

Full Length Research Paper

Analysis on 99 cases of adverse reactions of Chinese patent drugs

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This research is carried out to know more about the adverse reactions of Chinese patent drugs through the analysis on them, the reasons are also discussed. The ADR data sheet is established by combining Excel and manual selection, to make statistics and analysis on the original data of 99 patients. There are many organ systems and clinical manifestations involved in the adverse reactions of Chinese patent drugs, in which, the incidence of allergic reactions is high, especially after use of Chinese patent drug injection. Chinese patent drugs should be used cautiously in application, proper drug forms should be selected, and medication should be reasonable, to reduce the incidence of adverse reactions.

Key words: Chinese patent drug, adverse reaction.

INTRODUCTION

In recent years, Chinese patent drugs are welcomed by people, especially the drugs clearing heat, relieving exterior syndrome, relieving cough and reducing sputum and cardiovascular drugs. However, a misunderstanding of Chinese patent drugs occurs, i.e. most people think that the application of traditional Chinese medicine has a long history, natural origination, good health care effects, efficacy of treating symptoms and root causes, and no toxic and side effects. However, along with the development of pharmaceutical industry and deepening of study, there are more and more reports on the adverse reactions of Chinese patent drugs, so this paper makes the analysis on the adverse reactions of Chinese patent drugs, to provide a guideline to the doctors and patients for reasonable medication. Adverse reaction of traditional Chinese medicine means the unexpected adverse reactions irrelevant to the medication purposes occurring at the normal use and dosage of qualified drugs, including the adverse reactions caused by Chinese

patent drugs and decoctions. It includes side reaction, toxic reaction, side effects, after effects, secondary reactions, allergic reactions, etc (Yang, 2008).

METHODOLOGY

Ninety-nine reports on ADR of Chinese patent drugs in the hospital in 2009-2010 are selected according to ADR casual relationship in the National ADR Monitoring Center to make effective judgment and analysis. Analysis is made on gender, age, medication, route of administration, primary diseases, ADR manifestation and prognosis of the patients in the 99 ADR reports.

RESULTS

The result is analyzed by applying software SPSS 13.0, and measurement data is indicated by $x \pm s$. Data comparison among groups adopts the method of variance analysis. And comparison between two groups adopts the method of the continuous correction t test, and measurement data is tested by X^2 . In the 99 patients, male: 35 cases (35.35%), female: 65 cases (65.65%);

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Table 1. Proportion of patient ages from the cases.

Age group (years)	Number of cases	Proportion (%)
<10	27	27.27
10~19	3	3.3
20~29	7	7.7
30~39	2	2.2
40~49	6	6.6
50~60	16	16.16
>60	38	39.39
Total	99	100

Table 2. The result of ADR history from the cases.

ADR history	Number of cases	Proportion (%)
Yes	17	17.17
No	60	60.6
Unknown	23	23.23

age 0-87, <10, 27 cases (27.27%), >60: 39 cases (39.39%). There is a high rate of adverse reaction, which is specified in Table 1.

Primary diseases

The primary diseases are mainly heart disease, hypertension, cerebral infarction, influenza, cough and upper respiratory tract infection. The result of ADR history is shown in Table 2.

The results indicate that the high morbidity of primary diseases and high frequency of using medicines will increase the probability of adverse reaction. And the effect of ADR medicine history to the occurrence of adverse reaction is that the patients with history of allergy will mainly have adverse reaction, while the incidence of adverse reaction of the patients without history of allergy is below the patients who have history of allergy.

Medication

In the 99 patients with ADR, single drug use has 42 cases, accounting for 42.42%; combined drug use has 35 cases, accounting for 35.35%, in which combined Chinese and Western drug use has 25 cases, accounting for 25.25%. The drugs are administrated through oral taking, intravenous dripping and external use. As a result, drug combination will increase the probability of adverse reaction, and the intravenous drop has a higher rate of adverse reaction among the three routes of

administration.

Drug forms

The results of the analysis on the forms of the drugs causing ADR are shown in Table 3. Injection is the easiest way to cause adverse reaction. Drug category and variety is shown in Table 4.

ADR outcomes and the influence on primary diseases

In the 99 patients, the clinical symptoms of 68 cases (68.68%) spontaneously remit after stopping drug intake; 30 cases (30.3%) are cured after receiving symptomatic treatment, but 1 case has sequela, which has insignificant influence on the primary diseases.

DISCUSSION

Patient's age, gender and ADR

The survey data show that the patients of different ages have different drug sensitivity and tolerance, as well as irritability, so the probability and severity of ADR are significantly different. As age increases, the body functions decline, the ability of drug metabolism reduces, and body immunity also declines (Yang, 2008; Zhou et al., 2002). So the elderly has higher probability of ADR.

Patient's primary diseases and ADR history

Most of the primary diseases have longer duration and require a large drug dose, so many drugs accumulates in the body, which will affect liver and kidney function, the metabolism rate will slow down and bring more adverse effects (Liu, 2010; Jadoul et al., 1993). In addition, owing to long time medicine taking, drug resistance is generated. And the dosage will be increased which will cause adverse reaction. ADR history and the adverse reaction of medicine are closely related. In general, the patients who have history of allergy will have adverse reaction. And this is mainly relevant to the immune system of patients.

Relationship between ADR and drug factors

Drug form

Traditional Chinese medicine injection is a new form

Table 3. The results of the analysis on the forms of the drugs causing ADR.

Drug form	Number of the variety	ADR/case	Proportion (%)
Injection	3	54	54.54
Oral solvent	2	23	23.23
Tablet	1	14	14.14
Pill	2	8	8.8

Table 4. Category and variety of the drugs causing ADR.

