Erythropoiesis-stimulating agents (ESAs): comparison between originators and biosimilars. Preliminary results of a population-based study in Italian Nephrology Units

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The introduction of erythropoiesis-stimulating agents (ESAs) in 1989 resulted in a major progress in the treatment of anemia related to chronic kidney disease (CKD). The patent expiration of epoetin alfa in 2004 started marketing of the 'biosimilars', similar but not identical to the originator products. Several studies demonstrated no significant differences in efficacy and safety between biosimilars and originator ESAs (Abraham, 2012; Hörbrand, 2013; Davis-Ajami, 2014). However in some therapeutic areas, such as nephrology, the advent of biosimilars produced skepticism by clinicians, in particular about the real effectiveness and safety of these drugs compared to the originators.
Our aim was to compare the patterns of drug use of originator and biosimilar erythropoietins and their safety profiles in patients with chronic kidney disease in a clinical setting.
We collected data of the patients referred to nephrology units of 8 Italian hospitals, with a diagnosis of CKD on conservative treatment. All subjects aged ≥ 18 years and with a first prescription of erythropoietin (both originator or biosimilar) were recruited. Information were recorded from pharmaceutical prescriptions and from medical records during the first visit and after 3, 6 and 12 months follow-up. Up to April 2015, 68 patients from 7 hospitals were registered and 94% (64) of them were eligible for the study criteria. During the first visit, 57 patients were evaluated: 32 of them (56%) received a prescription of originators (21 darbepoetin alfa, 6 epoetin beta and 5 epoetin alfa) and 25 (44%) a biosimilar erythropoietin (epoetin zeta). Male patients were 62.5% for originator and 64% for biosimilar and the average age was 76.7 and 75.8 years for originator and biosimilar, respectively. No statistically significant differences between the baseline characteristics of population in the two arms were observed, except for concomitant hypertension (53.1% vs. 84%, *P=0.030*). The average weekly dose was 65.5 UI/Kg (sd=8.09) for biosimilars, 124 UI/Kg (92.92) for epoetin alfa, 184 UI/Kg (184.12) for epoetin beta and 13.2 mcg/Kg (sd=18.78) for darbepoetin alfa. Follow-up data were available for 42 (74%) patients at 3 months and for 30 (53%) at 6 months; thirteen subjects (23%) completed the follow-up period to 12 months. During the entire observation period of 12 months no adverse events were reported.
Our preliminary results show no significant difference in the pattern of drug use of originator compared to biosimilar erythropoietins. Our data are in agreement with relevant scientific literature and highlight how nephrologists should be aware of the clinical equivalence of biosimilars, in order to improve their appropriate prescription. Besides, biosimilars may assist in controlling health care costs for patients with chronic renal disease while maintaining high-quality anemia therapy.

Abraham et al. (2012). Expert Opin Drug Saf. 11:819-40.
Hörbrand et al. (2013). Eur J Clin Pharmacol. 69:929-36.
Davis-Ajami et al. (2014). Biologics. 16:155-67.