EVIDENCE BASED PATHYAPTHYA IN JALODARA/HEPATIC CIRRHOSIS COMPlicated BY ASCITES- A NARRATIVE REVIEW

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ABSTRACT
Jalodara is one type of Udararoga. Udararoga is included among Ashtaumahagada by Acharya Charaka which denotes its critical prognosis. The accumulation of fluid in peritoneal cavity is termed as Ascities. Cirrhosis clinical manifestations presents as a much later which makes it difficult to trace in the initial stage. Nearly 30% to 40% of cases are only discovered during autopsy, indicating that in extensive proportion of people, the disease goes undetected during life. The Ayurvedic management of Jalodara mainly focuses upon correcting Agni, Srotro Shodhana and most important being the maintenance of through a strictly followed Pathyapthya. Classical texts suggest a general guidance of salt, water and fat restricted diet with milk as primary source of nutrition initial 3 months to 6 months of treatment. Choice of milk has been Camel milk which is explained in Charaka Samhita which acts both as Ahara and Aushadha. Here, an attempt is made to find out evidence based Pathyapthya (diet regimen) which is effective in the management of Jalodara/hepatic cirrhosis complicated by ascities. Previous studies and research papers are analyzed and also data from P. D. Patel Ayurveda Hospital is collected and inferred. The data reveals that diet comprising of Masur dal soup, Ksheeravritti (milk diet) followed by Camel milk or Cow milk, along the lines of Ayurvedic principles will yield good result.

INTRODUCTION
Udara roga is one among the Ahstamahagada that which is difficult to treat with curative results. The diseases that are manifested in the abdominal cavity causing the distension of the abdomen are termed under Udara roga. In this condition, Agni plays a major role in the manifestation of disease where the Aprakrutha Aharapaka mala, and all Malaswaroopa gets accumulated in the Udara, which further leads to the Ghorayyadhi. Here Mandagni, Malinabhojana and Mala sanchaya are considered as main Nidanas [1]. Ayurveda emphasizing on being healthy, has a detailed description from the initiation to manifestation of disease. Udara Roga is a progressive disorder whose diagnosis is done based on the different stage of presentation.

It is explained that when intervention is not done on appropriate time eventually the end stage presentation will be Jalodara. Although Jalodara is said to be Asadyavyadhi [2], the hepatoprotective herbal medicines and following a restricted diet regime as described in Ayurveda has been proved to have given positive results. On the other hand, there seems to be no definitive answers in contemporary medicine to cure this grave disease. A diet regimen with skimmed cow / camel milk in Jalodara helps in the regression of the symptoms and maintenance of nutritional status of the patients.

The accumulation of fluid in the peritoneal cavity is termed as ascites. Cirrhotic ascitic fluid accumulation results from a number of factors broadly defined in terms of hormonal and cytokine dysregulation and related volume overload in the setting of portal hypertension. Survival from ascites majorly depends on severity of portal hypertension, liver failure, and circulation dysfunction. Management of ascites is targeted on diuretics and dietary salt should be restricted to a no added salt diet of 5.2g salt/day.
OBJECTIVES OF THE RESEARCH

- To find out the unique and complete dietary regime for the patients of Jalodara (ascites due to hepatic cirrhosis) by reviewing various research studies.
- To evaluate the effect of the proposed diet system in the management of Jalodara (ascites due to hepatic cirrhosis).

MATERIALS AND METHODS

- Various literature, clinical and review articles were selected for study.
- Expert opinion was collected from clinically experienced practitioners.
- Data related to management of Jalodara (ascites due to hepatic cirrhosis) was collected from P. D. Patel Ayurveda hospital Nadiad and the results were analyzed [3,4,5,6].

Proposed Treatment

Management of complications of malnutrition are essential to improve clinical presentations for patients with cirrhosis. It is estimated that 50% to 90% of individuals with cirrhosis have malnutrition which is why a proper diet protocol after assessing the status of patient is important.

Nutrition Management

The management of nutritional status of hepatic cirrhosis patient in four stages,[7]

- The first nutritional priority for the patient with cirrhosis is to promote overall adequate intake, regardless of the macronutrient distribution. When a proper nutritional regimen is planned it can reduce the chances of the fasting state in the body and in turn prevents muscle catabolism.
- After a patient is working toward improvements in overall caloric intake, then education can shift toward the second priority: protein intake. Protein requirements are recommended to be 1.0 to 1.5g/kg dry body weight.
- The third nutrition priority for patients with cirrhosis involves the ideal composition and frequency of meal and snack intake. The pathology in the liver’s ability to store glycogen, intake of carbohydrate in conjunction with protein ensures proper allocation of protein for muscle maintenance and rebuilding. Having these mixed macronutrient meals and snacks at regular and frequent intervals throughout waking hours helps the patient meet nutritional needs and reduce the time the patient’s body is spent in a fasting state. Therefore, it is recommended that patients have a bedtime time snack containing carbohydrate and protein.
- Once a patient is meeting the earlier nutrition recommendations, then a discussion regarding the source of protein may be the next step in optimizing nutrition care.

