Int J Ayu Pharm Chem
ISSN 2350-0204
www.ijapc.com

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Ayurvedic Perspective of Reticulo-Endothelial and Hemopoietic Disorders in Childhood Clinical Practice

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ABSTRACT

Liver disorders are among the most commonly encountered problems in childhood clinical practice. Although Jaundice has been considered as most common presenting symptom of liver disorders, many of the chronic presentations develop without jaundice along with growth failure as well as other constitutional symptoms. Liver being the major organ and biggest factory of body that carry on major metabolic functions related to protein, carbohydrate and fat metabolism of the body, hence play a vital role in maintaining homeostasis of the body.

Moreover the healthy Liver is always responsible for maintaining body homeostasis. *Ayurveda* the ancient rich medical heritage of India explained the role of liver in maintaining *Samyavastha* or homeostasis of the body and *Yakrit* along with *Pleeha* has been considered as *Moola* of *Raktavaha srotus*. Meanwhile in *Ayurveda* Yakrita is always explained in association with *Pleehaa* and same is called as *Yakrit-Pleeha* complex, which is root of *Raktavaha srotus. The* combination of this dual organs helps to derive the concept of reticulo endothelial system and hemopoietic system in *Ayurveda.* Thus concept and importance of hepato-billiary system, reticulo-endothelial and hemopoietic system or *Yakrit- Pleeha complex* play a major role in maintaining the homeostasis of the body and same has been emphasized in *Ayurveda.* Classics also explained physiological and pathological consideration of *Raktavaha-srotus* with special emphasis on Reticulo-endothelial and hemopoietic system of body. Thus present article is focused on the same concept in detail and its *Ayurvedic* parameters, symptomatology, *Dosha* and *srotus* wise evaluation of *Yakrit- Pleehajanya* disorders in relation to its diagnosis and management.

Key Words *Reticulo-Endothelial and Hemopoietic Disorders, Pittaja Jwara, Kumbha Kamala, Pittaja Shoola*

Received 08th March 22 Accepted 04th April 22 Published 10th May 2022

INTRODUCTION

Liver has been considered as a vital organ of the body still as per contemporary medical science not only for maintaining the normal functioning of the body, but also for diagnosis of disease and treatment[1.] However in Ayurveda there is no mentioning of the word liver or *Yakrit* in concern to any specific physiological, pathological and clinical consideration and we hardly find any

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direct references related to liver. Although liver and spleen or *Yakrit* and *Pleeha* has been explained as organ-complex in *Ayurveda*[2]. Liver or *Yakrit* has been given less importance than *Pleeha* which is analogous to liver and present on left side. However available references in *Ayurveda* highlights that *Pleeha* and *Yakrit* are structurally and functionally share the similar features, except the anatomical position. Nevertheless spleen has been given more importance than *Yakrit* diagnostically, physiologically, pathologically and therapeutically. Supporting above view *Kashaypa* also mentioned a separate chapter by name *Pleeha Halimaka Adhyaya*[3] which totally focused on spleenic disorder. Although common people strongly believe that for *Ayurveda* has better solution for liver disorders, in reality we find only few references related to *Yakrit* like *Kalakhand* in *Mamsaverga*[4] and as a similes for certain eye disorders. Meanwhile *Sushuruta* explained the pathological evidence related to *Yakrit* or liver disorders as *Yakrit Vidhridhi* and *Yakritdulyodara*[5].

GENERAL DESCRIPTION

Clinical consideration of pathology related to liver disorders exhibit two distinct categories like acute and chronic liver disorders. Acute liver disorders (failure) are characterized by decreased functional abilities of liver causing sudden fall in liver functions like decreasing in coagulation factors, protein synthesis, vitamin A and D storage, try-glyceride synthesis and other metabolic functions related to defense system of the body producing rapid or very severe presentations.

However chronic liver failure is always slow presentation which appears with late jaundice and Hypoalbumenemia (Less than 6 gram). Meanwhile based on management of the liver disorders are divided as hyper acute, sub-acute and chronic[6]. In hyper acute conditions coagulation pathology with increased tendency of the bleeding is first manifestations[7]. Similarly in Sub-acute manifestation always jaundice is seen as the major symptom like viral hepatitis[8]. Clinically impairment of the neurological function is more in hyper acute presentation while same is less in sub-acute. Long lasting liver disorders with degeneration, fibrosis and cirrhosis[9] of liver is included under chronic pathology.

It is quite obvious that once involvement of liver it directly and indirectly affects the each and every cell of the body. Majorly the renal function is affected and usual diuretics will not work. Meanwhile the development of constitutional symptoms in child with impairment of cardiac functioning and congestion of the lung and disturbed bone marrow environment are seen. Further contusion in the brain and involvement of the collagen tissues of the body and subcutaneous hemorrhage are also major manifestations.

When we analyze acute liver problems, it is predominantly by the group of hepatocytic and non-hepatic group of virus[10]. Most common being Hepatitis A[11] which spreads by feco-oral

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route, with incubation period of two weeks and quite common in July or summer season, although recent trend shows equal incidence through at the year.

