Potential long-term cost savings of hypoxia-inducible factor prolyl hydroxylase (HIF-PH) inhibitors when switching from epoetin alfa (EPO) in hemodialysis (HD) patients.

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Background: HIF-PH inhibitors, which have recently become clinically available for treating renal anemia, are attracting attention for their novel mechanisms of action. However, the cost of the starting dose of HIF-PH inhibitors is considerably higher than EPO, and it may limit the use of them. Since HIF-PH inhibitors potentially lead to the activation of numerous HIF-regulated genes,

1. we predicted that HIF-PH inhibitors would be more cost-effective when used over the long term.
2. we expected savings in drug use due to improvements in physical condition other than direct hematopoietic effects when used over the long term.

Methods: Sixty-four HD patients treated with 9000 U/week of EPO were converted to roxadustat (Rox) three times a week at a dose of 100 mg, then dose of Rox was titrated to achieve Hb level between 10 to 12 g/dL. In a similar way sixty-one HD patients treated with 9000 U/week of EPO were converted to daprodustat (Dap) at daily dose of 6 mg, then dose of Dap was titrated to achieve Hb level between 10 to 12 g/dL.

Results: The starting amounts of Rox and Dap were approx. 4,100 and 3,000 JPY / week, respectively, while EPO was approx. 2,600 JPY / week. AS shown in Figure, while spending on EPO naturally remained unchanged, but the respective drug use of Rox and Dap slowly decreased and the costs became almost equivalent to the cost of EPO in one year.

Conclusion: We have shown that administering Rox and Dap, HIF-PH inhibitors, had led to a reduction in cost in long-term use. Given the cost sparing advantages with the potential for “bonus effects” of HIF-PH inhibitors as has been reported, they appear to be an effective alternative to ESA in the long-term management of anemia in HD patients.