No.	Drug name	Number of cases	Proportion	Manifestations of ADR
1	Compound salvia miltiorrhiza injection	12	12.12	Palpitation, hyperpyrexia, allergic shock, severe headache, hemorrhage and drug rash.
2	Qingkailing injection	16	16.16	Rash, allergic asthma, nausea, headache and acute renal failure.
3	Safflower injection	26	26.26	Drug rash, shock, chest tightness and renal insufficiency
4	Huoxiangzhengqi liquid	18	18.18	Chill, weakness, gastric colic, edema of face and erythema.
5	Xiaoshuantongmai particle	5	5.5	Sour regurgitation, nausea, constipation, gastrointestinal reaction and hemorrhage.
6	Gentongping tablet	14	14.14	Gastrointestinal reaction, headache and fever.
7	Qingfei18wei pill	3	3.3	Headache, somnolence, nausea and fever.
8	Suxiaojiuxin pill	5	5.5	Headache, diarrhea and gastrointestinal discomfort.

originated in China, and compared with traditional Chinese patent drug form, it has the characteristics of high bioavailability, fast acting and so on, and it can better play the role of traditional Chinese medicine in the treatment of acute or severe diseases (Han and Gao, 2007). In all adverse reactions in traditional Chinese medicine, allergic shock caused by traditional Chinese medicine injection is in the first place (Zhu and Shen, 2004).

As for the reasons, firstly, traditional Chinese medicine injection is mostly the extract of Chinese herbal medicine, the composition is more complex, the contained macromolecular substances, such as protein, polysaccharide, tannins and so on, are difficult to completely remove, color deepening, turbidity, precipitation and other phenomena will occur after being placed for certain time, and these macromolecular substances are antigens and hapten allergens, easy to stimulate the body to produce antibodies or sensitized lymphocytes, so as to cause pathological immune response (Ye et al., 2004). Secondly, in the preparation of traditional Chinese medicine injection, mixing with impurities, low quality standards, backward production technology, lack of revaluation mechanism after marketing and improper

usage are also important reasons for high incidence of ADR caused by the injection. Thirdly, traditional Chinese medicine injection should choose appropriate solvent, otherwise after mixed with solvent, the drug will cause the changes of liquid pH, color, precipitation and so on, which will affect the efficacy and even increase the toxicity, so as to cause the adverse reactions, for example, ShuangHuangLian injection should not be combined with sylvite-containing compound sodium chloride injection and compound glucose injection, otherwise it will increase insoluble particles in injection and reduce the content of active ingredients in the injection (Zhuang et al., 2009; Che et al., 2010). Fourthly, the injection directly enters the circulation system without processing in digestive tract and the body's defense system, which greatly increases the probability of allergic reactions.

Drug compatibility

In traditional Chinese medicine, there is a saying of eighteen incompatibilities and nineteen counteractions, correct compatibility has double efficacy, and currently, the commonly used is compatibility of Chinese medicine

Table 5. Involving organs and clinical manifestations from the cases causing ADR.

Involving organ or system	Number of cases	Proportion (%)	Main diagnosis and manifestations
Skin and accessory	52	52.52	Skin rash, exudative erythema, pruritus, herpes zoster and anaphylactoid reaction
Nervous system	15	15.15	Headache, dizziness, insomnia, hand numbness and coma
Digestive system	8	8.8	Inappetence, nausea, vomiting, abdominal pain, diarrhea and gastrointestinal reaction
Respiratory system	4	4.4	Suffocation, chest tightness and shortness of breath
Circulation system	7	7.7	Hypertension, palpitation and bradycardia
Urinary system	5	5.5	Oliguria, hematuria, proteinuria and electrolyte imbalance
Others	8	8.8	Fever, chill, sweating, tinnitus and cold extremities

and western medicine, for example, the compatibility of bezoar antidotal tablet and acetylspiramycin has more rapid efficacy (Georgianne et al., 2002; Sun et al., 2007), on the contrary, unreasonable compatibility will adversely affect illness, such as the combination of digestant pill and macrolide antibiotics, because antibiotics inhibit digestive enzymes, thereby reducing the efficacy of digestion promotion of Chinese patent drugs (Zhang, 2009). Some compatibility will increase ADR, such as the combination of liquorice and its preparation with aspirin, which will significantly increase gastrointestinal reaction, gastrointestinal hemorrhage and ulcer and other symptoms (Wen, 2004).

ADR involving organs and clinical manifestations

It can be seen from the results in Table 5 that about 50% of ADR involve skin and accessories, which is same as the report of Veyrac and Jolliet (2006). Because these adverse reactions are easy to find, it requires medical staff to give a high degree of attention.

ADR and other factors

As for drug concentration, if the drug concentration is too high, it may affect its dissolution and absorption, so as to cause adverse reactions and affect the efficacy. Dripping rate should be regulated according to the nature of drug and the treatment need, and for weak and sensitive patients, we should pay particular attention to its dripping rate, to prevent high dripping rate from causing patient discomfort and leading to disease progression. As for drug dose, some patients mistakenly think that traditional Chinese medicine has no side effects and the increase of dose can cure the disease quickly, however, this incorrect understanding results in increased probability of

ADR.

In summary, the adverse reactions of Chinese patent drugs cannot be ignored. Firstly, medical care staff should continuously improve the quality of their business and be familiar with drug interactions and compatibility, as well as drug nature, usage and dosage, especially adverse drug reactions. Secondly, to strengthen the studies on pharmacology, toxicology, pharmacodynamics, drug interactions and other aspects of Chinese herb preparations. Thirdly, relevant departments should strengthen the management and pay attention to the re-evaluation after marketing of Chinese patent drugs (Judy and Yue, 2009). Finally, patients also need to fully understand the knowledge of Chinese patent drugs and lay a good foundation for safe, effective, scientific and rational drug use.

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