Understanding of Non-Alcoholic Fatty Liver Disease (NAFLD) in Unani System of Medicine: A Co relational Study with Modern Medical Science

[1] Musab Siddique; [2]Swaleha Akhtar; [3]Ishrat Ali; [4]Badrudduja Khan
[1,2] Assistant professor, Department of Moalajat, Sufia Unani Medical College and Research Centre, Bihar, India
[3]Assistant Professor, Department of Mahiyatul Amraz, Jamia Tibbiya Deoban, U.P, India
[4]Professor, Department of Moalajat, Ajmal Khan Tibbiya College and Hospital, AMU, U.P, India

Corresponding Author: Ishrat Ali

Abstract:
Background: Non-Alcoholic Fatty Liver Disease (NAFLD) is a leading cause of chronic liver dysfunction, affecting about 25.24% of the global population. In India, prevalence ranges from 9% to 32%, especially among individuals with obesity, diabetes, or sedentary lifestyles. NAFLD encompasses a spectrum from simple hepatic steatosis to non-alcoholic steatohepatitis (NASH), cirrhosis, and hepatocellular carcinoma. Currently, there is no definitive standard pharmacological treatment in modern medicine, prompting exploration of alternative systems such as Unani medicine. **Objective:** To explore the etiology, pathology, classification, symptoms, and complications of NAFLD through the lens of Unani medicine, and to identify traditional approaches for its prevention and management. **Methods:** A comprehensive review of classical Unani texts (Al-Qanoon fi al-Tibb, Kamil al-Sana'ah, Kitab al-Hawi etc) and modern scientific literature was conducted. Relevant Unani concepts were identified and correlated with contemporary understanding of NAFLD. **Results:** In Unani medicine, NAFLD primarily attributed to derangement of hepatic temperament and humor imbalance, particularly excess Balgham and Sauda. Causes include overeating, lack of exercise, and accumulation of morbid matter in the body including liver. Clinical features align with fatigue, heaviness in the right hypochondrium, poor digestion, and changes in temperament. Management focuses on lifestyle and dietary modifications like Ilajbil Ghiza (dietotheapy), Ilajbil Tadbeer (regimental therapy), and Ilajbil Dawa (pharmacotherapy) Several Unani herbs exhibit hepatoprotective, antioxidant, and anti-inflammatory effects relevant to NAFLD. **Conclusion:** Unani medicine provides a holistic understanding of liver disorders akin to NAFLD. Integrating classical insights with modern research may offer effective preventive and therapeutic strategies. Further clinical validation is essential to establish Unani interventions in NAFLD management.

Key words: NAFLD, Ghair Khamri Tashahhumm-e-Kabid, Warme Kabid, Unani medicine

1). Introduction:

Ghair Khamri Tashahhumm-e-Kabid (Non-Alcoholic Fatty Liver Disease) is recognized as a condition associated with affluent societies, particularly prevalent among the obese population. It is the most common chronic liver disease in many parts of the world, including the United States. NAFLD is defined by the accumulation of fat, mainly triglycerides, in liver cells, typically accounting for more than 5-10% of liver weight, in the absence of significant alcohol consumption (less than 30 g/day for male and less than 20 g/day for female) or other identifiable causes of liver fat accumulation. NAFLD represents a spectrum of liver conditions, ranging from steatosis to non-alcoholic steatohepatitis (NASH) and may progress to more severe stages, including cirrhosis and primary liver cancer. It has a global prevalence of 25.24%, with significant geographical variation. The highest rates are seen in the Middle East and South America (~30%), while lower rates are found in Africa (13%) and some parts of Asia, such as China (12.5–38%). (1–4)

The prevalence of NAFLD in India's general population ranges from 9% to 32%, with a significantly higher occurrence among individuals who are overweight, obese, or have diabetes or prediabetes. (5)

Non-Alcoholic Fatty Liver Disease (NAFLD) is not described in Unani medicine as a disease entity, but it can be understood in Unani medicine as aspectrum of disease, similar to how conventional medicine describes it. Because its etiology, risk factors, pathogenesis, clinical features and complications described by Unani scholars, closely resemble those of NAFLD. However, due to the lack of advanced tools and technologies, they were unable to give it a specific name.

In Ghinamuna is mentioned, the pain in the liver/hepatic area is sometimes caused by hararat (heat), sometimes by burudat (cold) and at times, by both factors (hararat and burudat). Jalinus said very well which is referenced by Abul Mansur Al Hasan Qamrin in Ghinamuna, tahajjur (hardness) develops very quickly in the liver, especially in those people who have inflammation in the liver and they continue to eat greasy and sticky foods in such condition. He further said, if Waram-e-kabid sulb became firmly stable, it cannot be cured by me, even not by any one. Such patients often develop ascites and often die from it very quickly. By the above we can say that, the NAFLD is described as a spectrum of disease in Unani medicine. Initially there is accumulation of fat in the liver (steatosis) which cause pain/heaviness in hepatic area. If patient continue poor dietary habits, then it will lead to steatohepatitis. After that if inflammatory process continues then it will lead to Waram-e-kabid sulb and tahajjur (fibrosis and cirrhosis), after that istisqa (ascites) will appear and patient will ultimately die as the condition has no medical cure.(6)

2). Classification:

In Unani medicine the disease can be classified as primary and secondary. As the disease well described by Ismail Jurjani under the causes of Zofe kabid (hepatic

dysfunction). He wrote Sue mizaj (morbid temperament) either it mainly affects liver or whole body. We all know that, due to Sue mizajbarid (morbid cold temperament)there is excessive deposition shahm (fat) in the body and in liver too, leading to obesity and NAFLD. He further mentioned some diseases primarily affect liver. It is related with primary classification of conventional medicine which include some unknown, genetic factors and obesity. Obesity is most important cause of NAFLD. Jurjani also described that Zofe kabid could be secondary to diseases affecting organs related to the liver, such as the spleen, stomach, kidneys, uterus, and lungs. This mirrors the secondary classification in conventional medicine, including conditions like polycystic ovary syndrome (PCOS) and hypothyroidism. (7)

