

## DRUG INDUCED HEPATOTOXICITY IN VIEW OF AYURVEDA (AGADA TANTRA)

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## ABSTRACT

*Yakrit roga* or hepatic impairment is very common disease since ancient time and also in present scenario. There are so many causes of Liver disease but drugs are one of the most common. There are so many drugs in modern medical science and ayurveda which may induce hepatotoxicity due to side effects and excessive use of hepatotoxic drugs and herbs as- antibiotics, NSAIDS and some herbal products, but in ayurveda drug induced hepatotoxicity has resemblance to *vishajanya yakrita roga* and treatment of this disease is also mentioned in *ayurveda* and *agada tantra*. *Gara visha* is a form of slow acting artificial poison and after long time use it may cause many types of chronic disease which may effect vital organs of body as *vrikka*, *yakrit* and others. According to *ayurveda* and *agadatantra*- *Nidan parivarjana*, *Vamana*, *Amashaya prakshalana*, *Tamra bhasm* with *madhu* (for vomiting), *Swarn makshik bhasma* with *madhusarkara*, *Nagdantiyadi ghreet*, *Nisotha Snuhikshira* and *Mainphala siddha ghreet*, *Amrit ghreet*, *Sanjivani agada* and some other *ayurvedic* and *agada* drugs could be useful in treatment of *gara visha janaya yakrita roga* and drug induced hepatotoxicity.

**KEYWORDS:** *Yakrita roga*, *Gara visha*, hepatotoxicity, *Agada tantra*.

## INTRODUCTION

Liver is one of the most important and largest organ of the body and the important function of liver is metabolism and detoxification of body, liver secretes many types of useful hormones and enzymes which is essential for metabolism, digestion and other vital activities of body. Nowadays due to wrong food habits and lifestyle there are so many causative factors which impair the function of liver and ultimately cause life threatening liver disease. Drug induced hepatotoxicity is one of the most common liver impairment due to excessive use or side effects of some hepatotoxic medicines and herbs.

## Ayurvedic Concept of liver diseases

*Ayurveda* is the oldest medical science that has mentioned disease and treatment in systemic and scientific way. According to *ayurveda* *Yakrita* is situated below right side of heart and cause many types of disease<sup>[1]</sup> According to *ayurveda* liver and biliary tract disease has been classified as *udara roga* and has counted eight types of *udara roga* in which *Yakritdalyodara* is considered under *Plihodara*, there are thirteen types of *agnies* having important role in metabolism and digestion. In all thirteen types of *agnies* Mahrishi Aatrya has narrated that *doshyukt jatharagni* causes all types of *udara roga* in which *Yakrita roga* also

considered.<sup>[2]</sup> In *ayurveda*, the disease of *Yakrita* is manifested through *raktavaha srotodusti*. Mahrishi Susruta has also narrated eight types of *udara roga* and counts *Yakritdalyodra* in *plihodra*.<sup>[3]</sup> According to *ayurveda* *srotas* are meant for carrying the *dhatus* from one place to another with nourishment of successive *dhatus* and the *srotas*, these are specific for each *dhatu*. According to Cakrapani *dushit srotas* could affect neighbouring *srotas* and *dhatus* also<sup>[4]</sup> According to Susruta *raktavaha srotas* are two in number and their root or chief organs are *Yakrita* and *pliha*, due to *srotovidh* when it get injured than cause blue colouration of the body, fever, burning sensation, anemia, haemorrhage and redness of the eye<sup>[5]</sup> According to Charka sign and symptoms of *Yakrita rogas* are as- *Durbalta*, *Aruchi*, *Avipaka*, *Mal- mutravarodha*, *Trisna*, *Angvedna*, *Vaman*, *Murcha*, *Kaas*, *Swas*, *Jwar*, *Anaha*, *Agnimandh*, *Parvsool* and some others.<sup>[6]</sup>

According to *ayurveda* during *garbhotpati kaal ranjak pitta* of *Yakrita* and *pliha* colours *rasa* and change it in to *rakta*, *Yakrita* and *pliha* are *sthana* of *ranjak pitta* and both got effected due to similar causes<sup>[7]</sup> According to *ayurveda* there are four types of *Yakrita-vridhi* as- *Raktaja yakrita-vridhi*, *Pittaja yakrita vridhi*, *Kaphaja yakrita-vridhi* and *Vataja yakritat-vridhi*.

Sign and symptoms of both *sroto dusti* and *sroto vidha* has some similarity with sign and symptoms of drug induced hepatotoxicity as- belly pain, tiredness, weakness, fever, nausea, vomiting, lack of appetite dark urine, pale or clay-colored stool, yellowing of the stool.

