

AYURVEDIC MANAGEMENT OF NON-ALCOHOLIC FATTY LIVER DISEASES: A REVIEW

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ABSTRACT

Introduction: Nonalcoholic fatty liver disease (NAFLD) is the most common chronic liver disease in many parts of the world. Today's globalization as well as urbanization affects the life style of people and resulting into the metabolic conditions on other ailments. NAFLD is one among them and is strongly associated with overweight / obesity and insulin resistance. It is very difficult to compare any particular condition mentioned in *Ayurveda* with NAFLD. It can be consider under the umbrella of *Santarpanajanya Vyadhi* (disease caused by over nourishment) having *Nidana* (etiology) and *Samprapti* (pathogenesis) similar to *Sthaulya*. **Aims and objective:** To explore the role of *Ayurvedic* treatment in management of NAFLD. **Material and methods:** All data collected and compiled about Ayurvedic management and NAFLD from classical text, modern literature and online sources. **Result and discussion:** Treatment of modern modalities has a lot of limitations along with side effects. On the other side *Ayurvedic* management can efficiently manage this condition as treated. NAFLD can be treated as *Santarpanajanya Vyadhi*. Treatment modalities of traditional science i.e. *Langhana* and *Deepana*, *Pachana* therapy could be effective in the disease management at primary level.

Keywords: *Ayurveda*, Non alcoholic fatty liver disease, *Santarpanjanya Vyadhi*, *Yakrita Vikaar*

INTRODUCTION

Nonalcoholic fatty liver disease (NAFLD) is the most common chronic liver disease in many parts of the world¹. NAFLD encompasses a spectrum of liver disorders characterized by macro vesicular hepatic fat accumulation alone (steatosis) or accompanied by sign of hepatocyte injury, mixed inflammatory cell infiltrate and variable hepatic fibrosis (non alcoholic steatohepatities, NASH), leading to cirrhosis². The true incidence and prevalence of NAFLD are un-

known. Based on imaging studies the prevalence of NAFLD in the adult population range from 14% to 31% globally. Epidemiological studies suggest prevalence of NAFLD around 9% to 32% of general population in India with higher prevalence in those with overweight/obesity and those with diabetes /pre-diabetes³. Fatty liver has been reported in all age groups, including children with highest prevalence in those between 40 to 49 year of age, recent studies

shown that NAFLD occurs with equal frequency in males and females⁴. *Yakrita* mentioned in *Ayurvedic* texts can be compared to liver, as per *Ayurveda*, *Yakrit* is a organs which related to the formation and maturation of blood. The roots of *Raktavaha Srotas* (channels which are related to the formation and carrying of matured blood) lie in *Yakrit* and *Pleeha*. *Yakrit*, being the main seat of *Ranjaka Pitta* and *Rakta Dhatu*. The function of *Rakta Dhatu* or *Ranjak Pitta* does not function well, it produces many disorders. The conditions affecting the structural and functional aspect of *Yakrit* due to various reasons are termed as *Yakrit Vikaras*.

Hence Nonalcoholic fatty liver disease is considering as *Yakrit vikaras* occur due to *Atisantarpana* (over nutrition). NAFLD is not comparable to any condition in *Ayurveda*, but we consider it as *Santarpanajanya Vyadhi* (disease caused by over nourishment) because similarity in the *Nidana* (etiology) and *Samprapti* (pathogenesis). Hence we can treat the condition with the help of traditional remedies includes *Langhana*, *Pachana*, *Deepana*, *Mridu Virechana*/ classical *Virechana*. In the today's scenario the modern medicine have not specific treatment of this disease, that's why its need of time to explore some herbal sources is priority to prevent a cure the NAFLD.

Aims and objective: To explore the role of *Ayurvedic* treatment in management of Nonalcoholic fatty liver disease.

Material and Methods:

As the study is a review study, the available literature like *Samhitas* and other modern literature, books are searched for the disease; all relevant content is considered and analyzed to get a comprehensive concept in the management of NAFLD.

DISCUSSION

Modern aspect of NAFLD⁵: The risk factors for the disease are urbanization and associated changes, such as sedentary life style and fat rich diet, and a higher inherited tendency for diabetes mellitus makes Indians more prone to metabolic syndrome or insulin resistance and its manifestation, such as NAFLD and NASH. Indian population has a higher body fat con-

tent and abdominal adiposity; the latter is particularly associated with insulin resistance and thus NAFLD, even if the BMI is normal.

