

NON-ALCOHOLIC FATTY LIVER DISEASE – AN AYURVEDIC VIEW

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ABSTRACT

Non-Alcoholic Fatty Liver Disease (NAFLD) is a distinct hepatic condition characterized by abnormal fat accumulation in liver cells and histologically it resembles alcohol-induced liver damage. The prevalence of NAFLD is up to 30% in developed countries and 10% in developing nations, making NAFLD the most common liver condition in the world. The liver can be compared with *Yakrit* (Liver) mentioned in Ayurvedic classics as an important *Ko-shtanga* (organ of the gastrointestinal system). But NAFLD as such could not be correlated to any of the *Yakrit Rogas* (Liver disorders) mentioned in Ayurvedic classics. Understanding the *Nidana* (aetiology) and *Samprapti* (pathogenesis) of the disease, NAFLD can be considered as a *Santarpanajanya Vyadhi* (disease due to over nourishment). Here initially *Agnivikruti* (deranged digestive fire) occurs which leads to the formation of *Ama* (Free radicals) which results from the vitiation of *Kaphadosha* and further results in unequal formation and deposition of *Dushta Vasa* (triglycerides) in *Yakrit*. Hence *Agnideepana* (stimulating digestive fire), *Amapachana* (antioxidation), *Lekhana* (scraping), *Srotosodhana* (clearing of channels of circulation), *Kapha Medohara* (antihyperlipidemic) and *Vata anulomana* (normalising the movement of *Vata*) is aimed primarily in the management of NAFLD

Keywords: Non-Alcoholic Fatty Liver Disease, Ultrasonography, Liver Function Test, *Santarpanajanya Vyadhi*

INTRODUCTION

Non-alcoholic fatty liver disease (NAFLD) is defined by macrovesicular steatosis in $\geq 5\%$ hepatocytes, in the absence of a secondary cause such as alcohol or drugs. It is characterized by steatosis of the liver, involving greater than 5% of parenchyma, with no evidence of hepatocyte injury. The incidence of NAFLD is estimated to be 5%-18% in Asia¹. In India, the prevalence of NAFLD is around 9% to 32% of the general population². NAFLD has been projected, within the next 20 years, to become the major cause of liver-related morbidity and mortality as well as a leading indication for liver transplantation³. Hence it is necessary to find proper management for the emerging disease. A direct reference of liver disease induced by impaired lipid metabolism due to sedentary lifestyle and improper dietary habits are not seen in Ayurvedic classics. Therefore, while understanding such diseases through Ayurveda, we must consider the *Nidana*, *Dosha* and *Dooshya* involved in the disease progression and thus NAFLD can be considered under the *Santarpanajanya vyadhi* explained by *Acharya* Caraka, in *Sutrastana* of *Caraka samhitha*.

MATERIALS AND METHODS

Ayurvedic classics, clinical medicine texts and related websites were referred to and reviewed for the present work.

Disease Review

Non-Alcoholic fatty liver disease (NAFLD) is a condition defined by excessive fat ($>5-10\%$ of liver weight) accumulation in the form of triglycerides (steatosis) in the liver in the absence of any secondary cause like alcohol or drug use. The exact aetiology of the disease is still unknown. Insulin resistance, obesity, metabolic syndrome, oxidative stress and dietary factors are associated with the development of NAFLD⁴. Genetic factors and environmental factors also contribute to the development and progression of NAFLD. A two-hit hypothesis was proposed by Day and James. The first hit is caused by insulin resistance, which leads to the accumulation of fat droplets that is a triglyceride in the cytoplasm of hepatocytes leading to the development of steatosis. NAFLD impairs glu-

cose and lipid metabolism by two mechanisms- by acting as an endocrine organ, which is releasing several fat-derived cytokines and by free fatty acid-induced ectopic fat deposition and lipotoxicity. The second hit is multifactorial, causing hepatocellular injury and the development of NASH⁵. The most common symptoms in NAFLD are Fatigue, right upper quadrant discomfort, Anorexia, Disturbed sleep patterns, Lethargy, Malaise⁶. The main complication of Non-Alcoholic fatty liver disease is cirrhosis, which is late-stage scarring (fibrosis) in the liver⁷.

