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For Peer Review

Dear Sir,

plerixafor is a selective antagonist of the CXC chemokine receptor 4, and reversibly inhibits the action of the chemokine stromal cell-derived factor-1α.[1] The clinical use of plerixafor is now approved in US and EU for hematopoietic stem cell mobilization in lymphoma and multiple myeloma patients who previously failed mobilization with the sole G-CSF.[2,3] The pharmacokinetic profile of plerixafor in the context of various degrees of renal function impairment has demonstrated that reduced doses of the drug can be safely administered in cases of moderate renal impairment.[4] However, the use of plerixafor in dialysis-dependent patients has not been reported.

We report a case of a 57-years-old woman suffering from dyalisis-dependent renal failure complicating multiple myeloma at clinical onset. After the diagnosis of IgA/λ multiple myeloma in April 2009, the patient underwent treatment with thalidomide and dexamethasone achieving partial remission after four months of therapy with no improvement in renal function due to irreversible damage related to cast nephropathy. In September 2009, the patient failed peripheral blood hematopoietic stem cell mobilization after the administration of G-CSF 10 μg/kg/day subcutaneously during eight consecutive days. Therefore, a new attempt was planned with plerixafor plus G-CSF. G-CSF was administered once daily at the dose of 10 μg/kg/day, and at the fourth day of treatment, plerixafor was administered at the reduced dose of 160 μg/kg/day subcutaneously. The same plerixafor dose was repeated at day 5. At day 6, the CD34+ count revealed successful stem cell mobilization in the peripheral blood, therefore the patient underwent stem cell apheresis, which was repeated on day 7 with a total harvest of 5.08 x 10^6 CD34+ cells/kilogram of weight (Figure 1). The treatment was well tolerated with no adverse events related to the administration of plerixafor.

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In November 2009, the reinfusion of the previously collected stem cells led to complete hematopoietic recovery after the administration of melphalan 140 mg/m^2 with neutrophil recovery (ANC>500/µl) and platelet recovery (PLT>20000/µl) observed 10 and 13 days after reinfusion, respectively.

Myeloablative chemotherapy is feasible and of clinical benefit also in the subset of patients with severe renal function impairment. Nevertheless, a significant proportion of patients fail to mobilize an adequate amount of stem cells with conventional methods (G-CSF+/- chemotherapy). The use of plerixafor in severe renal impairment might overcome this problem.

This case report suggests that plerixafor administration in combination with G-CSF might be safe and effective in patients with end-stage renal failure and might represent a valuable tool allowing the implementation of myeloablative chemotherapy programs in patients for whom this therapeutical approach has a critical role in disease control. Larger series are required in order to extensively define the toxicity profile and optimal dose of the drug in this clinical setting.

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FIGURE LEGENDS

Figure 1. WBC (panel A) and CD34+ cell (panel B) counts during G-CSF and plerixafor treatment

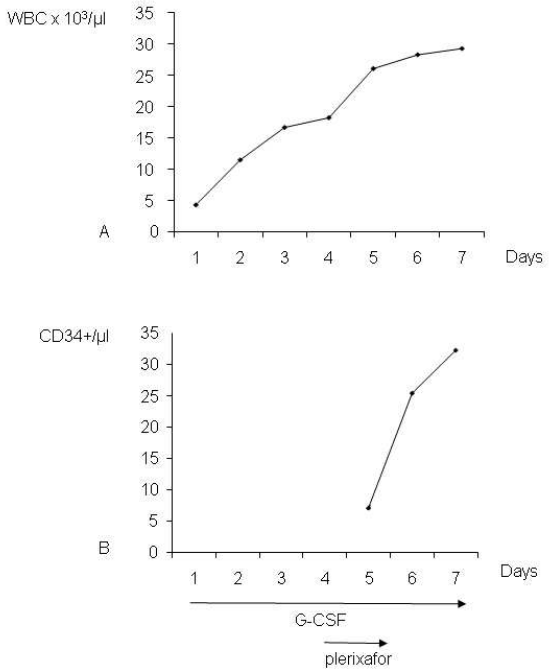

Figure 1. WBC (panel A) and CD34+ cell (panel B) counts during G-CSF and plerixafor treatment
254x190mm (96 x 96 DPI)

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