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Biosimilars

Biyobenzerler

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Abstract

For a drug to be defined as a biosimilar, it should be fairly similar to the previously approved original or reference product. The minor variances in its inactive ingredients should not pose clinically significant differences from the reference product in terms of safety and efficacy potency. Biosimilars of infliximab and adalimumab have received reimbursements in our country. By lowering treatment costs, biosimilars may provide considerable economies for health systems that reimburse healthcare expenditures.
Keywords: Psoriasis, biosimilars, biologics

Öz

Bir ilacın biyobenzer olarak tanımlanabilmesi için önceden onaylı orijinal veya referans ürüne oldukça benzer olması, inaktif bileşenlerindeki minör farklılıkların güvenlik, etkinlik ve potens açısından referans ürünle klinik olarak anlamlı farklılıklar yaratmaması gerekir. Ülkemizde infliksimab ve adalimumabın biyobenzerleri geri ödeme almıştır. Biyobenzerler tedavi maliyetini düşürerek geri ödeme sağlayan sağlık sistemlerinde önemli bir ekonomi sağlayabilirler.
Anahtar Kelimeler: Psoriasis, biyobenzer, biyolojikler

Introduction

Although biological therapies opened new horizons in the treatment of psoriasis, their costs limit their use. In these days when patents of many biologics are beginning to expire, their biosimilars are being developed or at the stage of being developed. For a drug to be defined as a biosimilar, it should be fairly similar to the previously approved original or reference product and the minor variances in its inactive ingredients should not pose clinically significant differences from the reference product in terms of safety, efficacy and potency[1]. Compared to chemically synthesized drugs, biological drugs have much larger molecular structures that cannot be characterised easily and they are produced using the recombinant DNA technology. The process is technically difficult and involves some stages hidden by the manufacturer. The biosimilar development efforts, on the other hand, use reverse engineering methods. Any variances at the stage of production may affect the physicochemical and functional features of the biosimilar. Considering the size and complex structure of a biological molecule, it is impossible to produce a molecule identical to the original one[2,3]. For this reason, health authorities require studies showing characterization of the biosimilar's structure and its similarity with the original as well as studies showing its *in vitro* biological activity. Besides analytic and non-clinical studies, clinical studies must be conducted to demonstrate that the biosimilar has similar characteristics to the original biological drug in terms of efficacy, safety and immunogenecity[4,5]. Unlike original biological drug studies, biosimilar studies are mostly *in vitro*

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and pre-clinical studies and a large portion of the product's cost is spent during these stages. For biosimilars, there is no need to conduct clinical studies for the doses, mechanism of action and comparison with other therapies[2]. With a more limited budget, clinical studies mostly investigate the drug's efficacy and safety for certain indications and extrapolate from the other indications of the original molecule, that is, make deductions. In other words, it receives indication approval without any clinical trials comparing it one-to-one with the other indications for which the original molecule was shown to be effective.

The European Medicines Agency (EMA) and American Food and Drug Administration (FDA) have already approved the biosimilars of adalimumab [Amgevita/Soymbic and Imraldi (EMA), Amjevita (FDA) and Cyltezo (EMA and FDA)], the biosimilars of etanercept [Benepali (EMA) and Erelzi (EMA and FDA)] and the biosimilars of infliximab [Remsima/Infectra and Flixabi (EMA), Infectra, Ixifi and Renfexis (FDA)]. The biosimilars of infliximab and adalimumab received reimbursements also in our country[2].

Although post-marketing data today are promising that there is no loss of efficacy and safety when a transition is made from the original molecule to its biosimilar in psoriasis, care should be taken when switching between multiple therapies[6].

The World Health Organization emphasizes that biosimilars should have an original identity to be traceable. For monitoring side effects in particular, it requires, in addition to the biosimilar's International Non-Proprietary Name (INN), its brand name, manufacturer's name, lot number and country of production. It also expects the safety information, posology, contraindications, warnings and side effects related to the biosimilar product to be stated separately on its package insert. Therapeutic substitution means that a drug can be replaced by an equivalent drug of the physician's choice while the treatment continues. Interchangeability, on the other hand, means that drugs having the same INN can be given in place of each other at a pharmacy or hospital without a need for the physician's consent unless the physician insists on a particular one[3,7]. The way of using biosimilars may change from country to country. For example, in some countries biosimilars are the first therapeutics to prescribe while in other countries they may be preferred only if they have a medical indication[8]. In any case, the choice should be at the discretion of the physician and an automatic replacement of a product at the pharmacy without the knowledge of the physician should not be allowed.

By lowering treatment costs, biosimilars may provide considerable economies for health systems that reimburse healthcare expenditures. This may enable more patients to have access to treatment. It will be appropriate for patient health and treatment that the principles governing the use and tracking of biosimilars are set out in accordance with international standards by national healthcare authorities, these products are differentiated from each other, and the authority to substitute and interchange these drugs is left to physicians[7].

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