The Direct and Indirect Costs among U.S. Privately Insured Employees with Hypogonadism

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ABSTRACT

Introduction. While previous studies have noted that hypogonadism (HG) may pose a significant economic and quality-of-life burden, no studies have evaluated the impact of HG on healthcare utilization and costs in the United States.

Aim. Compare direct (health care) and indirect (disability leave or medical absence) costs between privately insured U.S. employees with HG and controls without HG.

Methods. The study sample included 4,269 male employees, ages 35–64, with ≥2 HG diagnoses (International Classification of Diseases, Ninth Revision, Clinical Modification: 257.2x) or ≥1 HG diagnosis and ≥1 claim for testosterone therapy, 1/1/2005–3/31/2009, identified from a large, private insurance administrative database that includes medical, prescription drug, and disability claims data. The index date was the most recent HG diagnosis that had continuous eligibility for at least 1 year before (baseline period) and 1 year after (study period). Employees with HG were matched 1:1 on age, region, salaried vs. nonsalaried employment status, and index year to controls without HG.

Main Outcome Measures. Descriptive analyses compared demographic characteristics, comorbidities, resource utilization, direct and indirect costs inflated to USD 2009. Multivariate analyses adjusting for baseline characteristics were used to estimate risk-adjusted costs.

Results. HG employees and controls had a mean age of 51 years. HG employees compared with controls had higher baseline comorbidity rates, including hyperlipidemia (50.2% vs. 25.3%), hypertension (37.7% vs. 21.1%), back/neck pain (32.0% vs. 15.7%), and human immunodeficiency virus/acquired immunodeficiency syndrome (7.1% vs. 0.3%) (all $P < 0.0001$). HG employees had higher mean study period direct ($10,914 vs. $3,823) and indirect costs ($3,204 vs. $1,450); HG-related direct costs were $832 (all $P < 0.0001$). Risk-adjusted direct ($9,291 vs. $5,248) and indirect ($2,729 vs. $1,840) costs were also higher for HG employees (all $P < 0.0001$).

Conclusions. Employees with HG had higher comorbidity rates and costs compared with controls. Given the low HG-related costs, a primary driver of costs among HG patients appears to be their comorbidity burden. **Kaltenboeck A, Foster S, Ivanova J, Diener M, Bergman R, Birnbaum H, Kinchen K, and Swindle R. The direct and indirect costs among U.S. privately insured employees with hypogonadism. J Sex Med 2012;9:2438–2447.**

Key Words. Hypogonadism; Cost of Illness; Resource Use; Testosterone Deficiency; Economic and Quality of Life Burden

Introduction

Hypogonadism (HG) is characterized by reduced production of testosterone and spermatozoa in the testes because of disordered functioning of the hypothalamus, pituitary, or testes [1]. In a prevalence study among men over the age of 45 presenting to primary care offices, 38.7% of men were hypogonadal (defined as a total testosterone <300 ng/dL) [2]. In a population-based study of

men ages 30–79, a total of 24% of men had a total testosterone level of <300 ng/dL and 5.6% had a combination of low total testosterone, low free testosterone, and symptoms [3]. Symptoms of HG often include decreased libido, erectile dysfunction, loss of body/facial hair, weakness, decreased bone density, increased body fat, fatigue, depression, and anemia [2,4–6]. HG has also been associated with comorbidities such as diabetes and metabolic syndrome as well as lean body mass loss in human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) patients [1,3,7,8]. HG may also be caused by certain conditions or treatments, including sustained opioid use [9–11].

Testosterone replacement therapy is recommended in symptomatic men without conditions that predispose to adverse treatment outcomes (e.g., prostate or breast cancer) [1]. Testosterone therapy has been used for many years, and available options include oral formulations, patches, pellets, injections, and topical gels [1,12,13]. Although testosterone is effective in treating HG symptoms, many patients with testosterone deficiency are untreated [14].

Previous studies have noted that HG may pose a significant economic and quality-of-life burden [15,16]. No studies have evaluated the impact of HG on healthcare utilization and costs in the United States. One German study found that low levels of testosterone were associated with increased utilization and costs. Men with serum testosterone levels below the 10th percentile had 19.1 more predicted outpatient visits and 19.9% higher costs than patients with levels within the 10th and 90th percentiles [16]. A systematic literature review found no cost-of-illness studies related to testosterone deficiency but presented evidence linking HG to costly conditions including depression, cardiovascular disease, and osteoporosis [17].

Aims

The objectives of this analysis were to provide current estimates of healthcare and work loss costs of working-age HG patients compared with controls among privately insured employees in the United States and to describe patient characteristics and testosterone treatment patterns typical of HG patients. Healthcare and work loss costs were estimated from a third-party payer (employer) perspective.

Methods

Data

This retrospective analysis was conducted using a deidentified administrative claims database (Ingenix Employer Solutions) of 55 large, self-insured U.S. companies covering more than 12 million beneficiaries with data available from Q1:1999 through Q1:2009. The study periods for this analysis were limited to the most recent 5 years of data from 2005 to 2009. The database included enrollment data and medical and prescription drug claims as well as disability insurance claims for a subset of employees in 27 companies. This database was selected for its inclusion of both healthcare insurance claims (medical and prescription drug) and disability insurance claims, allowing the estimation of direct (healthcare) and indirect (work loss) costs incurred by employed patients with HG. The inclusion of disability cost data allowed us to avoid downward biased estimates of the full costs of HG, as absence from work is an important component of cost of illness.

The enrollment data included monthly eligibility, demographic information, and wage information. The medical claims data had dates of service, up to two diagnoses from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), procedures performed based on Current Procedural Terminology (CPT), and payments made to providers. Prescription drug claims included prescription fill dates, National Drug Codes (NDC), days of supply, and payments. Disability insurance claims include dates of disability, actual employer payments to employees for disability days lost to work, and plan-specific waiting periods before the start of disability coverage. Institutional Review Board (IRB) approval was not required or sought as these data were deidentified.

Sample Selection

Because this study aimed to evaluate direct costs as well as work loss costs, the core (prevalent) HG study sample included male employees from companies providing disability insurance claims data with ≥2 medical claims on different dates with an HG diagnosis (ICD-9-CM: 257.2x) or ≥1 medical claim for a HG diagnosis and 1 medical or pharmacy claim for testosterone from January 1, 2005 to March 31, 2009. The time frame was chosen to reflect the current state of treatment and costs in this population. Employees were required to have 1 year of continuous eligibility prior to and following any date of HG diagnosis; the most recent