Acharya has listed 19 manifestations ranging from *Pramehapitaka* to *Sopha* under the *Santarpana janya vyadhi* and he has also stated that it can also lead to some other diseases with similar kinds of manifestations. The word *Santarpana* has originated from the root word – '*Trip preenane*' which means to please, to nourish etc. *Santarpanam* is *Samyak tarpana* that is to cause extreme nourishment⁸. Therefore, *Santarpana janya vyadhis* can be considered as diseases that are caused due to over nourishment.

Nidana (aetiology) plays a significant role in the development as well as in the treatment of the disease. The various *Aharaja* (dietic) and *Viharaja* (regimental) factors involved here are *Snigdha* (unctuous), *Madhura* (sweet), *Guru* (heavy), *Pichila* (slimy) *Ahara*, *Navanna*, *Anupa*, *Varija mamsa* (meat of animal inhabiting arid and aquatic region), *Goudika*, *Paishtika Annam*, *Cheshta dwesham*, *Divaswapnam*, *saiyya dosha* etc⁸. Excessive intake of *Ahara* which are *Guru*, *Snigdha*, *Sita*, *Pichilla* and *Madhurarasa* produces *Lepana* (anointment) and *Brimhana* (heaviness), *Tarpana* (over nourishment) to *Sareera* (body) and thus leads to *Kapha Dushti*⁹. The intake of *Dadhi* (curd), *Navadhanya* (newly harvested grains) and *Ksheera* (milk) in excess can produce *Srotorodha* (obstruction to channels of circulation) due to their *Abhishyandi* and *Kledana* property¹⁰. The *Vihara* mentioned here when followed for a longer duration can lead to vitiation of *Kapha Dosha* which subsequently results in the formation of *Ama* (free radicals). These *Nidanas* can be correlated with the present-day use of fried and oily food, butter, cheese, ghee etc. which are

examples of *Snigdha Ahara*. *Ati Madhura Aharas* can include white sugars, pastries, sweet beverages, bakery products like halva, candies, cake. Pizzas, parottas, burgers etc. are *Guru Aharas* while *Pichila Aharas* include curd, fish etc.

Dosha in NAFLD: Even though the disease initiates with *Kapha* predominance, gradually the other two *Doshas* also get involved. **Vata:** *Vata* vitiation occurs here because of obstruction in the *Srotas* (channel of circulation) which is caused by the excessively vitiated *Kapha* and *Ama* (free radicals). As a result, there is *Vata* aggravation in *Koshta*. **Pitta:** by the continuous usage of *Snigdha Ahara and Vihara Pitta dosha* also gets affected (*Pitta* has *Ishat snigdha guna*). As the *Samprapti* (pathogenesis) happens in *Yakrit* (liver) which is the *Raktavaha srotomula*, due to the *Asraya Asrayibhava* of *Rakta Dhatu* and *Pitta Dosha*, *Pitta* is also found to be vitiated.

Dhatudushti and Srotodushti in NAFLD

Rasadhatu, *Mamsadhatu* and *Medodhatu* get vitiated by *Kapha* vitiation due to *Asraya –asrayibhava*. Apart from that, the *Nidanas* causes *Agnimandya* (deranged digestive fire) and thus result in the formation of improper *Rasadhatu*. As the *Agnimandya* persists and the person continues with the *Nidana*, the *Utharothara Dhatu* (successive tissue elements) formation gets affected. As a result, the *Rakta Dhatu*, *Mamsa Dhatu* and *Medo Dhatu* also gets affected. The vitiation of *Dhatu*, in turn, vitiates the *Srotas* and vice versa. Therefore, the respective *Srotas* also gets affected.

Agni in NAFLD

Due to *Kaphapradhana Tridosha kopa*, *Jataragni mandya* occurs. Due to the *Jataragnimandya*, there will be impairment of *Bhootagni* and respective *Dhatwagni*.