Another common hepatic virus with high mortality and morbidity rate is Hepatitis B[12] which commonly spreads through the parenteral route blood transfusions, body fluids, sexual transmissions, lab workers, etc. and has got incubation period of around 100 days. This virus characteristically shows serological elevation different types of surface and core antigen antibody titers within 2 months, and later remain active in the body for year's together or lifelong. Virus also presents in the body in the active state for long time leading to a carrier stage and can transmit the infection to others. Interaction between Hepatitis B virus and body immune system leads to different stage of disease like acute, chronic, chronic active carrier etc. meanwhile Hepatitis C, D and E is budding disorder nowadays and relatively uncommon in children. Different types of Hepatic Viral infections, especially A & B will be presented with acute onset of fever and development of jaundice and rapid fall in liver functional capacity is characteristic due to rapid destruction of the hepatic parenchymal cells with inflammatory edema[13].

When we analyze above condition under *Ayurveda* perspective, mostly we witness, diagnosis of *Kamala*[14] either as *Kosthasritha*[15] *or Shakhasaritha* as Jaundice is the most striking symptom, which is clinically miss-leading and end up in wrong management. Considering the etiology, and fever as also striking symptom this can be better compared with jwara, to be specific the *pithaja jwara*[16].

We look in to etiology and causative factors of hepatic viruses and etiopathology and *Samprapti* of *Pittaja jwara*[17] in *Ayurvedic* classics, it is obvious that the common symptoms of hepatitis can be clinically well correlate with clinical presentation of *Pithaja Jwara*. *Ayurveda* clearly explains that in *Pittaja Jwara* fever has got *Teekshana Vega* which is nothing but acute/severe onset of the fever. Further *Peeta vin Mutra Netratwa* that is yellowish discoloration of sclera, urine and stool clearly points towards of clinical jaundice which is predominant symptom of acute liver disorders.

Atisara ,Vamana Udarashoola mentioned in *Pithaja jwara* are indicating of viral prodromal leading to nausea, vomiting, abdominal pain, diarrhea pointing to the descending infections or associated symptoms of GIT disturbance. *Symptoms* like *Alpaninra* indicate level of discomfort in *Pithaja jwara* or *Hepatitis.*

Symptoms like *Kanta Mukha asya, Nasanam paka* indicate functional inflammatory pathology destruction of liver parenchyma leading to functional abnormalities of liver like Coagulation problems. *Pralapa* or delirium indicates late complications of hepatitis with involvement of CNS (Bilurubin encephalopathy). Filling of *Katukavakrata or* bitter taste in the mouth indicates disturbed metabolism and appetite due to decreased metabolic capacity of liver due to

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inflammation of hepatic cells. When we analyze complications of acute liver failure due to delayed diagnosis and untimely therapeutic interventions, *Moorcha, Daha, Mada, Trisha* are common presentations, which otherwise indicate towards hepatic coma.[18] Thus symptomatolgy of the *Pittaja Jwara* clearly fulfills the different stages of liver involvement starting from simple GIT disturbance to Hepatic Coma. Immediately treatment should be employed with guideline of investigations like Serum Biliurbin, Prothrombin time, HbsAg Screening, (which may be negative in the first week so repeat after second week).

When we consider *Pittaja Jwara* with hepatitis A than absolute bed rest is main indication which is stress reliever on liver by reducing metabolic functions. However it is a self-limiting disorder which should be carefully monitored for all possible complications and later consequences as in hepatitis B. As per *Ayurveda* any viral infection with fever and viral prodromal during first 7 days, after onset should be considered as *Navajwara* and treatment principles of *Navajwara* should be employed in *Pittaja jwara* also during first week. Usually after 7 days intensity of *Navajwara* comes down with slow revert back of liver pathology. In case of worsening conditions of fever after one week it should be considered as *Sannipathaja Jwara*[19] and treated like wise.

As *Ayurveda* saggest in *Navajwara*[20] , *Langhan* (limited food to reduce the liver load), *Swedan* (different method of reducing body temperature) Kala (waiting for *Amapachan* to complete) and nutritious food in formof liquid that is *Yavagu* mixed with *Tikta rasa's* which is *Jwarahara* in nature, as the ideal treatment in uncomplicated *Pittaja jwara* Hepatitis.

It is clearly told that "*Annakalae hitapeya yataswam pachanre krita"*. On considering *Ayurvedic* parameters of treatment, prime importance has been given for administrating of limited amount of easily digestible food and preferably more liquid like *Peya* during *Annakala,* with the aim of correcting the electrolyte imbalance if any and maintain fluid balance with administration certain macro and micro nutrients. Further after 7 days patient should be discharged or advised certain *shamana Aushadha* aiming to correct the *Agnimandhya* at *dhatu* level which is the root cause of pathology as per *Ayurveda*. However role of *shamana Aushadha* is very important in the chronic and active case of hepatitis B, and such cases also advised *Virechana* by *Pancha tikthaka Guggulu Ghrita* among with *Shaman Aushadhis* to facilitate to liver regeneration. Lakshmi narayana Rasa along with *Kumari Asava, Vasa guducchyadhi Kwatha, Bhumaymalaki, Bhunimbha* are commonly used *Shamana Aushadha* with beneficial effects and clinically good in any viral infections.

