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Case Study

A CASE REPORT ON THE EFFICACY OF AYURVEDIC INTERVENTION IN NON-ALCOHOLIC FATTY LIVER DISEASE (GRADE 2)

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ABSTRACT

Non-Alcoholic Fatty Liver Disease (NAFLD) has emerged as a leading cause of liver-related morbidity and mortality worldwide, characterized by excessive fat accumulation in hepatocytes in individuals who consume little to no alcohol. The disease encompasses a spectrum ranging from simple steatosis to non-alcoholic steatohepatitis (NASH), which can progress to advanced fibrosis, cirrhosis, and hepatocellular carcinoma. the pathogenesis of NAFLD is complex and multifactorial, involving genetic predisposition, environmental influences, and lifestyle factors such as diet and physical inactivity. Early stages of NAFLD are often asymptomatic, complicating timely diagnosis. Management strategies for NAFLD primarily emphasize lifestyle modifications, including weight loss, dietary changes, and regular physical activity. In this case study, effect of Ayurvedic intervention in grade 2 fatty liver reported forty-year-old obese female with grade 2 fatty liver presented with compliant, on Haematological examination revealed altered total cholesterol low density lipoprotein and triglyceride and also alanine transaminase fasting blood glucose. The patient was diagnosed sonological with grade 2 fatty liver the patient was given Ayurveda treatment for sixty days with 3 treatment regimen and two settings of *Raktmokshana (Siravedha)*. the clinical improvement in the patients sign and symptom was monitored, in haematological parameters after sixty days significant improvement was observed in symptoms no fatty tissue was reported sonological and every changed biochemical parameter within normal bound. The potential of Ayurvedic treatments in the treatment of obesity and non-alcoholic fatty liver disease is demonstrated by the current case.

INTRODUCTION

Non-Alcoholic Fatty Liver Disease (NAFLD) is a progressive metabolic liver disorder that includes a spectrum of conditions ranging from simple hepatic steatosis to Non-Alcoholic Steatohepatitis (NASH), fibrosis, cirrhosis, and hepatocellular carcinoma (HCC). More advance form of NAFLD is (non-alcoholic steatohepatitis) is metabolic dysfunction associated steatohepatitis (MASH) NAFLD is closely linked to obesity, insulin resistance, type 2 diabetes, dyslipidaemia, and metabolic syndrome, making it a major public health concern. NAFLD is regarded as *Yakrit Roga* (liver disease) and *Medoroga* (lipid disorder) in Ayurveda. *Yakrit Roga* encompasses a wide range of disorders, including liver cirrhosis, hepatomegaly, and simple steatosis. In *Yogratnakar*, *Katu* (spicy) *Amla* (sour) *Ushna* (hot) *Tikshna* (pungent) *Abhishyandi* (food that obstructs the routes) *Vidahi Aahar* causing *Pittadushti* leads to *Raktdushti* as *Pitta* and *Rakta`s Ashrayashrayi bhav*. *Raktkapha dushti* giving rise to *Yakritodara* (enlargement of liver) This case study demonstrates how Ayurvedic treatments helped a patient with grade II NAFLD.

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Patient information

History

A female patient of 40-year-old and weight 86 kg, diagnosed with non-alcoholic fatty liver disease visited OPD (outdoor patient department) December

08 2024 with chief complaints abdominal pain burning sensation in chest and abdomen, fatigue, abdominal discomfort bloating, indigestion, nausea and vomiting and irregular bowel movement for past 4 month the patient had a history of dyslipidaemia and hepato-splenomegaly along with sedentary lifestyle and irregular dietary habit including excessive intake of outside food and lack of exercise

Clinical finding

At first visit the patient blood pressure was 140/88 mm hg pulse rate 86 /min and respiratory rate was 14 /min. No any abnormal clinical finding for respiratory system, CNS, and CVS. the body temperature was normal. on palpation tenderness was found in right lumber region and umbilical region the percussion on the right lumbar region dull sound were noted, and on auscultation reduced bowel sounds were here No relevant family history of any surgical or psychological disease was present in the patient Six months prior; the patient had seen an allopathic doctor for comparable medical issues. To manage the distension of the abdomen and the evacuation of the colon, antacids and laxatives were administered. The patient did not fully recover during this time, and as a result of the symptoms returning, he sought Ayurvedic treatment. At the time of the Ayurvedic intervention, he was not taking any medications.

