


LETTER TO THE EDITOR

Roxadustat in the treatment of a hemodialysis patient with anti-erythropoietin antibody-mediated pure red cell aplasia

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The main treatment for renal anemia is subcutaneous injection of recombinant human erythropoietin (rHuEPO) [1]. However, this may be complicated by anti-EPO antibody-mediated pure red cell aplasia (PRCA) [2]. PRCA responds poorly to immunosuppressive therapy and requires long-term reliance on blood cell transfusion [3]. Roxadustat is an oral hypoxia-inducible

factor prolyl hydroxylase inhibitor. We report one case in which roxadustat successfully improved anti-EPO antibody-mediated PRCA.

A 64-year-old man started hemodialysis in May 2018. At that time his hemoglobin was 68 g/L and ferritin was 9.6 ng/mL, so he received a blood transfusion, rHuEPO (epoetin- α , 10 000 IU; Epogen,

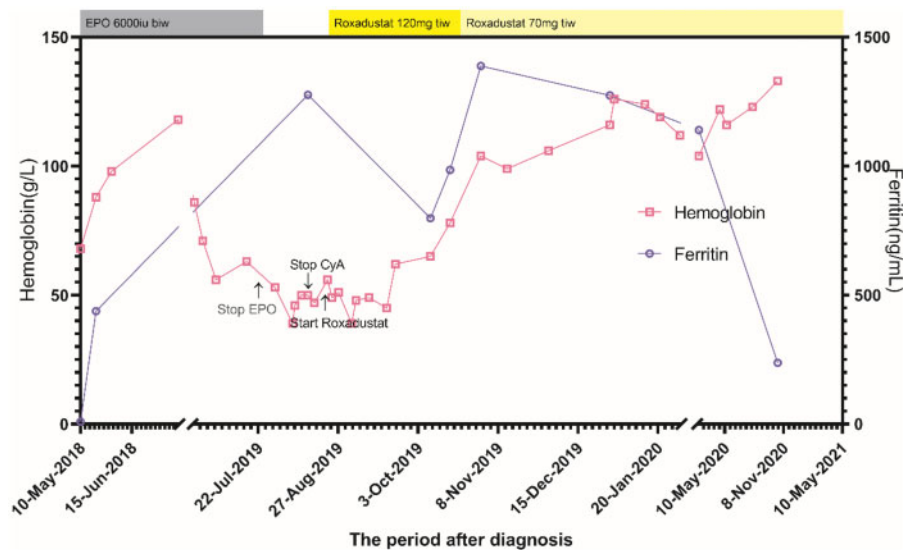


FIGURE 1: Clinical course of the patient: red squares, changes in hemoglobin; blue circles, changes in ferritin and cyclosporine A.

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3SBio, Shenyang, China) subcutaneously and iron supplementation. After 2 months, his hemoglobin level rose to 118 g/L.

In February 2019, anemia worsened despite blood transfusion and rHuEPO. His hemoglobin decreased to 40–50 g/L. Gastrointestinal bleeding was ruled out. Since his reticulocyte count was $<10\,000/\mu\text{L}$, he underwent a bone marrow aspiration biopsy in March 2019. The report showed the significant low proliferation of nucleated cells and erythroid cells. A diagnosis of PRCA was made. Cyclosporine was started and the rHuEPO dose increased, but anemia did not improve and blood transfusion was required. Circulating anti-EPO antibodies (3SBio) were detected positive and rHuEPO treatment was stopped. After excluding thymoma, lymphoma and other autoimmune-related diseases, the final diagnosis was anti-EPO antibody-mediated PRCA. His ferritin level was $>2000\text{ ng/mL}$. Cyclosporine was stopped because of poor response after 5 months. Blood transfusion was stopped and oral roxadustat (120 mg three times a week, administered after dialysis) was started 1 week later. After 1 month, his hemoglobin increased from 47 to 78 g/L. After 2 months on roxadustat, a bone marrow aspiration biopsy showed active marrow proliferation and ferritin decreased to 237 ng/mL. The dose of roxadustat was adjusted to 70 mg three times per week. His hemoglobin level rose to 104 g/L in November 2019 and to 133 g/L in October 2020 (Figure 1).

Acquired PRCA is a rare blood system disease [4]. The basic treatment for this disease is to withdraw rHuEPO immediately, then start blood transfusion, immunosuppressive therapy and kidney transplantation. In this case, roxadustat increased

hemoglobin levels and a re-examination of bone marrow aspiration biopsy showed PRCA was cured. Roxadustat simulates intracellular hypoxia to promote the production of endogenous EPO within the physiological concentration range [5]. In summary, roxadustat was effective to treat anti-EPO antibody-mediated PRCA.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest. The results presented in this paper have not been published previously in whole or part.

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