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Original Article

Prescription Pattern of Corticosteroids in Zanjan, Iran

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Abstract

The aim of the present study was to provide a clear picture of the prescribing pattern of corticosteroids in Zanjan, Iran. A retrospective and cross-sectional study was conducted to describe the pattern of corticosteroids prescription at Beheshti pharmacy (Zanjan, Iran) over a period of six months between March 21 and September 22, 2013. Descriptive analyses were stratified by gender, age, type of prescribed corticosteroid and rout of administration. Separate analyses were performed to determine the most common indications leading to the prescription of injection dexamethasone. Corticosteroids were prescribed mostly (74.56%) as injection. The overall corticosteroid prescribing rate was 25.73%; 55.86%, and 44.14% in females and males, respectively. Corticosteroids were prescribed frequently for adults in both males and females. In young and middle-aged women, corticosteroids were prescribed substantially higher than in men of the same age. Dexamethasone as the most prescribed corticosteroid in both male and females was mostly prescribed for respiratory bacterial infections. The current study grows the knowledge about the use of corticosteroids in Iran and suggests more attempts to reduce corticosteroids prescription. Educational interventions to promote hygiene in the society could improve rational use of corticosteroids.

Keywords: Age, Ambulatory care, Dexamethasone, Gender, Prescribing pattern, Respiratory infection

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1. Introduction

Corticosteroids are among the most widely used drugs in the world. As a therapeutic group corticosteroids are highly useful for the relief of symptoms in many inflammatory and immune diseases and other conditions [1-5].

High prescription and overuse of corticosteroids have been reported during recent years in Iran [6, 7]. In general lack of knowledge, poor availability of proper alternative medicines and weak supervision of regulatory bodies have been proposed to high corticosteroids prescription in Iran [8].

Nevertheless, the reasons for high prescription of corticosteroids have not studied yet. In a quantitative study performed in Iran, the reasons for irrational use of injection medicines were investigated but corticosteroids have not been studied [9]. Moreover, existing reports of corticosteroids use in Iran are usually based on wholesale statistics. Therefore, the objectives of this study was to firstly investigate the prescribing pattern of corticosteroids according to age, gender, type of prescribed corticosteroid, and rout of administration to provide a clear picture of corticosteroids prescription in Zanjan, Iran. Secondly, we determined the most common indications leading to the prescription of injectable dexamethasone.

2. Methods

A retrospective and descriptive study was conducted to describe the pattern of corticosteroids prescription in Zanjan, Iran. The analyses were conducted in 3123 collected prescriptions from the Beheshti pharmacy over a period of 6 month between March 21 and September 22 of 2013. Beheshti pharmacy is the main public pharmacy in Zanjan, affiliated with Zanjan University of Medical Sciences. Percentage of prescriptions with at least one corticosteroid was calculated by dividing the number of prescriptions with corticosteroids to the total number of prescriptions x 100.

Prevalence rate of corticosteroid prescription was stratified by gender, age, type of prescribed corticosteroid and rout of administration.

The most common underlying indications leading to the prescription of injection dexamethasone by reviewing all drugs on each prescription were determined. Drugs were classified according to the anatomical therapeutic chemical classification (ATC) system recommended by world health organization (WHO) [10].

3. Results and Discussion

The most common rout of administration for corticosteroids was injection (74.56%), while only a small proportion of patients received oral (9.15%) and 17.74% of patients

Table 1. Age and gender specific prescriptions with corticosteroid at the main public pharmacy in Zanjan, Iran, March-September 2013.

	0-9 years	10-19 years	20-29 years	30-39 years	40-49 years	50-59 years	60-69 years	≥ 70 years	All age groups
Prescriptions with corticosteroid*									
Male	41 (11.45)	24 (6.7)	59 (16.48)	78 (21.78)	37 (10.33)	44 (12.29)	31 (8.65)	44 (12.29)	358 (44.14)
Female	25 (5.51)	29 (6.4)	89 (19.64)	78 (17.21)	107 (23.62)	53 (11.69)	42 (9.27)	30 (6.62)	453 (55.86)
Total	66 (8.13)	53 (6.53)	148 (18.24)	156 (19.23)	144 (17.75)	97 (11.96)	73 (9.00)	74 (9.12)	811

*Data are presented as number of prescriptions with corticosteroid (%)

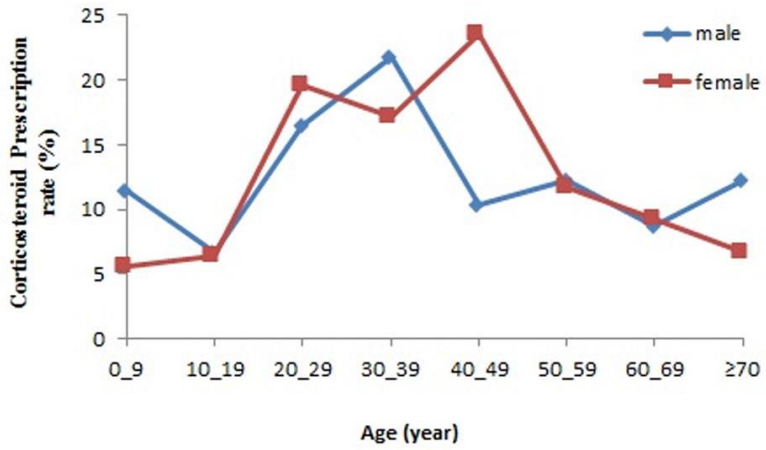

Figure 1. Corticosteroid prescription stratified by age and gender at the main public pharmacy in Zanjan, Iran, March-September 2013.

received corticosteroids as topical. Prevalence of corticosteroid prescription stratified by age and gender are presented in table 1. The prevalence of prescriptions with corticosteroid for all age groups was 25.73% in total; 55.86% for women and 44.14% for men. Corticosteroids were prescribed more in 20-59 years adults both in males and females. Corticosteroid prescribing rate in 10-69 years women was substantially higher than in men of the same age while for aged <10 years and the oldest individuals (≥70 years), the results were opposite (Figure 1). Corticosteroid prescribing rates for the 811 practices in the study varied 3.25 and 4.28-fold in males and females, respectively.

Dexamethasone was the most prescribed corticosteroid (Figure 2) by 42% of the total prescribed corticosteroids (18.69% in males and 21.25% in females) and was mostly prescribed by general practitioners (96.75%). Respiratory bacterial infection was the most frequently recorded indication for injection dexamethasone (46.55%), followed by other respiratory disease (16.9%), musculoskeletal disease (14.49%), and nausea and vomiting (8.3%) (Table 2)

As far as we are aware, this is the first report on the prevalence of corticosteroid prescribing according to age and gender in

Table 2. The most indications for injection dexamethasone, at the main public pharmacy in Zanjan, Iran, March-September 2013.

Indication	Number of patients (%)
Acute respiratory infections	131 (46.55)
Other respiratory system disease	49 (16.9)
Musculoskeletal disease	38 (14.49)
Others	61 (24.78)

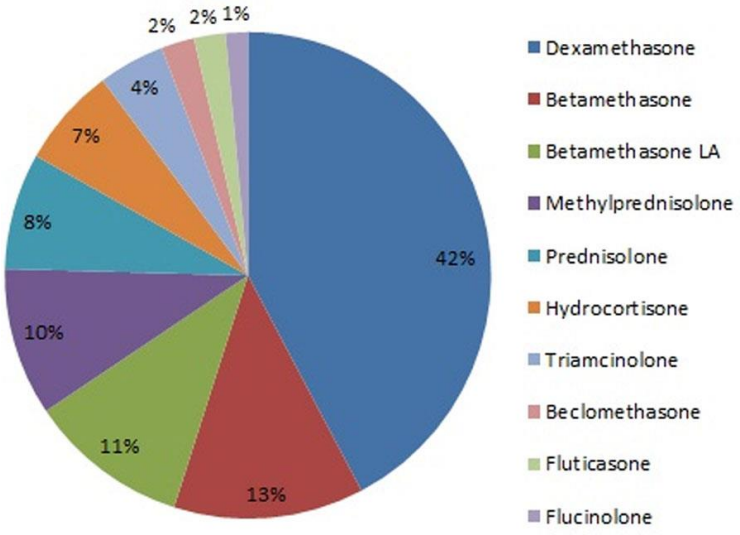

Figure 2. The most prescribed corticosteroids at the main public pharmacy in Zanjan, Iran, March-September 2013.

ambulatory care setting in Iran. Generally, our data showed that corticosteroids were prescribed in females more than males. Traditional masculine behavior among men [11] could partially explain lower use of corticosteroids by them. In the current study, women and men constituted 51.8% and 41.9% of the total population, respectively.

In the current study, injectable dexamethasone was mostly prescribed for the treatment of respiratory bacterial infections especially by the general practitioners. Respiratory infections are common illness in outpatients [12-14] and it has been shown that single dose of IM dexamethasone in combination with antibiotic provides symptomatic relief of pain and faster recovery, mainly in patients with severe sore throat and sinusitis [15,16]. Corticosteroids suppress transcription of activated inflammatory mediators in human airway endothelial cells and ultimately alleviate symptoms of pain [17]. Due to prompt relief of the pain by corticosteroid injection, the days missed from work will be reduced. This could contribute to the high corticosteroid prescription by adults in our study. An IM injection of corticosteroid, causes pain and necessitates more nursing cares. In a clinical trial, similar levels of pain relief in acute exudative pharyngitis has been reported for oral and IM corticosteroid use [18].

It is important to note that the obtained results can be attributed to the larger proportion of patients with respiratory bacterial infections. Therefore, educational interventions to promote hygiene in the society could improve the health status of the members of the community that in turn improve medicines prescription. Consequently, injectable medicine prescribing, a core prescribing indicator recommended by

WHO, would be reduced [19]. The government has a specific role in this area. The present data was restricted only to one facility in Zanjan and we believe the greater population should be made of prescribing data, including prescribing records from other parts of the country are necessary to determine the most indications for injection dexamethasone in the country.

4. Conclusion

In conclusion, our data confirmed that the high use of injectable corticosteroids especially in adults could be contributed to the use of dexamethasone in patients with respiratory bacterial infections that was prescribed for alleviation of pain. Reducing the prevalence of respiratory infections would be one of the major challenges for health care system in primary care setting in Iran. Therefore, to improve rational corticosteroid use more attention should be considered in general population as well as health professionals.

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