Table 1: According to Ayurvedic assessment *(Ashtavidh pariksha)*

1	*Nadi* (pulse)	*Pitta vata* (86/min)
2	*Mala* (stool)	Irregular bowel movement (constipated)
3	*Mutra* (urine)	*Prakrut*
4	*Jivha* (tongue)	*Saam* (coated)
5	*Shabda* (speech)	*Prakrut*
6	*Sparsh* (skin)	*Ruksha* (dry)
7	*Drik* (eyesight)	*Prakrut*
8	*Akruti* (built)	*Madhyam* (medium)
9	*Agni* (digestion)	*Visham Tikshna Agni*
10	*Bala* (power)	*Madhyam*

local examination

- Auscultation – Hypoactive reduced bowel sound
- Palpation – Liver and spleen palpable, non-tender
- Percussion – Dull note, heard

Differential diagnosis for fatty liver includes the following:

- Viral hepatitis
- Alcoholic hepatitis
- Alpha1 antitrypsin deficiency
- Wilson disease
- Primary biliary cholangitis
- Cirrhosis

Diagnosis

The patient was referred to sonologist for ultrasound of abdomen.

Laboratory investigations showed:

- Liver enzymes: Elevated AST and ALT
- Lipid profile: Increased total cholesterol (300mg /dL), LDL (130mg/dL), and triglycerides (200mg/ dL).
- Fasting blood sugar: 90mg/dL

Ultrasound Abdomen: Grade 2 fatty liver with mild hepatomegaly and fatty infiltration on abdominal ultrasound, conforming the NAFLD

Ayurvedic Perspective on NAFLD

Pathophysiology

In Ayurveda, NAFLD can be correlated with *Medoroga* (lipid disorders) and *Yakrit Vriddhi* (hepatic enlargement) due to the imbalance of *Agni* (digestive fire) and *Doshas* (bio-energies). Excessive accumulation of *Ama* (toxins) and impaired lipid metabolism lead to fatty liver conditions. [1]

Treatment protocol

The selection of line of treatment in Ayurveda is based on the principles of *Raktmokshan* (detoxification) and metabolic correction and rejuvenation.

Panchakarma

Raktmokshan (Siravedh) used to purified blood reduce inflammation and enhance liver function.

There is 2 setting of *Raktmokshan* on dated 08 December 2024 and 22 December 2024.

Intervention

**Raktpachak (Patol + Sariva + Musta + Patha + Kutki) (Vagbhat chi 1 /48) + Aarogravardhini*

**Triphaladi churn (Triphala + Guduchi + Vasa + Kirattikta + Nimba + Kutki (Vagbhat pandu /13))*

**Shankhvati*

**Avipattikar churn*

**Panchatikt ghrita*

The patient was given Ayurvedic medication for 60 days. All the interventions are presented in following table.

Table 2: Therapeutic interventions

Date of intervention	Duration	Drug	Dose and frequency	Route of administration
08 December 2024	Day 1-15	• *Ratktpachak + Aarogyavardhini vati* • *Triphaladi churn* • *Shankhvati* • *Avipattikar churn* • *Panchatikt ghrit*	3 gm + 500mg BD 3 gm BD 500 mg BD 5 gm HS 10 ml OD	Oral Oral Oral Oral Oral
22 December 2024	Day 16-30	• *Aarogyavardhini vati* • *Triphaladi churn* • *Panchatikt ghrit* • *Avipattikar churn*	500 mg bd 3gm bd 5ml OD 5gm HS	Oral Oral Oral Oral
05 January 2025	Day 31-60	• *Aarogyavardhini vati* • *Triphaladi churn* • *Avipattikar churn*	500 mg bd 3gm bd 5 gm bd	Oral Oral Oral

Diet

Pathya/Apathya

avoid spicy fried food, also food contain saturated fat salts added sugars, processed food.

Timeline of disease First occurrence of symptoms.	**Timeline** 2024 September 02
First USG of the abdomen and diagnosis of grade II fatty liver.	2024 December07
Assessment and examination were done. The treatment regimen first started	2024 December 08
Assessment on first follow-up and treatment regimen two started.	2024 December 22
Assessment on second follow-up and treatment regimen three started.	2025 January 05

RESULTS AND OBSERVATIONS

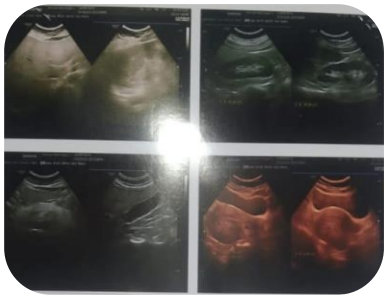
The patient's symptoms of *Yakrit Roga* and *Medo Roga* were evaluated using a four-point rating system: none, mild, moderate, and severe.

