Comparative economic study of the use of corifollitropin alfa and daily rFSH for ovarian stimulation in older patients: Cost-minimization analysis based on the PURSUE study

Gorka Barrenetxea a, Juan Antonio García-Velasco b, Belén Aragón c, Jordi Osset c, Max Brosa d, Noemí López-Martínez d,⁎, Buenaventura Coroleu e

Abstract This study presents an economic assessment of ovarian stimulation in assisted reproductive technology procedures in Spain, comparing the use of corifollitropin alfa and various forms of recombinant follicle-stimulating hormone (rFSH) in women of advanced maternal age. A cost-minimization analysis (CMA) was performed to assess the cost per cycle of ovarian stimulation, including only direct costs associated with the stimulation phase. The CMA was based on the population characteristics, the protocol, and the results obtained from the PURSUE study, taking into account 9 days of ovarian stimulation and 300 IU rFSH/day. The primary analysis included pharmacological costs alone. Different scenarios were evaluated including various doses and possible additional days (0–5) for rFSH. For the alternative analyses, the total costs (direct pharmacological costs, costs of visits and follow-up tests, and any additional pharmacological costs) were considered in both the private and public sectors. Treatment with corifollitropin alfa resulted in a lower pharmacological cost compared with rFSH (€757.25 and €950.30, respectively), creating a saving of approximately -20%. The results of the scenario analyses showed that corifollitropin alfa reduced the pharmacological cost of ovarian stimulation in comparison with daily administration of doses ≥ 250 IU rFSH (considering same daily dose for all days), regardless of the additional days required (7–12 days) (average -€223; range -€488 to -€44). In conclusion, in addition to the efficacy shown in the PURSUE study.
study, the use of corifollitropin alfa results in a decrease in the direct costs associated with ovarian stimulation in older women in Spain. © 2018 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

KEYWORDS: corifollitropin alfa, cost-minimization analysis, ovarian stimulation, recombinant follicle-stimulating hormone

Introduction

Approximately 6% of babies in Spain are born following treatment using assisted reproduction technology (ART) (Lorente et al., 2013). In general, the use of ART has increased in recent years (Audibert and Glass, 2015; Bosser et al., 2009; Brassesco-Julio et al., 2015; FIVCAT.NET, 2013; Matorras, 2011; SEF Registry, 2014). Various factors, including an ageing population, are involved in this increase. Thus, the percentage of women aged >40 years who seek treatment with ART has increased.

In Spain, intracytoplasmatic sperm injection (ICSI) is the most common procedure for in-vitro fertilization (IVF) (Matorras, 2011; Sunyer and Almazán, 2012). Most treatments in Spain are performed in private centres (Prados et al., 2014). The Registry of the Spanish Fertility Society (Sociedad Española de Fertilidad, SEF) records most IVF (traditional) or ICSI (mixed) cycles performed in Spain (Prados et al., 2014). Based on the latest information available in the SEF Registry, 51,591 cycles using IVF/ICSI and the patient’s own oocytes were started in Spain in 2014 (SEF Registry, 2014). Of these, 31% (15,882 cycles) were performed in women aged <35 years, 47% (24,241 cycles) in women aged ≥35 and ≤39 years, and 19% (9902 cycles) in women aged ≥40 years; the age of the woman was unknown for the remaining 3% (1566 cycles) (SEF Registry, 2014). In Spain, the most commonly used drug for ovarian stimulation is recombinant follicle-stimulating hormone (rFSH) (Lorente et al., 2013).

Some gonadotropins currently available for ovarian stimulation [rFSH, urofillic tropin (uFSH), highly purified-human menopausal gonadotropin (HP-HMG)] together with a gonadotropin-releasing hormone (GnRH) antagonist require daily administration. Elonva® (corifollitropin alfa) is a sustained follicle stimulant that can be administered in ovarian stimulation (SPC Elonva, 2016). Unlike other gonadotropins, corifollitropin alfa can replace 7 days of gonadotropin treatment with a single injection. The efficacy and safety of these treatments have been assessed in three randomized, double-blind clinical trials (Boostanfar et al., 2015; Devroe et al., 2009; Obruc a et al., 2010). Corifollitropin alfa was found to have an equivalent effect to daily doses of 150 IU rFSH in the ENSURE study (Obruc a et al., 2010), and to daily doses of 200 IU in the ENGAGE study (Devroe et al., 2009). The most recent direct evidence comes from the PURSUE study (Boostanfar et al., 2015), where a single subcutaneous injection of 150 μg corifollitropin alfa was compared with the daily administration of 300 IU rFSH in a trial involving 1390 women aged between 35 and 42 years. This age group is representative of the majority of patients seeking ART treatment in developed countries (Audibert and Glass, 2015; Prados et al., 2014; SEF Registry, 2014). Treatment with corifollitropin alfa showed non-inferiority in pregnancy rates [estimated difference -3.0% (confidence interval (CI) -7.4 to 1.4)], in the mean number of oocytes recovered [estimated difference 0.5 (CI -0.2 to 1.2)] and in the rate of live births [estimated difference -2.3% (CI -6.5 to 1.9)] (Boostanfar et al., 2015).

In Spain, the total pharmaceutical cost associated with assisted reproduction is €98.7 million (2012 prices), with 81% of the cost (€80 million) associated with ovarian stimulation (Lorente et al., 2013). The Spanish National Health System (SNHS) finances less than one-third (29%) of the total cost (Lorente et al., 2013). This lack of funding prevents many couples from accessing ART treatment (Audibert and Glass, 2015; Matorras et al., 2016).

The demand for ART is expected to continue to rise. Therefore, the economic impact of the available treatments must be assessed, and ways of minimizing the cost sought (Audibert and Glass, 2015; Matorras, 2011). To our knowledge, there are no published studies in autologous oocyte cycles comparing the economic impact of using corifollitropin alfa instead of daily gonadotropins among IVF patients. Two studies have assessed the issue among egg donors (Cat alayud et al., 2017; Cruz et al., in press). In addition, the economic evaluations of rFSH available in Spain have been made in young populations (Bosch and Pellicer, 2005; Melo et al., 2010; Navarro Espig ares et al., 2006). Therefore, studies in older populations are needed.

The purpose of this work was to assess and compare the cost of using corifollitropin alfa and various forms of rFSH for ovarian stimulation in women of advanced maternal age in Spain, based on data from the PURSUE study (Boostanfar et al., 2015).

Materials and methods

A cost-minimization analysis (CMA) was undertaken using Excel 2013 (Microsoft Corp, Redmond, WA, USA) to assess the efficiency associated with corifollitropin alfa and rFSH treatments based on the PURSUE study (Boostanfar et al., 2015; López Bastida et al., 2010).

CMA should be based on interventions that have been proven to be equivalent (Husereau et al., 2013). For this reason, the current CMA was based on the PURSUE study because: it is a phase 3 randomized, double-blind, non-inferiority, multicentre trial evaluating 1390 women aged 35–42 years; it represents the most recent direct evidence comparing these treatments; the age group evaluated corresponds to the majority of women receiving ART treatment, both in Spain and in other developed countries; and the non-inferiority design enables a CMA between corifollitropin alfa and rFSH.

CMA has been used previously to compare ovarian stimulation treatments with similar clinical results (Lloyd et al., 2003; Melo et al., 2010; Revelli et al., 2006; Wex and Abou-Setta, 2013).
دریافت فوری
متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات