Original Article

Prescribing Pattern of Corticosteroids by Medical Specialists in West Azerbaijan, Iran

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Abstract

Background & Aims: Inappropriate prescribing of drugs such as corticosteroids is known all over the world y especially in developing countries as a major health care system problem. There are few studies about the prescription pattern of corticosteroid across our country and this subject has not been studied in West Azerbaijan province. The aim of this study is to evaluate the pattern of prescribing corticosteroids among outpatients by specialist physicians in West Azerbaijan.

Materials & Methods: In this retrospective cross-sectional descriptive study, data were collected from two million prescriptions of ear, nose and throat (ENT), internal medicine, general surgery, obstetrics and gynecology,, pediatrics cardiology, neurology, infectious disease, orthopedic and urology specialists using prescription-processing software "NoskhehPardaz"(Rx Analyzer). Microsoft Excel software (2016) was applied to prepare the appropriate graphs.

Results: Obstetrics and gynecology specialists, pediatrics and internists had the most percentage of prescriptions (23.65%,20.21% and 15.67% respectively). The ENT specialists, orthopedists and internists were more likely to prescribed corticosteroids than others. All, physicians with the exception of cardiologists and gynecologists, prescribed injectable corticosteroids more than other forms of this drug. The injectable corticosteroid was the highest and inhaled corticosteroid was the lowest prescribed drug.

Conclusion: The prescribing practices in this study are not satisfactory. Our data confirmed that ENT, orthopedic and internal medicine specialists are more likely to prescribe corticosteroids than others.. Injectable corticosteroids were the most commonly prescribed drug.

Keywords: Rational prescribing, Corticosteroids, specialist physicians

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Introduction

Appropriate drug prescription has a basic effect on global reduction in morbidity and mortality with its consequent medical, social and economic benefits (1). The World Health Organization (WHO) defines it as: 'The rational use of medicines requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time and at the lowest cost to them and their community (2). Inappropriate prescribing is known all over the world as a major health care system problem (3). This is more so in developing countries where health budgets are small and 30 – 40% of the total health budget is spent on drugs(1, 4). Drug prescription is the main step of treatment and prevention process in health care system.

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It may be regarded as two-sided swords and therefore the appropriate use of drugs is very important issue, which must be paid more attention to evaluate the current behavior of prescribers and consumers, and it is critical to plan new educational intervention for changing their irrational attitude(5). Many other developed and especially developing countries have Rational Use of Drugs (RUD) Committees to achieve this goal. For example, in Indonesia the Directorate General of Drug and Food Control is responsible for drugs programs and policies and provides EDL and monitor the use of drugs in community. In Iran, National Committee of Rational Use of Drug (NCRUD) was established by Food and Drug Deputy, Ministry of Health and Medical Education in 1996. NCRUD collects the prescriptions data from all around the country and analyze it to evaluate the trend of prescriptions' indicators and the pattern of drug use in the country(4).

Corticosteroids are among the most commonly 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(6). High prescription and overuse of corticosteroids have been reported during recent years in Iran(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). But there are very limited number of studies about the prescription pattern of corticosteroid across the country and this subject has not been studied in West Azerbaijan province. Therefore, the aim of this study is to evaluate corticosteroids prescription patterns among outpatients by ENT, internal medicine, general surgery, obstetrics and gynecology, pediatric, cardiology, neurology, infectious, orthopedic and urology specialists of West Azerbaijan Province.

Method

In this retrospective cross-sectional descriptive study, data were collected from two million ENT, internal medicine, general surgery, obstetrics and gynecology, pediatrics, cardiology, neurology, infectious disease, orthopedic and urology specialists of all cities of west Azerbaijan province by convenient sampling using prescription-processing software "NoskhehPardaz"(Rx Analyzer) from 21 March 2015 to 20 March 2018. This software is a user-friendly computer software program of Prescription Analysis Program which was tested for its validity and reliability in a pilot study in Mashhad University of Medical Sciences. Currently the software is in use by medical sciences universities and health services all over the country. Counters prescribed during 2015 to 2018 by specialist physicians menthioned above, insurance prescriptions for outpatients were inclusion criteria and prescriptions for inpatients, prescriptions of general physicians and specialists except ENT, internal medicine, general surgery, obstetrics and gynecology, pediatric pediatrics, cardiology, neurology, infectious disease, orthopedic and urology were exclusion criteria. Then, these medical prescriptions were evaluated in terms of the percentage of corticosteroid recipients and corticosteroid percentage of all prescriptive subjects as well as the form of the drug in the prescriptions of the physicians. The prescriptions data were presented as frequency percentage, and analyzed by using professional computer software program (Rx Analyzer). It has capability of analyzing the prescriptions according to the specific prescribing indicators. Microsoft Excel software was applied to prepare appropriate graphs.