Table 3: Observation of Signs and symptoms related to liver and obesity

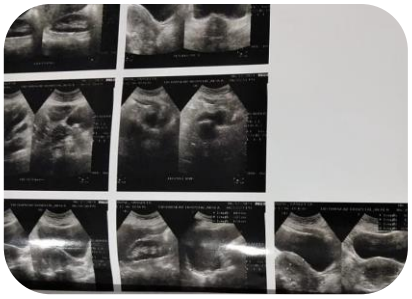
S.No	Parameters	Before treatment	After treatment
1	USG liver	Grade 2 fatty liver	Normal
2	S.G.O.T.	110.80	45
3	S.G.P.T.	129.90	55
4	Alkaline Phosphatase	150.10	101
5	Weight, kg	86	84
6	B.P.	140/88	130/80
7	Anorexia	Moderate	Normal
8	Dull pain in Rt. Hypochondrium region	Present	Absent

After two months of Ayurveda interventions, significant improvement was observed in all the laboratory parameters, and they were in the normal range. However, the effect was more pronounced on Alanine transaminase, total cholesterol, low-density lipoprotein, and triglyceride levels. Also, complaints like abdominal pain, burning sensation abdomen, fatigue, abdominal discomfort bloating, indigestion, nausea and vomiting and irregular bowel movement drop down after treatment.

USG report



Before treatment



After treatment

Ultrasonography of the whole abdomen (USG)

- Before treatment– Liver was brighter and more echogenic, loss of periportal echogenicity
- After treatment– There is complete resolution of liver parenchyma in addition After treatment there is no abnormality in portal vein

DISCUSSION

In the modern era, dietary and lifestyle changes raise the risk of hepatic disease. In western medicine, treatment of fatty liver include supportive therapy and treatment of underlying cause because of nature of disease long term treatment is required that cause various side effect hence effective intervention is required in such cases.

NAFLD is a disease of *Raktvaha strotas*. Hence *Raktmokshan* and *Nitya Virechana* (laxative) were the main principles. Also in this case, basic needs include *Ama Pachana* (eliminating the toxins from the body) and *Agni Deepana* (enhancing the digestive fire).

Raktpachak churna[2] *{Patol (Trichosanthes doica) + Sariva (Hemidesmus indicus) + Musta (Cyperus rotundus) + Kutki (Picrorhiza kurrooa) + Patha (Cissampelos pareira)}* – These contain are mainly used for *Raktgata Jwara*, and *Satatjwar*. In fatty liver disease, the "*Dosha*" are believed to be mainly vitiated in *Raktwaha srotasa*, therefore, this preparation is used for *Doshagat Aampachan* (eliminating the toxins) mainly from *Raktwaha Srotasa*.

Triphaladi churn[3] *{Triphala [Aamlki (Phyllanthus emblica) Bibhitki (Terminalia bellirica) Haritki (Terminalia chebula)] + Guduchi (Tinospora cordifolia) + Vasa (Adhatoda vasica L.) + kirattikt + Neem (Azadirachta indica A.) + Katuki (Picrorhiza kurrooa)}*- these drugs mainly used for elimination of *Raktgat pittadosh shodhan* and enhancing the secretion of *prakrut* (natural) *pachak pitta* from liver.

Avipttikar churn[4] contain 33% of *Trivutta* which mainly known for *Sukh virechan* (easy purgative) as *Virechan* is main treatment of *Raktdosha* also *Rakta* and *Pitta* live in *Aashrayashrayi bhav* and liver is *Moolstana* of *Raktavah strotas* so here *Virechan* improve the quality of *Pittadosha* and *Rakta* and protect liver function.

Ingredients *Punarnava Mandura*[5] have digestive, metabolism-enhancing, and antioxidant properties. *Arogyavardhini vati* is primarily a hepatoprotective, it has been shown to help patients with NAFLD improve their liver function**.**

Panchatikta together with *Ghrit* and *Triphala.* Is polyherbal ayurvedic formulation called *Panchatikt ghrit.*[6]

Arogyavardhini vati:[7] The drugs used in *Arogyvardhini Vati* are *Vata Kaphashamak*, *Deepak* (Appetizer), *Pachak* (digestive), *Vishaghna* (anti-toxic), *Jwaraghna* (anti-pyretic), detoxify, and has effect on *yakrut* (liver).

Shankhvati[8] the contain of *Shankhavati* are used in abdominal discomfort, gases and *Vishtabdhajirna, Aadhmana,* and *Aatopa*.

Raktmokshan[9] *Prabhutdosh nirharan* done by *siravedh* The *Siravedha* method can efficiently absorb toxic compounds, making it simple to eliminate them from the body. *Siravedha Karma* is a genuinely *Tridoshahar* procedure as it purifies the primary centre of *Rakt* in addition to eliminating *Pitta* and *Kapha* Doshas.

CONCLUSION

Liver disorder such as fatty liver alcoholic or non-alcoholic are more common due to changing lifestyle and bad food habits this individual case report shows the significant reassurance in patient symptoms on the basis of the result, we can conclude that Ayurvedic interventions used in the present case have shown a significant effect on weight reduction and management of non-alcoholic fatty liver. The results observed in this case are encouraging, and further well-designed clinical trials may be carried out to test the efficacy of these interventions in similar conditions.

Abbreviation

NAFLD- Non-alcoholic fatty liver disease

NASH- Non-alcoholic steatohepatitis

MASH - Metabolic dysfunction associated steatohepatitis

USG- Ultrasonography

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