Aetio-pathogenesis: Currently multiple hypothesis is going on to explain the pathogenesis of NAFLD. Includes development of hepatic macro-steatosis as a result of increased lipolysis and free fatty acids. Second reason is oxidative stress, presence of endotoxins, cytokines, adipokines and environmental factors. These complex interactions of the various factors lead to insulin resistance and serum and liver iron overload and oxidative stress that lead to necroinflammation and fibrosis. Truncal or central obesity is more associated with NAFLD [reference language not good⁶].

Clinical features: Most subjects are asymptomatic. Diagnosis often follow incidental, usually picked up evaluation of dyspepsia, malaise and fatigability. NASH/NAFLD can progress to cirrhosis and end stage liver diseases and is projected to be leading cause of liver transplantation.

Diagnosis of NAFLD requires the exclusion of other specific etiology of liver disease and excessive alcohol consumption. NAFLD should be suspected as a cause of asymptomatic elevation of Aminotranferases. In general, ALT is higher than AST. Diagnosis strongly suggested when metabolic syndrome is present and specific etiology is excluded. Ultrasound, CT, MRI, MRS radiological modalities are accurate in detecting hepatic steatosis; liver biopsy is diagnostic but may not be routinely required.

Currently there is no approved treatment for NAFLD. At the present time, the initial approach involves dietary modification based on the metabolic profile and getting patients to increase level of physical activity. Small changes in body weight can achieve improvement in hepatic necro inflammatory activity. Various other treatment modalities used for NAFLD have included treatment of risk factors like diabetes mellitus, hyperlipidaemia, use of antioxidant and insulin sensitizing agents⁷.

Ayurvedic Point of View: NAFLD can correlate with the *Santarpanajanya Vyadhi* (disease caused by over nourishment) due to having *Nidana* (etiology) and *Samprapti* (pathogenesis) similar to *Sthaulya*. Initial

pathology lies at *Agnivikriti* (vitiating of digestive mechanism). Vitiating of *Agni* by any of the *Dosha* leads to the formation of *Apakva Anna Rasa* (improperly formed digestive end product) which again leads to the vitiating of *Kapha Dosha* and *Medodhatvagni*. Because of the *Khavaigunya* happening at *Medovaha Srotasa*, *Sthayi Medodhatu* gets increased abnormally or irregularly, without providing proper nutrition to subsequent *Dhatu* like *Asthi*, *Majja* and *Shukra*. Increased *Medodhatu* has more tendencies to be deposited over abdomen⁸. In the abdomen, maximal fat deposition occurs at *Yakrit* and this condition is called as Fatty Liver. Vitiating *Kapha* and *Meda* results in *Srotorodha* (blockage of channels) which provokes *Vata*. Vitiating *Vata* again results in *Agnivikriti* and this cycle repeats.

Nidana of NAFLD⁹: *Aaharaj Nidana* includes excessive use of *Lavana (sour)*, *Amla Katu (bitter) Rasa dominant diet*, *excessive use of Kshara Sevana*, *excessive use of Snigdha (oily)*, *Guru Ushna (hot) Sleshmala Ahara (diet)*, *Excessive use of Navanna (new harvested food)*, *Mamsa (meat)*, *Navamadhya (newly made alcohol)*, *Ikshuvikara (sugar cane products) Sevana*, *Kulatha*, *Masha*, *Tila Taila*, *Moolaka*, *Dadhi (curd)*, *Shukta (pickles)*, *Sura (super-natant alcohol)*, *Souveeraka*, *junk food i.e. Pizza*, use of cold drinks with diet, *Adhyashana (excessive eating)*, *Vishamashana (irregularly habit of taking food)*, *Virudha (having incompatible food)*, *Vidahi (spicy)*, *Akalabhajana (not follow proper time to take meal)*, *Abhajanana (fasting)* etc. are etiological factors to aggravated the pathogenesis of NAFLD. **Viharaja Nidana** includes less exercise or lazy to exercise, sedentary life style, irregularities in sleeping pattern, excessive angriness, *Diwasvapna (day sleep)*, *Vegadharana (suppression of natural urge)*, *Vireka Vamana Sneha Vibhrama*.

