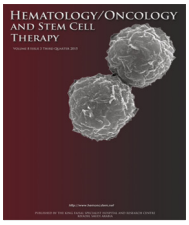

LETTER TO EDITOR

Co-existence of myeloid neoplasm and monoclonal gammopathy; case series and review of literature

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Dear Sir,

Concomitant occurrence of a clonal plasma cell proliferative disorder (PCD) and acute myeloid leukemia (AML) is uncommon, though reactive plasmacytosis may be seen in upto six percent cases [1]. Moreover, an increased risk of secondary AML has been documented in patients with multiple myeloma (MM) following therapy [2,3] but the development in a chemotherapy naive patient of PCD is very rare [4]. Here we describe unusual presentation of three cases of monoclonal gammopathy, who were eventually diagnosed to have myelodysplastic syndrome (MDS) and AML.

Three patients presented at different time points to the Hematology OPD for evaluation of generalized weakness and fatigue in the past three years. A summary of the clinic-pathological profiles of these patients is shown in Table 1. Interestingly all three of them had received one or more blood transfusion in the past 6 months. Examination was notable for pallor in all of them, while one patient had mild hepatomegaly. Bone marrow examination revealed proliferation of greater than 20% myeloperoxidase positive myeloid blasts in both the cases of AML, besides the proliferation of plasma cells (Fig. 1A). Third case showed presence of significant dyspoiesis in the myeloid and erythroid lineages (Fig. 2A). In addition approximately 10% plasma cells were also appreciated. Flow cytometric analysis of the bone marrow sample showed a distinct population of myeloblasts (>3%), an abnormal antigen expression and granulocyte maturation pattern (Fig. 2C–F) indicative of MDS with multilineage dysplasia (MLD).

Besides the presence of plasma cell proliferation in the bone marrow, a reversal of the albumin and globulin ratio in all three cases prompted a serum electrophoresis. Serum protein electrophoresis (SPE) biclonal gammopathy in case 1 of AML and MDS (Figs. 2B and 1B), while the second case of AML revealed a monoclonal gammopathy. Finally, a diagnosis of AML with monoclonal gammopathy of undetermined significance (MGUS) and AML with smoldering myeloma was proposed in the first and second case respectively, while the third case was diagnosed as MDS-MLD with MGUS. One of AML patients died within 6 months of diagnosis, while the other patient is currently on antibiotics; MDS patient was lost to follow up.

The association of plasma cell dyscrasia and secondary malignancies was identified almost forty six years ago by Kyle and his colleagues [5]. Since then numerous studies have highlighted the increased risk of AML in patients with

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Table 1 Patient demographics and relevant clinical and laboratory data.

	Case 1 (AML with MGUS)	Case 2 (AML with SMM)	Case 3 (MDS with MGUS)
Age/Sex	50/F	34/M	67/M
Chief complaints	Generalized body pain and fatigue × 1.5 years Past history of transfusion	generalized body ache, low-grade fever and blood transfusion dependency × 1 month	Generalized weakness and transfusion dependency × 1 year k/c/o DM × 11 years
Physical examination	Pallor + No LAP/ organomegaly	Pallor and mild hepatomegaly	Pallor + No LAP/ organomegaly
Haemoglobin (g/dl)	7.3	7.9	6.1
WBC count (10^9/l)	2.1	2.2	1.8
Platelet count (10^9/l)	159	9	431
S. Protein (g/dl)	6.5	7.6	9.1
A:G Ratio	1:18	1:1.4	1:2.1
S. creatinine (mg/dl) (ref range −0.5 to 1.4)	1.0	0.8	1.0
Lytic lesions	No	No	Not done (ND)
Serum Electrophoresis	Bi clonal	Single band	Bi clonal
Serum Immunofixation	IgG kappa and IgM lambda	IgG Lambda	IgA kappa and IgG kappa
Kappa/Lambda ratio (ref range −0.26 to 1.65)	1.1	2.1	3.6:1
% Blast in Bone Marrow	40	60	7
% Plasma cells	21	15	11
Immunophenotyping	CD13, CD33, CD34, CD38, CD117, cMPO, CD64, CD11c positive blasts	Blasts expresses CD13, CD33, CD34, CD38, CD117, CD64, CD11c and were negative B/T cell markers	Hypogranularity with 4% myeloblasts, distorted neutrophilic maturation pattern, and loss of CD16
Cytogenetics	Normal	46, XY increase in length of the heterochromatin on the 9q on one chromoome	Normal
Outcome	Died within 6 months of diagnosis before initiation of therapy	Patient is currently on antibiotics due to concomitant infections and is awaiting chemotherapy	Lost to follow up

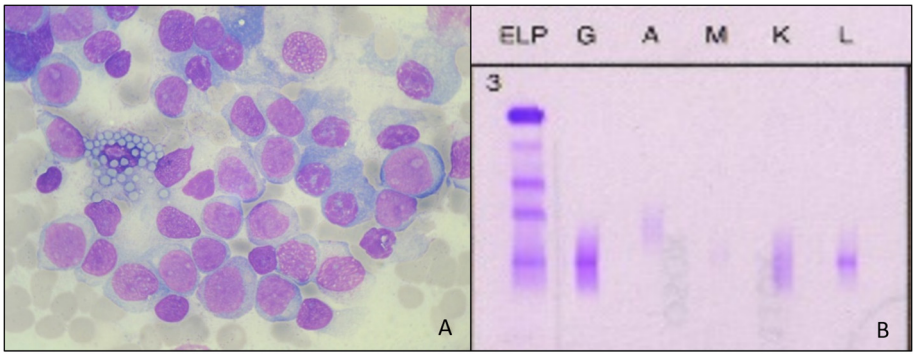

Fig. 1 Panel of photographs depicting, A, May Grunwald Giemsa stained bone marrow aspirate smears, showing proliferation of blasts with opened up chromatin, conspicuous nucleoli, scanty cytoplasm and atypical plasma cells, B, Serum immunofixation showing presence of monoclonal gammopathy of IgG lambda type (case 2).

MM on chemotherapy; a risk ratio being 3–20 times higher than the general population [6,7]. However, the co-existence or development of myeloid neoplasms in a treatment naïve PCD patient, as in our series, has been only rarely reported [4]. In one of the largest population based studies, Mailankody et al analyzed 5652 MGUS patients for progression to subsequent hematologic and non-hematologic malignancies. They observed that AML/MDS was the third commonest malignancy, with an 8.01 times increased risk in these patients as compared to the general population

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