Results

Nearly two million (1923912) prescriptions of ten group of specialist physicians were analyzed in this study from 2015 to 2018. Table 1 shows the total

number of reviewed prescriptions by specialists, percentage of patients receiving corticosteroids and percentage of corticosteroids per encounter in West Azarbayjan. Table 1 shows that Obstetrics and gynecology specialists had the most percentage of prescriptions (23.65%), pediatrics and internal medicine specialists after those (20.21% and 15.67%, respectively).

Table 1. Total number of prescriptions, percentage of patients receiving corticosteroids and percentage of corticosteroids per encounter

Speciality	Number of prescriptions(%)	% of corticosteroid per prescription	prescribed corticosteroids	The most prescribed corticosteroids
ENT	112973(5.90)	21.73	MPN(inject),PN(oral),BMZ(local),FTZ(inhaler)	MPN
Internal medicine	300122(15.67)	9.29	MPN(inject),PN(oral),TCL(local), FTZ(inhaler)	MPN
General surgery	116408(6.08)	7.67	MPN(inject),PN(oral),TCL(local) FTZ(inhaler)	MPN
Gynecologist	452842(23.65)	3.82	BMZ(inject),DEX(oral),TCL(local),FTZ(inhaler)	BMZ
Pediatrics	386922(20.21)	8.08	HCZ(inject),PN(oral),HCZ(local),FTZ(inhaler)	HCZ
Cardiologist	90532(4.72)	2.05	MPN(inject),PN(oral),TCL(local), FTZ(inhaler)	MPN
Neurologist	201594(10.53)	5.87	DEX(inject),PN(oral),BMZ(local),FTZ(inhaler)	DEX
Infectious disease	73111(3.82)	11.28	TCL(inject),PN(oral),TCL(local),FTZ(inhaler)	TCL
Orthopedist	104376(5.45)	17.61	MPN(inject),PN(oral), TCL(local),FTZ(inhaler)	MPN
Urologist	76032(3.97)	5.99	MPN(inject),PN(oral),HCZ(local), FTZ(inhaler)	MPN

ENT: Ear, Nose and Throat,MPN: Methylprednisolone,PN:Prednisolone,BMZ: Betamethasone, FTZ:Fluticasone, TCL: Triamcinolone, DEX: Dexamethasone,HCZ: Hydrocortisone,

According to figure all physicians, with the exception of cardiologists and gynecologists, prescribed injectable corticosteroids more than other forms of the drug. However, injectable corticosteroid was highest and inhaled corticosteroid was the lowest drug prescribed.