Recommended protein food sources include:- Dairy Cow’s milk (1 cup) 8g, cheese (1 oz) 7g, grain lentils (1/2 cup cooked) 9g, sprouted grain bread (1 slice) 4g, wild rice (1/2 cup cooked) 3.5g vegetable soy milk (1 cup) 8g peas (1 cup) 8g beans (1/2 cup) 7-10g peanut butter (2 tablespoons) 8g nuts (1 oz) 6g almonds (1 oz) 6g broccoli (1 cup) 2.5g corn (1 cup) 4g soy beans (edamame, 1/2 cup) 8.5g, protein powder Whey (1 scoop) 25g casein (1 scoop) 25g pea (1 scoop) 25g animal based egg (1 large) 6g chicken (1 oz) 7g beef (1 oz) 7g pork (1 oz) 7g fish (1 oz) 7g.

Dietary guidelines in Ayurveda

Management of Udara roga presenting Jalodara as perceived in Ayurveda focuses on Mala Nirharana by the means of Nityavirechana, supplementing necessary vitamins to assuage the malnutritional status removing of accumulated fluids without harming the Bala of Rogi, restoring the Agni by expelling Bahu dosha and normalizing Prana-agni-apan by inducing Vatamulomana. Once Apana starts moving its Prakrutamarga all other Vata attains normalcy. Removal of mala through Mootra is done by administering Mootrayuktaka teekshna ksharadi ushadhis. The Abadh - Asthirakaphasamoorchha with Udaka gets broken by Rooshka teekshnaushnagunas of Mootra and enhances the Agni. Administration of milk over a period of 12 months is the most effective diet modification which not only manages the nutritional requirement but also helps in modifying the disease pathology. The Pathya Kaalpana for Jalodara [8] condition is registered as Raktashaali Odaka, Anoopajamamsa/shaaka, Yava Pishtakrutha Mudga, fangalarasa. Apathya [9] Ahara and Vihara is that which needs to be avoided are Vyayama, Divaswapna, Ashwadi Yaana, Arishta Asava Ushna/ amla/ Lavana/ Vidahi/ Guru/ Abhisyandi - Bhojana, Madhu, Seedhu, Sura.

Role of Milk in the Management of Jalodhara [10]

Ushtri Dugdha is specially mentioned for Jalodara by Acharyas. In the absence of Ushtri Dugdha, Godugdha is preferred by Acharyas. Godugdha (cow milk) is only complete food which is full of nutrients and easily digestible. Following diet regime is recommended:

- 6 months- Ksheeravritti (only milk)
- 3 months- Peya (A type of recipe made with rice which is easy to digest) and Ksheera (milk)
- 3 months- Jeernashyamaaka, Kodrava, Aalpasneha-lavana with Paya/Phalaamla/Jaanghalamamsa (whole diet).

Buffalo milk is also preferred (as per opinion, whose Agni is not so poor) to be taken for 1 week and cereals should be avoided[11].

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Camel milk with *Trikatu* is advised for 1 month (Potassium salt gives *Lavana rasa* to *Ksheera* in sodium pool, potassium is exchanged for sodium thus reduces sodium retention and in turn water retention) [12,13,14].

### Table 1: Diet Preferred in P. D. Patel Ayurveda Hospital, Nadiad

<table>
<thead>
<tr>
<th>First 6 Months</th>
<th>Next 3 Months</th>
<th>Last 3 Months</th>
</tr>
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<tbody>
<tr>
<td>Milk - <em>Ushtrapaya</em> (since it is alkaline in nature-reverse osmosis)</td>
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<td>Milk - <em>Ushtrapaya</em> (since it is alkaline in nature-Reverse osmosis)</td>
</tr>
<tr>
<td>Masura soup</td>
<td>Mudga, Masoora, Kulattayusaha</td>
<td>Mudga, Masoora, Kulattayusaha, Raktashali, Purana shali</td>
</tr>
<tr>
<td>Gomutrayukttkamaishadugha (if Agni is not poor).</td>
<td>Raktashali, Purana shali</td>
<td><em>Shigruphala</em>, Cauliflower, brinjal, bottle guard, bitter guard, <em>Taambulapatra</em>, <em>Ela</em>, <em>Rasona</em>, <em>Ardraka</em>,</td>
</tr>
<tr>
<td><em>Triphalayuktagosheera</em>.</td>
<td><em>Takra</em></td>
<td><em>Yava</em>, wheat flour (coarse)</td>
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<tr>
<td><em>Gomutra</em>.</td>
<td><em>Takra</em></td>
<td><em>Takra</em></td>
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<tr>
<td><em>Takra</em></td>
<td><em>Papaya</em>, sweet apple, black raisin</td>
<td><em>Papaya</em>, sweet apple, black raisin</td>
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<td><em>Papaya</em></td>
<td><em>Chyavanaprashavaleha</em></td>
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**DISCUSSION**

The science of nutrition at the present times evolved as an elaborate and organized subject of study, even then contemporary perspective [15] mull over core components of diet like carbohydrates, fats, proteins, minerals, water etc. While Ayurveda focuses on diversified aspects of dietetics and nutrition like the quality, quantity, processing methods, rationale of combination of food articles, emotional aspects, nature of the consumer, geographical and environmental conditions etc., which are play a pivotal in preservation and promotion of health and prevention of disease.