#### Nidan of Yakrita roga

According to *Madhava Nidana* all *nidana* of *plihodara* are about similar as for *Yakritodara* as- Excessive intake of alcohol, *ushna* and *guru ahara*, sleeping in day time, excessive sexual activity, heavy weight and long walking are causative factor of *Yakrita* and *pliha roga*.<sup>[8]</sup>

#### Samanya Samprapti of udara roga (Yakrita roga)

Due to *dusti* of *udara*, *vatadi dosa* accumulates and cause many types of *rogas* with *mandagni* which

#### Sign and symptoms<sup>[5,6,17,18]</sup>

Drug-induced hepatotoxicity	<i>Yakritodara</i>	<i>Raktavah srotodusti</i>	<i>Raktavah srotovidhta</i>
Fever	<i>Jwara</i>	<i>Jwara</i>	
Belly pain	<i>Anaha</i>	<i>Adhyaman</i>	
Tiredness	<i>Angvedna</i>	<i>Angvedna</i>	
Weakness	<i>Daurbalya</i>	<i>Daurbalya</i>	
Vomiting	<i>Vamana</i>	<i>Vamana</i>	
Lack of appetite	<i>Aruchi, Agnimandh</i>	<i>Aruchi, Agnimandh</i>	
Dark urine	Haematuria ( <i>Raktmutrata</i> )	Haematuria ( <i>Raktmutrata</i> )	Clay coloured stool, Yellowing of stool
Yellowing of skin	Jaundice ( <i>Kamala</i> )	Jaundice ( <i>Kamala</i> )	Colouration of body (blue)
Yellowing of eye	Yellowing of eye	Discoloration of eye	Redness of eye

According to modern point of view drug induced hepatotoxicity is very common in present world due to frequent use of hepatotoxic drugs and herbs.

#### Drug induced hepatotoxicity in Agada tantra

According to *ayurveda* in *agada tantra* (Toxicology) drug induced hepatotoxicity may counts in *gara visha*. According to *Agada tantra gara visha* is a type of artificial slow acting poison and usually it produced due to combination of toxic or nontoxic substances, the waste products of body, *bhasma* and *alpavirya* (Low potent) *visha*, *Virudhahara* causes formation of *gara visha* and use of *virudha ausadhi* is also one of the important cause. Sign and symptoms of *gara visha janaya Yakrita roga* has resemblance with drug induced hepatotoxicity.<sup>[11]</sup> After long time use of *gara visha* and *virudha ausadhi* patient shows symptoms of *Udara roga* (*Yakrita vridhi, pliha vridhi*), *Mandagni, Pandu, Krista, Adhyaman, Grahni roga, Jaundice* and *Yakrita vikara*.<sup>[12]</sup>

#### Management and Treatment according to Agadatantra<sup>[13]</sup>

*Nidan parivarjana- Nidan parivarjan* means to avoid or to stop causative factors of disease. This is the first and most essential part of management or treatment so hepatotoxic drugs or factors should be avoided first.

- *Vamana*,
- *Amashaya prakshalana*,
- *Tamra bhasma* with *madhu* (for vomiting),

produce undigested foods and accumulate *dosa* in *udara pradesha* and cause *udara roga* and due to *dusti* of *pranavayu, pachkagni*, and *apanavayu* cause obstruction of *marga (sroto dusti)* and finally cause *udar roga* with *yakrita roga*.<sup>[9]</sup>

#### Symptoms of Yakrita roga

*Yakrita vridhi* cause pain in ribs, right shoulders, fever, bitter mouth, haematuria, weakness, constipation, discoloration of eye, jaundice, insomnia, swelling, burning and *Yakrita vridhi* and *yakritodalyodara*.<sup>[10]</sup>

- *Swarna makshik bhasma* with *madhusharkara*,
- *Nagdantiyadi ghreet*,
- *Amrit ghreet* and some other *Agada* and *ayurvedic* drugs.

#### Hepatotoxicity according to modern point of view

Hepatotoxicity is very common disease at present scenario due to many different reason and drug induced hepatotoxicity is also considerable and it is very common in present life style due to frequent use of hepatotoxic drugs and herbs.

#### Etiology of drug induced Hepatotoxicity<sup>[14]</sup>

- Antibiotics- Many antibiotics may cause hepatotoxic effect as-
- Amoxicilline Clavulanate, Sulphamethoxazole, and others.
- Nonsteroidal anti-inflammatory drugs (NSAIDS).
- Herbal and dietary Supplements.
- Anticancerous drugs.
- Antimalarial drugs.
- Cardiac drugs.
- CNS drugs as- Phenytoin and others.
- Anti-tubercular drugs- First line anti-tubercular drugs as Rifampicin, Isoniazide and Pyrazinamide and many other drugs has hepatotoxic effects.

**Non drug induced hepatotoxic factors<sup>[15]</sup>**

- Alcoholic and Non-alcoholic fatty liver disease,
- Steatosis, Fibrosis, Cirrhosis,
- Hepatocellular carcinoma, cholangiocarcinoma,
- Autoimmune hepatitis, primary biliary cirrhosis
- Viral hepatitis and others.

**Diagnosis<sup>[16]</sup>**

The liver has a significant role in metabolism, regulation of red blood cells (RBCs) and glucose synthesis and storage. The liver function tests typically include alanine- transaminase (ALT) and aspartate transaminase (AST), alkaline phosphatase (ALP), gamma-glutamyl transferase (GGT), serum bilirubin, prothrombin time (PT), the international normalized ratio (INR) and albumin. These tests can be helpful in determining an area of the liver where damage may be taking place and depending on the pattern of elevation can help a differential diagnosis.

**CONCLUSION**

In *Ayurveda* and modern both point of view *yakrita* or liver is very important and vital organ and impairment of *Yakrita* cause many types of *Yakrita rogas*. Both science accepted that due to bad food habit and life style and external factors such as alcohol, medicine and some other factors are responsible for liver disease. In *ayurveda* there is reliable way of management and treatment of *Yakrita rogas* with drug induced *Yakrita roga* but *Agada tantra* consider drug induced hepatotoxicity as *garavishajanaya* hepatotoxicity and *Agadatantra* has also its own principle of management and treatment of this disease.

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