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P442 -The effect of dose, frequency and responsiveness on the dose conversion ratio for switching darbepoetin-alfa to PEG-epoetin beta: preserving haemoglobin control in non-haemodialysis patients with CKD

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Introduction

Mircera® (PEG-epoetin beta) is a continuous erythropoietin receptor activator (CERA) with a long half-life allowing once-monthly administration. Despite this advantage Mircera use in the UK is not widespread. Experience of converting Aranesp® to Mircera in clinical practice is limited. We studied the ability of Mircera to maintain haemoglobin (Hb) levels in non-HD CKD patients switched from Aranesp, with the aim of establishing a dose conversion ratio (DCR).

Methods

A sample of 119 non-HD CKD patients switched from Aranesp to Mircera were identified for longitudinal analysis. These displayed stable eGFR over the thirteen-month study period.

Hb, ESA dose and frequency were collected for a three-month 'Baseline' Aranesp pre-switch period (months -3 to -1). This was compared to data for a five-month Mircera 'Evaluation' period (months 6 to 10). Months 0-5 represent a Mircera dose titration period. The population mean monthly dose (MMD) at Baseline and Evaluation were used to calculate a DCR. A DCR of <1 indicates a lower Mircera dose.

(DCR = Evaluation dose / Baseline dose).

Regression analyses were performed on individuals' ESA dose. The DCR was validated using a single-month snapshot of a larger sample (n=274), comparing MMD of Aranesp to Mircera two years after conversion.

Subgroup analyses were performed for Baseline Hb (below, in or above target 100-120g/L) and the Aranesp frequency.

Results

Figure-1

Mircera effectiveness was comparable to Aranesp, with similar mean Hb levels at Baseline and Evaluation (109g/L and 107g/L). Patients with Hb in-range at Baseline remained stable at Evaluation with no significant difference in Hb levels.

The MMD of Aranesp was 73.4mcg and Mircera was 72.1mcg (n=119), producing an overall DCR of 1:1; the difference in dose was not significant.

Patients switched on the basis of a 1:1 monthly dose (DCR of 0.8–1.2) at month 0 showed no significant difference in Hb or ESA dose between treatment periods.

Mircera was administered less frequently than Aranesp (1.1 vs 2.5 injections/month). Higher Aranesp dose-frequencies related to higher Aranesp MMD and related inversely to DCR values. The proportion, MMD and DCR for Aranesp frequencies were: weekly 39%, 61mcg/mth, 0.88; fortnightly 34%, 62mcg/mth, 0.96; three weekly 3%, 62mcg/mth, 1.02; monthly 24% 35mcg/mth, 1.42.

60% of the monthly-frequency Aranesp subgroup had an Aranesp MMD of <30mcg. 30mcg is the lowest Mircera syringe strength; explaining the higher DCR in this subgroup.

Snapshot analysis (n=274) demonstrated the MMD of Aranesp was 97mcg and Mircera was 99mcg; confirming a DCR of 1:1. 40% of Aranesp or Mircera patients relied on a healthcare professional for administration; compared to 15% receiving short-acting epoetin (n=117).

Conclusions

These data demonstrate that Mircera effectively maintains Hb stability in non-HD CKD patients converted from Aranesp. A population DCR of 1:1 was observed. Patients converted at a DCR of 0.8-1.2 maintained Hb stability.

We recommend an approximate 1:1 monthly DCR when switching patients with Hb levels in target, while adjusting the Mircera dose for higher Aranesp frequency and dose.

These data will benefit clinicians wishing to use Mircera or when considering logistical on-costs or bio-equivalence in any costing-model.