Samprapti

Due to *Aharaja* and *Viharaja Nidanasevana*, *Kaphapradhana tridoshadosha kopa* occurs in the body. This leads to *Jataragnimandya* and *Ama* formation. The formed *Rasa Dhatu* is in *Dhooshita* condition¹¹. This *Rasa* reaches *Yakrit* through *Rasavaha srotas* with the help of *Vyana Vata*. From the *Ama-yukta Rasa*, *Amayukta Rakta* is formed and the carrier

of *Dhooshita Rasa* i.e., the *Vyana Vata* also gets vitiated. From the *Dhooshita rakta*, *Dooshita mamsa* is formed. Therefore, from the *Dushtamamsa*, *Dushtavasa* (triglycerides), which is the *Sudhamamsasya Sneha* is formed, and it gets located in the *Yakrit*. *Yakrit* is the *Raktavaha Srotomula*, due to the *Asraya - Asrayibhava* of *Rakta* and *Pitta*, *Pitta* is also found to be vitiated¹³.

LAKSHANA

The specific *Lakshanas* of the disease is not mentioned separately. Since *Jataragnimandya*, *Ama*, *Rasa*, *Rakta*, *Mamsa Medo Dhatu Dushti* and *Srotodushti* occurs in the pathogenesis, features like *Sadam*, (*Malaise*) *Tandra* (*Fatigue*) *Glani* (*Sleepiness*) *Alasya* (*Lethargy*), *Aruchi* (*Anorexia*), *Hrit daha* (*heartburn*), *Amlodgara* (*Sour belching*) *Anannabhilasha* (*Loss of appetite*), *Marutamoodata* (*Belching*, *Flatulence*), *Gaurava* (*Feeling of heaviness*), *Ati Kshudha* (*Excessive hunger*), *Daurbalya* (*General debility*) can be present. Since *Yakrit* is affected, Symptoms from *Pandu*, *Kamala* and *Udara* like *Ayasa Akshamata* (*Unable to bear physical exercise*), *Koshta sula* (*Right upper quadrant discomfort*), *Vishtambha* (*Distension of abdomen*), *Udaravridhi* (*Enlargement of Abdomen*) will be seen.¹⁴

UPADRAVA

If left untreated, it can progress to *Kamala* (*Jaundice*) and *Udara* (*ascites*) like conditions.

TREATMENT^{15,16}

Since NAFLD is considered as a *Santarpanajanya vyadhi*, *Apatarpana Chikitsa* (non-nourishing treatment) must be adopted here.

Vamanam(*emesis*), *Virechanam*(*purgation*), *Rakthamokshanam* (*bloodletting*), *Vyayamam*(*exercise*), *Upavasam*(*fasting*), *Dhoomapanam* (*medicated smoke*), *Swedanam* and *Choornapradeha* are said by *Acharya Caraka* as therapeutic procedures in *Santarpanajanya vyadhi*.

Treatment here must aim at bringing back the normalcy of vitiated *Doshas*, along with the removal of causative factors. *Agnivaigunya* (*deranged digestive fire*), *Kapha Medo Dushti* at *Mulasthanam* (*root*) of *Raktavaha Srotas*, *Srotorodha* and *Vatakopa* (*provoked Vata*) are involved in the pathogenesis of the

disease. Therefore, the treatment should aim at *Agnideepana* (stimulating digestive fire), *Amapachana*, *Kapha Medo Anilapaha* and *Srotoshodhana* (clearing the channels of circulation), which are almost similar to the treatment principle of *Medoroga* (Dyslipidemia). *Dosha* is in a *Madhyama bala* (moderate strength) stage, which should be treated by *Langhana* (fasting) and *Pachana*. *Laghu* (Light), *Ushna* (Hot) and *Teekshna* (Sharp) *Dravya* (drugs) can attain this. The drugs suitable here are *Katu* (pungent), *Tiktha* (bitter), *Kashaya* (astringent) *Rasapradhana* and usually, they are *Akasha*, *Vayu*, *Agni Mahabhoota* predominant. They help in *Langhana* as well as *Pachana*.