Ayurveda emphases [16] that food article can become wholesome or unwholesome based on the permutations and combinations to several persisting factors. So, the natural qualities of dietary articles and regimen as well as the conditions like quantity are required to be well ascertained before the administration of a diet or requisite therapy in order to achieve the desired effect. Similarly, there are some dietary articles, which naturally wholesome in almost all circumstances and they are readily acceptable such as *Rakta Shali* rice, *Mudga* among pulses, *Saindhava*, cow milk, cow ghee etc.

*Mudga* is considered as the best among *Shamidhanya* and *Kalaya* is categorised as worst but if on the perspective of nutritive value is taken it is noted that *Kalaya* has more protein content than *Mudga*. Clinical proofs suggest that *Mudga* has both nutraceutical and pharmaceutical properties. Acharyas have explained the concept of pharmacokinetics and pharmacodynamics of a drug in terms of *Rasa* (taste present in the drug), *Guna* (properties), *Virya* (potency), *Vipaka* (final taste after digestion of the drug) and *Prabhava* (specific effects). The action of a drug is completely based on the *Rasapanchaka* of that drug. Individual assessment of patient’s constitution and diet preferences need to be understood while planning diet. Scope for more studies on this domain is inferred in this paper.

**Reason for Selection Milk as Diet**

Camel milk has valuable nutritional and therapeutic properties of consisting of high proportion of antibacterial and antioxidant substances like vitamin C as well as iron in comparison to cow milk. Intake of camel milk helps to control blood sugar levels and also helps in preventing variety of infection including gastroenteritis, tuberculosis, and cancer. The camel milk also cures severe food allergies and rehabilitates the immune system in children [17]. Protein is a must to correct reduced osmotic pressure of plasma. Among proteins animal protein is easily digestible than plant origin, while treating Ascites factors to be kept in mind are:

- It should not cause constipation.
- Fat content should be less.
- Should not lead to malnutrition

**Milk fulfills all these qualities**

Patients may benefit from a higher percentage of protein intake from plant-based and dairy-sourced protein. The increased intake of branched- chain amino acids (BCAAs) protein from plant-based and dairy sources shows pathophysiological changes with amino acid metabolism and insulin resistance in patients with cirrhosis, further there is an imbalance of BCAAs available for protein synthesis in skeletal
muscle. Increased intake of BCAA will improve appetite, increase muscle synthesis, and have an impact in improving quality of life [18].

Kashaya rasa bring most Rukshata and Shoshana of Dhatu. Rakshaguna also does Shoshana which helps in Shrotoshothana which mitigates the Kaprodosh and dries up the Kleda and Medadhatu. Kashaya rasa Yuktaahara is guru in nature, which are not easily digestible. Madhura rasa and Sheetavirya helps in reliving Ati Trishna. With the help of its properties like Ruksha, it does Rukshana and also aid in reducing Meda dhatu. Kashaya rasa is useful in wound healing through Shoshana properties. Sheetavirya helps in nourishing, promotes growth and strength of the body.

Green gram plays an important role to preventive and supportive dietary supplement as a staple food. Mung beans have several pharmacological activities and it's scientifically proved. Studies suggest that the antioxidant effects Mung bean extracts have a potent scavenging activity against pro-oxidant species, including reactive oxygen species and reactive nitrogen species as well as an inhibitory effect on low density lipoprotein oxidation.

Regular eating of Mung beans can normalize the flora of enterobacteria, reduces absorption of toxic substances, decreases the chance of hypercholesterolemia and coronary heart disease, and prevent cancer. Research studies showed that Mung bean extract is acting against lethal sepsis thought provoking autophagic HMGB1 degradations.

The above mentioned studies aids in proving the potency of Mudga preventing various chronic and lifestyle disorders. Mudga has been prescribed as a Pathyaahara in a broad range of disorders like Agnimandya (loss of appetite), Amlapitta (hyperacidity), Udara (ascites) etc. The daily intake of Mudga as a food and therapy in Jalodara helps in maintaining the nutritional status and regenerate the liver cells [19].

CONCLUSION

Nutrition plays an important role in maintenance of a healthy status. In diseases related with liver the metabolic activity is greatly hampered which further worsens the prognosis of the disease. When a systemically calibrated diet regime is followed the recovery is fast. Diet followed in contemporary science with regards to management of Jalodara/hepatic cirrhosis complicated ascites has certain limitations, whereas Ayurveda pronounces a diet protocol that manages the Jalodara/hepatic cirrhosis complicated ascites condition and also helps in regeneration of liver tissues. Evidences related to the diet compiled from various literature and hospital data shows that Camel milk when administered alone with medicines for a period of 12 have positive results in management of Jalodara/hepatic cirrhosis.

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