Meanwhile above condition is routinely considered under concepts of *Pandu* and *Kamala,* as *Kamla* is most predominant symptom in this condition. However it doesn't look logical as *Charaka* explained *Kamala* as later outcome and complication of *Pandu*. So in hepatitis the

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presentations are not complication of *Pandu*[21], and increase jaundice without anemia. When we look into *Charakas* explanation of *Pandu* is not associated with fever as predominant presentation, instead *Pandu* and *Kamala as* dominant symptoms. Hence *Charaka's* explanation of *Pandu and Kamala* can be better compared with chronic hemolytic disorders leading to Jaundice, due to acquired, congenital and hereditary causes. Hence it is rightly told that *Sa Alpa raktha, Alpa medha, Nissara, Shithilendriyam* as the major pathological presentation in *Pandu.* The four major presentation of *Pandu* mentioned by *Charaka* very clearly points towards different hematological, bone marrow and reticulo-endothelial pathology with liver involvement with chronic presentation. Word *Alparakta* is pointing towards severe anemia, which may be due to bone marrow aplsia, infiltration or depression, or RBC enzyme defects, or different hemolytic pathology of acquired and hereditary causes. Similarly *Alpameda* refers to bone marrow depletion like aplastic anemia as we know *Sarakatameda* is nothing but *Majja.* Meanwhile presentation like *Nissara* suggests deficient state of the body due to anemia and deceased liver and spleen functions. However word *Shithilendriya* suggests involvement of central nerve system as sensory, motor and higher mental functions of the body are affected due to chronic longstanding liver and hemopoietic pathology.

When we further analyze these chronic hemopoietic and reticulo-endothelial system disorders under the light of *Ayurvedic* perspectives, it is quite and clear that symptomatology of *Vataja Pandu* [22]can be considered under leukemia spectrum disorders, where there is rapid abnormal cell-division and abnormal increase in number of hemopoietic cells are obvious due to abnormal functioning of *Vata.* However *Vata kshaya* can leads to aplastic anemia like disorders where there is *kshaya* of bone marrow. *Pittaja Pandu*[23] can be visualized under multiple liver or RBC enzyme linked pathologies like G6PD. Similarly *Kaphaja Pandu*[24] can be compared with certain malignant pathologies of hemopoietic system like Hodgkin's lymphoma etc. further it seems that *Charaka* covers all the nutritional causes of *Pandu* under the heading of *Mrit bakshana Janya Pandu*[25] and remaining types are indicating of destructive pathology related to reticulo-endothelial and hemopoietic system.

Hence this condition demands *Tikta Rasa Pradhana dravya like Patola, Katuka rohini, Kumari* etc, *Rasayana and Bhrimana* like treatments. In contrary, the *Pandu* explained by *Sushruta* has nor given much empharis for *pitta*, and considered of *Rasavaha sroto Dushti* as main pathology. This manifest as generalized anemia or *Pandu* in the skin as there is disturbance for circulation of *Sarabhaga*. *Dhatuagni* vitiation at the level of *Rasadhatu* level due to obstruction of *Kapha* is the major pathology, which also mimic conditions like *Kaphaavritha Rakta*. *Agni*

mandhya at the level of *Rasa Dhatu* leading to improper or less formation of *Rakta* is the major pathological event. This explanation again depicts the possibility of nutritional anemias and rightly haemotonic should be supplemented. Meanwhile the *Kapha hara* treatment to clear the *kapha* and ignite the *Rasadhatwagni* should be given in the form of *Katu Rasa drugs*, like *Gomutra* as *Katu Rasa* increases the *Pitta* and corrects the metabolic error which is obstacle in formation of *Rakta* from *Rasa*. Further *Kumbha Kamala* is more advanced chronic progressive destruction of the liver tissues leading to complication like cirrhosis and ascites, portal hypotension where abdomen resembles like *Kumbha* or Pot filled with water. In obstructive pathology of hepeto-biliary system leading to jaundice, always *the Kapha hara chikitsa* should be employed. *Gomutra haritaki*[26], *Shilajithu yoga* and *Dashamoola Haritaki* which acts on *Kapha ahara* and remove the obstruction should be preferably used. However other *ushna Teeksha* drugs can be also given with *Takra (Takra is ushna amla)* . *Haritaki* which is best *Pathya* and known always maintain the normalcy of *Vata.*

CONCLUSION

Hepatic viral infections, congenital and acquired hemolytic disorders are quite common in childhood clinical practice. *Ayurveda* explains these concepts very clearly under the heading of *Pithaja jwara, Pandu and Kamala.* Most common cause of *Pandu* is nutritional which has explained under *Mrith Bakshana janya Pandu.* Rest of the cause and etiology of anemia related autoimmune, bone marrow hemolytic and congenital or hereditary hematological pathologies were explained under the heading of remaining types of *Pandu* and *Kamala*, which are nothing but pathology of reticulo-endothelial system and hemopoietic system. Rightly *Yakrita* and *Pleeha (*liver and spleen) are considered as "*Moola of Rakta vaha srotus".*

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