Therefore, *Nidana Parivarjana* (elimination of the causative factors), *Deepana* (stimulative digestive fire), *Pachana*, *Samsodhana* (purification), *Samsamana* (pacifying) line of treatment can be adopted here:

Nidana parivarjana

All the factors which are responsible for the formation of disease mentioned earlier i.e., *Kapha* and *Medo dhushtikara Ahara* and *Vihara* should be avoided.

Deepana- Pachana

As there is both *Jataragni* and *Dhatwagni mandya* and formation of *Ama* in *Samprapti*, *Agnideepana* and *Ama pachana* helps in bringing back the *Agni* to normalcy and thus help in the proper transformation of *Dhatu*.

Samshodhana

Acharya Charaka has mentioned the fruitfulness of *Shodhana Karma* as by the administration of these therapies' diseases are cured and his normal health is restored.

Virechana Karma is the most suitable *Shodhana Karma* for liver disorders. It helps in bringing *Dhatu-sthiratwa* and *Agnideepthi*. It is also indicated in excessive *Dosha* accumulation and blockage of channels. Therefore, *Mridu Virechana* can be considered in the earlier stage of the disease.

Samshamana

Drugs which are having *Tikta*, *Kashaya Rasa*, *Lekhana*, *Deepana* and *Pachana* properties, which corrects the *Agni* and reduce *Kapha*, *Meda* and *Ama* are the choice of drugs for the management of NAFLD.

Rasayana- Rasayana drugs corrects the structural deformity of the *Dhatu*s and thus normalise the function and prevents any secondary disease. Free radical-mediated oxidative stress plays a major role in the formation of the disease. Therefore, the *Rasayana* drugs due to their antioxidant property play a good role in preventing the biological effect of free radicals.

PATHYA-APATHYA

Pathya Ahara – *Madhudhaka*, *Mudga yusha*, *Ksheera*, *Ruksha Annam*, *Yava*, *Phalavarga*

Pathya Vihara – *Vyayamam*, *Jeerna ashanam*

Apathya Ahara – Excessive intake of *Guru*, *Snigdha*, *Madhura*, *Pichila ahara*, *Navannam*, *Anupa* and *Varija mamsa*, *Goudika annam*, milk and milk products.

Apathya vihara – *Ati nidra*, *Avyayama*, *Atibhojana*, *Shoka*, *Krodha*, *Bhaya*.

CONCLUSION

Thus, Non-Alcoholic Fatty Liver Disease can be brought under the umbrella of *Santarpanajanya Vyadhi*. Considering NAFLD as a *Santarpana janya vyadhi*, *Apatarpana Chikitsa* should be adopted. It can be attained through *Nidana Parivarjanam* and *Samprapti Vighatana*. The treatment should aim at *Agnideepana*, *Amapachana*, *Srotoshodhana*, *Lekhana* and *Vatanulomana*.

REFERENCES

1. Younossi ZM, Koenig AB, Abdelatif D, et al. Global epidemiology of nonalcoholic fatty liver disease – Meta-analytic assessment of prevalence, incidence, and outcomes. *Hepatology*. 2016; 64:73–84. [PubMed]
2. Singh SP, Nayak S, Swain M, et al. Prevalence of non-alcoholic fatty liver disease in coastal eastern India: a preliminary ultrasonographic survey. *Indian J Gastroenterol*. 2004; 25:76–9
3. Calzadilla Bertot L, Adams LA. The Natural Course of Non-Alcoholic Fatty Liver Disease. *Int J Mol Sci*. 2016;17: pii: E774. [PMC free article] [PubMed]

