

Thinking of Toxicology in Chinese Medicine

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Abstract. This paper summarizes the research achievements of predecessors in the field of toxicology of Chinese medicine, discusses the new understanding of the toxicity of Chinese medicine from the aspects of the toxicity of Chinese medicine, the application of the toxicity of Chinese medicine and the trend of the development of toxicology of Chinese medicine, try to redefine the toxicity of Chinese medicine, And the future development of Chinese medicine toxicology recommendations.

Introduction

Chinese medicine toxicology is in the traditional theory of Chinese medicine under the guidance of the system, by the Chinese medicine, toxicology and toxicokinetics and other interdisciplinary formation of disciplines. Many studies indicates the toxicity of drugs It is also one of the important sources of drug effects.

In this paper, the new knowledge of the toxicity of Chinese medicine was discussed from the aspects of the toxicity of Chinese medicine, the application of the toxicity of Chinese medicine and the trend of the development of toxicology of Chinese medicine, and put forward some suggestions on the future development of Chinese medicine toxicology.

The Aspects of the Toxicity of Chinese Medicine

Through the analysis of Chinese medicine books and the analysis of the adverse reactions of Chinese medicine in recent years, it is concluded that the toxicity of Chinese medicine comes from the following aspects.

Inappropriate Time

Modern pharmacological studies have shown that the efficacy, toxicity, pharmacokinetic changes of drugs have a certain relationship with the rhythm of time. By following a certain rhythm of the law, you can maximize the role of drugs in the body, to minimize the toxicity of drugs. Therefore, the control of drug administration time is an important way to reduce drug toxicity[1]. It is shown in table 1.

Table 1. The relationship between the toxicity of Chinese medicine and the time of administration

drug	Suitable administration time	Inappropriate time	toxicity
formula for diuresis and diffusing dampness formula for diuresis and diffusing dampness	Morning fasting medication	After a meal or before going to sleep	Affect digestion or nighttime sleep
Stomach irritation Stomach irritation	Should be taken after meals	Taking empty stomach	Affect digestive function
Tranquillizing formula tranquillizing formula	Should take 30 minutes to 1 hour before going to bed	morning	Mental fatigue, fatigue
Slow down the agent	Should be taken at bedtime, so that the next morning bowel movements	Morning or daytime	Affect nighttime sleep

Inappropriate Dose

Chinese medicine is also a high dose of Chinese medicine toxic effects of one of the important reasons[2]. In general, the dosage of Chinese medicine should be based on the patient's condition, the quality of herbs and clinical needs to determine. Excessive dosage is often due to its serious adverse reactions, and even life-threatening, such as the amount of jade stone is too large will often lead to heavy metal poisoning; strong role of the drug is too large often produce liver toxicity or nephrotoxicity Such as Suoyang and so on. It is shown in table 2.

Table 2. The relationship between the toxicity of Chinese medicine and the dose

Drug	Efficacy	Usage and dosage	Toxicity
Cynomorium	replenishing kidney essence, removing phlegm. The main treatment of it are impotence, waist and knee fatigue. Constipation, paralysis and improve sexual function have a certain role.	oral: Decoction, 7.5-15g; Add to pills, powders, or plasters	Large doses can cause nephrotoxicity
cinnamon	Fill yang, warm stomach, remove the cold, through the meridians, pain and diarrhea. Attending the door fire, limb cold pulse micro, death yang collapse, abdominal pain diarrhea, cold hernia, waist cold cold pain, virtual sun float above the hot cold embolism.	oral, 2-5g, Decoction time is shorter, or after soaking. Punching up, Each 2-3g,	Large doses can lead to stomach pain, loss of appetite, constipation, oliguria or urinary incontinence and other adverse reactions.
Bitter ginseng	Clear away heat and damp elimination, pesticide, Diuresis, Oriented flow field, Hematochezia, Icterus, Anuria, Leucorrhea color red, Genital edema itching, eczema, Wet sores, Skin itching, Scabies Leprosy; It can also be topical for the treatment of trichomonas vaginitis.	oral, 3-10g; Or add to pills or powder, external application : external application , Decoction; Apply or sprinkle it on the wound,	Excessive poisoning can occur after salivation, the pace of instability, rapid pulse, shortness of breath,
castor bean	Swelling; swelling; swelling full; stool dry knot; mouth crooked skull; bruises and injuries; scorching.	External application: Suitable dose, Apply, oral: Suitable dose, 1-5g; Crushed or eat after frying,	Excessive administration can cause gastrointestinal reactions, toxic hepatitis and acute renal failure

Inappropriate Course of Treatment

Chinese medicine treatment is also based on the patient's condition to decide, in general, if it is acute disease, and the condition is relatively light, then 5-7 days or so for a course of treatment; if it is chronic disease, and the condition is more serious, then 10-15 Day or so, even longer. By the "natural drug non-toxic harmless concept", the toxicity of Chinese medicine is one of the reasons for any prolonged medication time, long-term use[3,4]. It is shown in table 3.

Table 3. The relationship between treatment and toxicity

drug	efficacy	Treatment of the wrong side effects
Tripterygium wilfordii	Expelling wind, detoxification, insecticide. Topical treatment are curing rheumatoid arthritis and itchy skin, killing maggots, cutting snails, and poisoning rats,	Long-term use can lead to toxic substances accumulation, easy to cause adverse reactions.
Grass aconitum	Analgesic, eliminate the mass, the treatment of arthritis, stroke paralysis, tetanus, headache, stomach cold pain, cold dysentery, throat paralysis, ulcer, boils, scrofula.	
rhubarb	Alopecia; gonorrhea; edema of the abdomen full; urinate; head red; sore throat; mouth sores; stomach; stomach, stomach and stomach; Vomiting; hemoptysis; hemoptysis; blood loss; hematuria; hematuria; blood; closed; postpartum stagnation of abdominal pain; Zhengjia accumulation; bruises.	Long-term use produces drug dependence.
Senna	Diarrhea heat laxative, for heat constipation, abdominal distention.	
Huang Yaozi	Detoxification, expectorant, cooling blood to stop bleeding. For thyroid enlargement, lymph node tuberculosis, sore throat, hematemesis, hemoptysis, whooping cough, cancer;	Long-term use can cause toxic hepatitis.
Xanthium	Treatment of cold, treatment of nasal congestion, stopping the pain.	Long-term use can cause damage to nerves, myocardium and liver.
Ephedra	This drug is mainly the treatment of cold fever, no sweating, edema, systemic itching and rheumatism and so on.	Long-term use may be addictive.
Licorice	This medicine is mainly used to treat cough and pain. And it can also ease the effects of severe drugs.	Long-term use can cause edema
Kansui	This medicine can treat a variety of edema diseases. This medicine also can cure sores	Long-term use can cause dehydration

Inappropriate Drug

The main reasons for the confusion of Chinese herbal medicines are: the same name, the wrong drug, the wrong origin [5]. In addition, the wrong method of treatment will increase the toxicity of Chinese medicine. such as the toxicity of realgar could be reduce by a specific method which can improve the drug, while heating will become more toxic arsenic. It is shown in table 4.

Table 4. Incorrect Drugs and Toxicity Reactions

Drug	Efficacy	Easy to confuse the breed	The source of its side effects
Wujiapi	This medicine can be used to treat rheumatism, edema and beriberi.	Xiangjiapi	Incense in the skin contains cardiac glycosides, easily lead to gastrointestinal reactions and arrhythmia symptoms. It has been reported that the North lost sauce can cause skin allergies.
Baijiangcao	This medicine can be used to treat chest and abdominal pain, as well as postpartum abdominal pain.	Beibaijiangcao	Incense in the skin contains cardiac glycosides, easily lead to gastrointestinal reactions and arrhythmia symptoms. It has been reported that the North lost sauce can cause skin allergies.
Dannanxing	This medicine can be used to treat cough spitting, stroke and mania.	Tiannanxing	Aloe veracillin and the attached proteinase content is higher than the gallbladder star.
Chaihu	This medicine can be used to treat colds and fever, upper abdominal pain, irregular menstruation, uterine prolapse and prolapse.	Dayechaihu	Large leaf Bupleurum has a strong vomiting effect.
Zhusha	This medicine can treat palpitations and insomnia, excessive mental excitement, sore throat and mouth sores.	Zhusha (product in Guangxi)	Guangxi cinnabar has a relatively large toxicity.
Qianliguang (Compositae)	This medicine can be used to treat eye redness, eczema, dysentery abdominal pain and other diseases.	Europe Qianliguang	European thousands of miles of light mainly contains thousands of miles of alkali, the toxicity of Adoni Fulin alkali 3 times.
Baifuzi	This medicine can be used to treat stroke sequelae, headache, tetanus and sore throat. Topical can treat snake bites.	Guanbaifu	The toxicant dicarboxylate alkaloids contained in the clones are the main source of toxicity.

Inappropriate Compatibility

Chinese medicine theory has eighteen anti-ten strong, there are contraindications to contraindications, medication taboo and other taboo, there are many in the use of Chinese medicine in the process of Chinese medicine itself is not appropriate compatibility[6]. It is shown in table 5.

Table 5.Improper compatibility and corresponding toxicity

Improper compatibility	corresponding toxicity
Soybean root and rhubarb	Dizzy, weak enough to move, fingers trembling
Kunbu,Haizao and Zhusha	Drug-induced enteritis
Changshan and Licorice	The amount of similar two drugs combined, increased vomiting side effects,
veratrum and Guangmuxiang	Significantly increased the toxicity of veratrum
Yanhusuo and Strychnos	Enhance the toxicity of Strychnos
Soybean root and bitter ginseng	Slow heart rate, resulting in cardiac toxicity
Gallnut, elm, Agrimony and ferrous sulfate, rifampicin, aminoglycosides	Enhance the side effects of chemical drugs

Inappropriate Object

"Because people are not the same physical, age is not the same, the condition is not the same.....",which is in Augmented Materia Medica. The use of drugs is according to individual physical differences. Su Shen Liang Fang recorded: "This is like people drink. Some people will not be drunk after drinking a lot, while some people only could drink a little ... so medicine for people, like the wine for people, this is the difference in physical[7].It is shown in table 6.

Table 6. Special groups of people and improper drug toxicity

Special groups of people	Not suitable for use	improper drug toxicity
Lactation patients	Toxic Chinese medicine, such as croton, cantharidin, thistle, Maqianzi, aconite	Causing poisoning of infants or patients
	Strong cold hot medicine, such as musk, Senna, rhubarb	So that milk changes color, causing infantile diarrhea, or can inhibit milk secretion
	Contains heavy metals such as mercury or lead	Child savings poisoning
	Fried malt, pepper, mirabilite	Back to milk
Pregnancy patients	Blood circulation of Chinese medicine and its preparations, such as peach kernel, leeches, Yunnanbaiyao, Sanqi tablets, etc .; Run class of drugs and their preparations; resuscitation Xingnao Chinese medicine and its preparations	Easy to cause abortion
	Exhaust gas class Chinese medicine and its preparations, such as Achyranthes, Aconitum, tiger papaya pills, the size of active pills, Tianma pill, etc.	Prone to miscarriage or fetal developmental disorders
Liver and kidney dysfunction patients	Can cause liver cell damage and Chinese medicine and its preparations, such as Huang Yaozi, Xanthium, Qianliguang, fish, Tripterygium wilfordii, cotton seeds, leaves, castor, bitter almonds, toad, cassava, Azadirachtin, pomegranate peel, gruel, secret Tuo monk, lead Dan, lead powder and so on.	Such as excessive use can cause toxic hepatitis, which toosendan can also cause nervous system and cardiovascular damage.
Allergy sufferers	Containing allergy substances in Chinese medicine and its preparations, such as medlar, fleece-flower root, sarmentos, and Chinese medicine injection.	There have been allergic dermatitis, drug eruption, asthma, fever, and shock and other allergic reactions.

Inappropriate Indications

"Materia Medica Yanyi" in a case, "there is a man, summer had dysentery this disease, doctors want to use cold medicine to treat the disease, with the Coptis, donkey-hide gelatin, woody. These drugs in the just sick time Can be used, but this man has been sick for some time, so it should be treated with other drugs" syndrome differentiation is one of the basic methods of Chinese medicine diagnosis, under the guidance of the theoretical system of Chinese medicine, combined with clinical data analysis, thus The patient's condition for accurate qualitative positioning, to determine the treatment of medication. If the syndrome is unclear, easily lead to irrational medication, the light is invalid, while the emphasis on the disease, and even life-threatening [8]. It is shown in table 7.