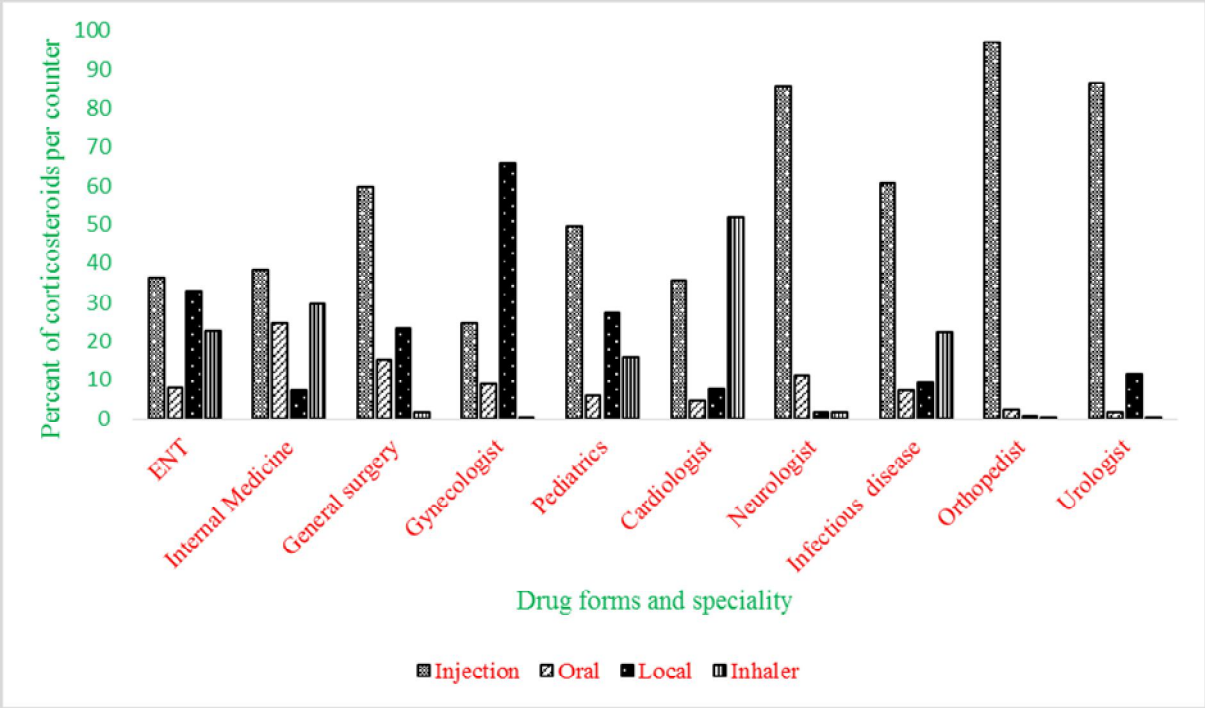

Fig 1. The pattern of administration of corticosteroid according to the specialty and form of the drug

Discussion

A total of 1914912 prescriptions were studied in this survey. More than half of the prescriptions (1139886 prescriptions; 59.53%) were issued by gynecologists, pediatrics and internists. The lowest number of prescriptions was written by cardiologists (4.72%), urologists (3.82%) and Infectious disease specialists (3.97%) respectively. This is mostly according to the results of Sadeghian et al. study(9)but is inconsistent with the results of Thadanki M. et al. study(10).

The ENT specialists, orthopedists and internists prescribed more corticosteroids so that 21.73%, of their prescriptions have at least one corticosteroid which was higher than the national average (21.25%)(11).. Sumalatha et al.in India(12) report that ENT specialists used corticosteroid for only 1% of patients. In the Gong's et al. study in China overall prescription of corticosteroids was 6%(13). Corticosteroids prescription of other specialists was lower than national average, but was higher than other physicians in other countries. Indian orthopedists prescribed 8%(14) and 6.6% (15) corticosteroids for patients that was lower than present study results(17.61%). In studies by Karimi et al.(11), and Sadeghian et al. (9)orthopedists were the top prescribers of corticosteroids but ENT specialists and internists were in the next place (except neurosurgeons, general physicians and dentists who were not in our study).

The results of Bastani et al.(16) study revealed that the growth of corticosteroid prescription has doubled for in a period of ten years (12.68% in 2003 in comparison with 23% in 2013). The results of present and other studies (2, 4, 7, 13)show that corticosteroids are prescribed higher than other countries in Iran. Corticosteroids are widely prescribed in treatment of various disease conditions such as asthma, skin diseases, and rheumatoid arthritis(17). Prolonged corticosteroids using have wide range of adverse effect like sleep disturbances, lipodystrophy, adrenal suppression, metabolic syndrome, weight gain, and hypertension, vertebral fractures, psychiatric disorders(18). Many studies have been done to describe

the causes of physicians' desire for corticosteroid administration. Physicians are compelled to prescribe corticosteroids due to their palliative effects and can attract the patients to their clinics in subsequent visits(19) . Scientific knowledge, patient-physician relationship, availability of suitable medicine alternatives and function of inspectoral organizations are other reasons for irrational prescribing of this drug(8).

The injectable form of corticosteroids was the most prescribed form by all specialists. Results of other studies are similar to these findings(7, 11). Orthopedists prescribed 96.85% of corticosteroids in the form of ampule. In Rajarathna, et al. study this was 8.6%(15). However, such a figure is far from the WHO standards (10%), which could indicate of a major deficiency of our health system. There is a misbelief that injections are the strongest and the most rapid way to gain recovery. Interestingly, many physicians have the same belief. In fact, physicians prescribe injectable drugs more because they believe that patients are more satisfied with injectable forms of drugs. In Iran, more than 50% of adverse drug reactions registered by the office of ADR are from injectable drugs(20). The most prescribed corticosteroid form was injectable form except in cardiology, internal medicine (inhaler) and gynecology (local) groups. Methylprednisolone was the most prescribed corticosteroids but in studies by Thadanki et al.(10), Ankit and Bharat (21) as well as studies in Iran(2, 4, 7, 22) , dexamethsone was the most prescribed corticosteroids.

The major limitations of this study are mentioned below: a) It was limited to only ten group of specialists and all of the specialists were not compared together. b) Demographic data of physicians were not available and comparison of specialists based on age, sex, work experience and service location was not possible.

In conclusion, the prescribing practices in this study are not satisfactory. The findings of this study confirmed the highest use of corticosteroids by many specialist physicians specially by ENT, orthopedic and internal medicine specialists.. Injectable corticosteroids were the most form of prescribed drug. We purpose that development of evidence-based clinical guidelines, continuing education, unbiased drug information, consumer education are the main issues which should be noted to promote proper prescription pattern and rational drug use in Iran.

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Conflict of Interest

The Authors declare that they have no conflict of interests.

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