Fatty liver as a Nidanarthakara Roga¹⁰:

Commentator *Dalhana* has quoted that *Vata Vikara* may occur due to *Avarana* (covering) of *Marga* by *Medo Dhatu*. This refers to secondary conditions leading to fatty liver like obesity, diabetes mellitus, hypothyroidism etc. where a significant role is played by *Vata* in the pathogenesis. The normal *Gati* of *Vata*

Dosha gets obstructed due to excess *Medo Dhatu* which thus gets vitiating causing further pathogenesis. These factors lead to fatty liver.

Samprapti of NAFLD and its consequences;

NAFLD is primarily considered as a *Santarpanajanya Vyadhi*. Though *Santarpana Ahara and Vihara* which includes sedentary life style, high calories food intake, lack of exercise etc. are considered as the main culprits of fatty liver, *Santarpana Ahara and Vihara* which vitiating *Agni* and *Vayu* also play a major role in the pathogenesis. Although, the *Dushti* of *Kapha*, *Rasa* and *Medo Dhatu* and *Srotasa* are more evident from the symptoms, involvement of other components like *Vata*, *Pitta*, *Rakta*, *Annavaha* and *Purishavaha Srotasa* cannot be ignored

On the basis of *Samanya Visheshha Siddhanta*, the excessive consumption of similar substances (*Dravyasamanya*), similar qualities (*Gunasamanya*) or similar actions (*Karmasamanya*) help in over production of *Dosha* and *Dhatu*. In the manifestation of any disease, vitiating of certain basic components – *Dosha*, *Dhatu*, *Mala*, *Srotasa* - takes place.

Rupa (Clinical Presentation) of NAFLD:

Symptoms can be mainly attributed to the *Dushti* of *Rasa* and *Medo Dhatu* and *Srotasa* it shows the features of *Jatharagni and Dhatvagni Mandya*. Patient may develop symptoms of *Ajirna* and *Sthaulya* as root cause is *Aam* and *Agnimandya*. As *Vibandha* or *Atipravritti* of *Mala* (Non elimination or excess elimination of feces), *Anannabhilasha* (Loss of appetite), *Glani* (General weakness), *Marutamoodata* (Belching, Flatulence), *Vishtambha* (Distension of abdomen), *Gaurava* (Feeling of heaviness), *Bhrama* (Giddiness), *Anaha* (Belching), *Praseka* (Excess alleviation), *Utklesha/Hrillasa* (Nausea), *Gaurava* (Feeling of heaviness). Symptoms of *Sthaulya Ati Kshudha* (Excessive hunger), *Ati Sveda* (Excessive sweating), *Ati Nidra* (Excessive sleep), *Daurbalya* (General debility), *Udaravridhhi* (Enlargement of Abdomen), *Anga Shithilata* (Flabbiness of body), *Ayasa Akshamata* (Unable to bear physical exercise).

Chikitsa (Management): *Chikitsa* aims not only removal of the causative factors of the disease, but also at the restoration of the *Doshika* equilibrium. The

points focused to be in the management of NAFLD are *Agnivaigunya*, *Kapha Medo Dushti* at *Mulasthana* of *Raktavaha Srotasa*, *Srotorodha* and *Vatakopa*. Therefore, the treatment should aim at *Agnideepana*, *Amapachana*, *Kapha Medo Anilapaha* and *Srotoshodhana*, which are almost similar with treatment principle of *Ajirna* and *Sthaulya*. As the *Sthanasamsraya* takes place at *Yakrit*, *Yakrit Shothahara Chikitsa* should also be adopted. Treatment can be classified into *Nidana Parivarjana*, *Samsodhana*, *Samsamana* and diet –life style modifications.

1. **Nidana Parivarjana¹¹**: Avoidance of causative factors is the prime line of treatment of any diseases mentioned in Ayurveda classics. The factors which mentioned in *Nidana* of NAFLD should avoid, so can prevent the disease.
2. **Samsodhana**: *Acharya Charaka* has mentioned the fruitfulness of *Shodhana Karma* as, by the administration of these therapies disease are cured and his normal health is restored; the sense faculties, mind become clear¹². *Virechana* might have effect as *Vyadhiviparita Chikitsa*. *Acharya* have given a list of the various disease conditions (*Virechya Vyadhi*) where *Virechana Karma* is ideal to administer as prior choice of therapy. *Udara Roga¹³* is one among *Virechya Vyadhis*. *Samyaka Virechana* contributes *Indriya-samprasada* (cleansing of all senses) and bio-purification of body. *Virechana Karma* (bio-purification therapy) is most suitable *Shodhana Karma* for the liver disorders and mentioned best treatment for *Pittaja* and *Raktaja Roga*. *Virechana* is useful for eliminating vitiated *Pitta Dosha*, helps for active transformation of *Srotasa* (micro circulatory channels) It is also indicated in excessive *Dosha* accumulation and blockage of channels. *Nitya Virechana* is mentioned as the treatment of *Udararoga*, which is the final stage of NAFLD. Drugs and formulations include *Eranda Taila*, *Trivrita Avaleha*, *Haritakyadi*, *Katuki* can be used for the *Virechana Karma*.
3. **Samsamana Chikitsa¹⁴**: Number of single herbs, herbal and herbo-mineral formulations mentioned