4. Aguilera-Méndez A. Nonalcoholic hepatic steatosis: a silent disease. *Rev Med Inst Mex Seguro Soc.* 2019 Mar 15;56(6):544-549. [PubMed]
5. Basaranoglu M, Neuschwander-Tetri BA. Nonalcoholic Fatty Liver Disease: Clinical Features and Pathogenesis. *Gastroenterol Hepatol (N Y).* 2006 Apr;2(4):282-291. [PMC free article] [PubMed]
6. Basaranoglu M, Neuschwander-Tetri BA. Nonalcoholic Fatty Liver Disease: Clinical Features and Pathogenesis. *Gastroenterol Hepatol (N Y).* 2006 Apr;2(4):282-291. PMID: 28286458; PMCID: PMC5335683.
7. Neuschwander-Tetri BA Non-alcoholic fatty liver disease. *BMC Med.* 15, 45 (2017). [PMC free article] [PubMed]
8. Agnivesha.Santarpaniyam adhyayam. Sutrasthanm 23/1. In. Vaidya Acharya Jadavji Trikamji Acharya, editor. Charaka Samhita revised by Caraka and Drdhabala with Ayurveda – Dipika Commentary by Cakrapanidatta 2nd ed. Varanasi. Chowkhamba Publications 2014.p.395
9. Acharya Vagbhata. Ayushkamiyam Adhyayam. Sutrasthanm 1/19. In Bhisagacharya Harisastri Paradakara Vaidya, editor. Ashtanga Hrdaya, with the Sarvanga Sundara Commentary by Arunadatta and Ayurvedarasayana by Hemadri.9th ed. Varanasi: Chaukhambha Orientalia Publications;2005.
10. Acharya Vagbhata. Annaswaroopa vijnaneeyam Adhyayam. Sutrasthanm 6/58. In Bhisagacharya Harisastri Paradakara Vaidya, editor. Ashtanga Hrdaya, with the Sarvanga Sundara Commentary by Arunadatta and Ayurvedarasayana by Hemadri.9th ed. Varanasi: Chaukhambha Orientalia Publications;2005.
11. Acharya Sushruta. Garbhiniyakarana sareera. Sareeerasthanam 4/13. In Vaidya Jadavji Trikamji Acharya, editor. Susruta Samhita with Nibandhasangraha Commentary by Sri Dalhanacharya and the Nyayacandrika Panjika of Sri Gayadasacharya.3rd ed. Varanasi.Chowkhamba Krishnadas Academy Publications, 2014.p.356
12. Acharya Vagbhata. Doshadivijnaniyam Adhyayam. Sutrasthanm 11/16-17. In Bhisagacharya Harisastri Paradakara Vaidya, editor. Ashtanga Hrdaya, with the Sarvanga Sundara Commentary by Arunadatta and Ayurvedarasayana by Hemadri.9th ed. Varanasi: Chaukhambha Orientalia Publications;2005.
13. Acharya Vagbhata. Maatrashitiyam Adhyayam. Sutrasthanm 8/16-17. In Bhisagacharya Harisastri Paradakara Vaidya, editor. Ashtanga Hrdaya, with the Sarvanga Sundara Commentary by Arunadatta and Ayurvedarasayana by Hemadri.9th ed. Varanasi: Chaukhambha Orientalia Publications;2005.
14. Acharya Vagbhata. Maatrashitiyam Adhyayam. Sutrasthanm 8/16-17. In Bhisagacharya Harisastri Paradakara Vaidya, editor. Ashtanga Hrdaya, with the Sarvanga Sundara Commentary by Arunadatta and Ayurvedarasayana by Hemadri.9th ed. Varanasi: Chaukhambha Orientalia Publications;2005.
15. Agnivesha.Santarpaniyam adhyayam. Sutrasthanm 23/8. In. Vaidya Acharya Jadavji Trikamji Acharya, editor. Charaka Samhita revised by Caraka and Drdhabala with Ayurveda – Dipika Commentary by Cakrapanidatta 2nd ed. Varanasi. Chowkhamba Publications 2014.p.397.
16. Acharya Vagbhata. Maatrashitiyam Adhyayam. Sutrasthanm 8/20-22. In Bhisagacharya Harisastri Paradakara Vaidya, editor. Ashtanga Hrdaya, with the Sarvanga Sundara Commentary by Arunadatta and Ayurvedarasayana by Hemadri.9th ed. Varanasi: Chaukhambha Orientalia Publications;2005.

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