Table 7. The applicability and Disabled

Common drug categories	nature and flavour	Applicability	Disabled
Chinese bitter-warm-property sudorific drugs	pungent	superficial syndrome of exogenous febrile disease	syndrome of superficies attacked by wind-heat.
heat-clearing medicinal	cold	interior heat syndrome	deficiency of spleen and stomach, loose stool
medicine for rheumatism	Bitter and cold	rheumatic arthralgia	yin blood insufficiency
aromatic damp-resolving drug	formula for relieving superficies syndrome with pungent and warm natural drugs	syndrome of damp retention in middle-Jiao.	syndrome of yin deficiency and blood dryness and qi deficiency
damp-clearing drug	tasteless	syndrome of internal stagnation of fluid-dampness.	syndrome of yin deficiency and depletion of fluid; Pregnant women
drug for invigorating blood circulation and eliminating stasis	Pungent, bitter and hot	syndrome of blood stasis	deficiency syndrome with blood stasis

The Occurrence of the Wrong Drug Reaction

Chinese medicine multi-component multi-target play a therapeutic role, therefore, in the safe dose range, in addition to play a major therapeutic role, but also in other parts of the body play a role in the treatment has nothing to do, which also belongs to the toxic effects of Chinese medicine. This erroneous drug response does not occur immediately after taking the case, and may occur before or after efficacy. It is shown in table 8.

Table 8. Chinese medicine toxicity latency and corresponding toxicity

Chinese medicine	Appear time	Wrong drug response
castor bean[9]	3-24h after eating the disease, but also as late as 3 days of symptoms	At the beginning of the throat and esophagus burning sensation, nausea, vomiting, abdominal pain, diarrhea and other digestive system discomfort, there are drowsiness, headache and other central nervous system symptoms.
centipede	2-3 days after eating symptoms	Hemolytic reactions, allergic reactions
cicada slough	After serving about 15min	Bloating, self-mitigation after 30min
bombyx batryticatus	Medication 5-8 when the agent appears	rash
Chinese lovage	After taking 40 min	Allergic reaction
carapax amydae	After taking 5min-60min	Allergic reaction

From the above information, the traditional sense of the concept of toxicity of Chinese medicine is relatively narrow, so the definition of a more comprehensive toxicity of Chinese medicine should be: wrong time, wrong dose, wrong medication, dislocation compatibility, wrong object, wrong Indications, the occurrence of the wrong drug reaction.

The application of Chinese Medicine Toxicity

At present, the study of toxicology in Chinese medicine has made great progress from drug toxicity, combined with the application of modern new technology [10]. But the toxicity of Chinese medicine also prompted the corresponding organizational organs of the drug-sensitive, but also the basis of efficacy, is to target a stronger therapeutic drugs. Arsenic trioxide is one of the most effective drugs for the treatment of acute promyelocytic leukemia[11]. In recent years, it has also been found in the treatment of lymphoma, myeloma, gastric cancer, liver cancer, lung cancer and breast cancer. The results of the treatment of *Gastrodia elata* mainly affect the digestive tract and respiratory system, and now in vitro studies have shown that *Gastrodia* compound injection on gastric cancer, lung cancer and liver cancer cells have anti-killing and inhibition [12]. The toxicity of Chinese medicine will cause damage to the body, organs, because the role and targeting is too strong, if you can reduce the dose, change the course of treatment or control the time of administration and other methods, the toxicity of Chinese medicine may change For the efficacy, and its toxicity is greater, its activity may be stronger, so as to become more targeted, better therapeutic effect of drugs, therefore, to poison and attack can become an important research direction of Chinese medicine one of the research.

In addition to the therapeutic effect of drugs, drugs can also be used in pharmacological studies, such as the establishment of animal models, the current use of replicated animal models of drugs mostly chemicals, but often there are high costs, model reversible, high mortality. However, not only the toxicity of chemical drugs can be applied to the preparation of animal models. Tang Dynasty Chen possession of the "Materia Medica Supplements" for the first time recorded the use of fine rice feeding dogs and dogs successfully established beriberi model, modern research using the use

of croton oil replication rat hemorrhoid model [13], also useful warm drug , Cinnamon, ginger combined with carbon tetrachloride to replicate chronic liver injury in rats with liver deficiency [14]. In addition, the new application of drugs is also being explored, the more typical drugs for the treatment of cardiovascular disease Viagra, is now applied to the treatment of male sexual dysfunction disease. There are many studies on the toxicity of monotherapy, but the toxicity of new reports less, suggesting that toxicology should be combined with pharmacological studies, simple toxicological research is not as good as combined, toxicity may also be the future of drugs The basis of new efficacy. The purpose of the toxicology study is more important to prevent the occurrence and treatment after the occurrence, in order to from various aspects of drug known or potential toxicity to quantify or quantify the risk assessment in order to achieve timely prevention, mitigation or even eliminate the toxic effects , For the application and development of Chinese medicine to provide the basis.

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