in *Yakrit-Pleeha Chikitsa Adhikarana* in *Bhavaprakasha* and *Bhaishajyaratnavali*. It is also said that all the drugs mentioned for the management of *Pleeharoga* can also be included in *Yakrit Roga Chikitsa*. Drugs which are having *Tikta*, *Kashaya Rasa*, *Lekhana*, *Deepana* and *Pachana* properties, which increase the power of *Agni* and reduce *Kapha*, *Meda* and *Ama* are the choice of drugs for the management of NAFLD.

Shamana drugs used in the management of NAFLD¹⁵:

Single drugs includes *Pippali*, *Sharapunkha*, *Katuki*, *Guduchi*, *Haritaki*, *Bhumiamalaki*, Decoctions i.e. *Phalatrikadi Kwatha*, *Pathyadi Kawatha*, *Patoladi Kwatha*, *Guduchyadi Kwatha*, *Asava- Arishta* i.e. *Rohitakarishtha*, *Pippalyasava*, powders i.e. *Hingwashtaka Churna*, *Vaishvanara Churna*, *Ajmoodadi Churna*, *Triphala Churna*, *Avipattikara Churna*, *Rasa preparations* i.e. *Arogyavardhini Vati*, *Punarnava Mandura*, *Chandraprabha Vati* are useful medicaments for the management of NAFLD.

Some formulations mentioned here in Ayurveda classics like^{16,17}:

Pippali Churna + Dugdha
Arkalavana + Mastu
Hingu, Trikatu, Kushtha, Yavakshara, Saindhava + Matulunga Rasa
PalashaKshara Toya Bhavita Pippali Churna
Shankhanabhi Bhasma + Jambheraphala Rasa
Sharapunkhamula Kalka + Takra
Shalmalipushpa Phanta + Rajika Churna
Yavani, Chitraka, Yaavashuka, Shadgranthi, Danti, Pippali + Ushnambu, Mastu, Sura, Asava.
Shigru Kwatha + Amlavetasa, Saindhava, Pippali, Maricha
Rohitaka or Abhaya Kvatha + Pippali or Yavakshara
Shobhanjana Kvatha + Saindhava, Pippali, Chitraka or Palashakshara or Yavakshara
Pakva Amra Rasa + Madhu
Yavanikadi Churna
Pippali, Nagara, Danti, Abhaya, Vida + Ushnambu

4. **Diet and life style modification (*Pathya Apathya*) to be followed in the management of NAFLD.**

Pathya: Use *Puranashali, Kodrava, Shyamaka, Yava, Laja, Mudga, Karavellaka, Patola, Shigru, Ardraka, Kushmanda, Kaalashaaka, Lasuna, Panchakola, Dadima, Draksha, Kapitha, Jambu, Ela, Pippali, Maricha, Madhu, Takra, Ushnajala* in routine diet. Also do the *upavasa, Kale Bhojana, Vyayama, Chamkramana, Yoga, Pranayama Dhyana, Pathana, Madhyama Marga Sheelana* in daily routine.

Apathya: Avoid taking *Navadhanya, Chanaka, Kulatha, Masura, Tila, Masha, Kanda, Mulaka, milk preparations (Dugdha, Dadhi), Mastu, Sura, Ikshuvikara Anupa, Oudaka Mamsa* in the diet. Avoid taking excessive diet, sedentary life style, *Svapnaviparyaya* (irregularity in sleeping pattern), *Vegadharana*, stress, angriness, and excessive thoughts.

CONCLUSION

Fatty liver is mainly generated from the excessive caloric intake and lack of physical activity, pointing to correction of unhealthy life style as the first line approach in the prevention and treatment of NAFLD. Through follow the adequate life style and dietary changes can prevent the disease. Traditional system of medicine is very useful the disease also it is cost effective and increase the quality of life of patients too.

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