3). Risk Factors:

3.1) Siman-e-Mufrit (Obesity): Siman-e-mufrit is defined as accumulation of excess fat in the body including liver. If we deeply go through the topic of Siman-e-mufrit then we will be able to understand that the all components of metabolic syndrome described in modern science are found in Siman-e-mufrit like farbahi (obesity), sudden death which is because of brain haemorrhage or myocardial infarction, it is correlated with hypertension. Fart-e-tadassum fil dam (dyslipidemia) because Siman-e-mufrit is a condition caused by excessive accumulation of shahm (fat) in the body. Obviously, the quantity of shahm will also increase in the vessels leading to dyslipidemia. Now a day Siman-e-mufrit is more important factor for NAFLD which is closely resemble with Metabolic syndrome/obesity.(8)

3.2) Dusumat-fil-Dam (Dyslipidemia): Unani scientists are well aware about the presence of lipid in the blood. Jalinus mentioned the presence of dusumat (fatty substances) in the blood. Hararat inhibit fat accumulation while burudat lead to fat deposition in various part of body including liver. Excessive accumulation of shahm in any living can be detrimental, leading to burudat in the organs and potentially resulting in death.This can be easily correlated with dyslipidemia which is an important risk factor for NAFLD.(9,10)

3.3) Akyas-e-Khusyatur Raham (Polycystic Ovarian Syndrome): It is mentioned by Unani scholars Zofe kabid can be due to organs having some relation with liver like rahamincluding Khusyaturraham (uterus & ovary). Now a day researches concluded that up to 30% of women with polycystic ovary syndrome (PCOS) exhibit increased levels of alanine transaminase (ALT), a liver enzyme that can indicate liver dysfunction. Additionally, research has shown that 42% of PCOS patients are affected by NAFLD. From the above we can conclude that due to diseases of Khusyaturraham liver can be affected resulting fatty liver.(11,12)

3.4) Ghizai-be-Etedali (Poor Dietary Habit): Unhealthy dietary pattern especially excessive intake of ghaleez and kaseefaghziya (fatty and oily foods), excessive use of barid substances and fructose containing beverages are important risk factor for NAFLD. Research involving 18 healthy individuals demonstrated that increasing caloric intake through fast-food meals led to marked elevations in alanine aminotransferase (ALT) levels and a significant increase in liver fat within just four weeks. Fructose, known for its lipogenic (fat-producing) and pro-inflammatory properties, contributes to oxidative stress and the upregulation of tumour necrosis factor-alpha (TNF-α), which are detrimental to liver health.(13)

3.5) Zofe Meda: Ibne Hubal Baghdadi mentioned that when meda (stomach)does not function properly then semi digested food reach to liver and causes sudda and waram. When food is not digested properly, ultimately it will cause alteration in gut flora. This is closely correlated with Gut liver axis theory. Recently it is considered the gut microbiome plays a crucial role in the development and progression of Non-Alcoholic Fatty Liver Disease (NAFLD) through various mechanism.(13)

3.6) Ihtiraq (Unwanted Combustion): According to hippocratic doctrine akhlat are divided in to four types. A normal proportion of these akhlat in term of quantity and quality is responsible for health and vice versa. Unani medicine has described a deteriorating phenomenon that alters the normal humoural makeup and is implicated in all the ailments is called as ihtiraq (unwanted combustion), and every disease of our body is suggestive of ihtiraqin a specific humour. All altered types of humours are collectively known as Sauda-e-ghairtab'iya (abnormal melancholic humour), which has a cold and dry temperament. Unwanted combustion or Iḥtiraqof balgham produces an abnormal humour called as Sauda-e-balghamiya/ balgham-e-mohtaraq. This balgham-e-mohtaraq responsible for tissue inflammation, oxidative stress, mitochondrial dysfunction and insulin resistance which are considered very important risk factor for NAFLD now a day.(14)

4). Pathogenesis:

Abul Hasan Ahmad bin Mohammad Tabri explained that Waram-e-rikhw (soft swelling) occurs due to obstruction and retention of rutubat (moist) in the liver vessels, leading to a change in the liver's temperament. This condition is often the result of excessive consumption Barid ratabaghziya. Additionally, he described that Waram-e-rikhwcan progress to Waram-e-sulb (fibrosis and cirrhosis) if not managed properly. Waram-e-rikhw is categorized into two types; if it remains unchanged and there is no alteration in quwwa (power), istisqa (ascites) will not develop. However, if there is a change in quwwa, particularly in Quwwat-e-mugayyrah, istisqa may occur. By the above we can clearly understand the progression of NAFLD in Unani medicine

which include Waram-e-rikhw (steatosis, steatohepatitis), Waram-e-sulb (fibrosis, cirrhosis), istisqa (ascites).(15)
Ibn Sinamentioned that liver diseases typically arise from burudat. Razi discussed that when the Quwwat-e-mugayyarh is altered due to heat, it results in the production of safra. Conversely, if altered due to cold, balgham is produced. We know that burudat is responsible for alteration and causing slow down bodily functions including liver. Due to alteration in liver function, there is an imbalance between influx and efflux of shahm (fatty acid) in liver resulting accumulation within it causing NAFLD.(16,17)

5). Clinical Features:
Qillat-e-shahwateghiza (decreased appetite), Siql-e-batan (pain/heaviness in right hypochondric region), symptoms of increased quantity of balgham (lethargy, weakness, somnolence), pallor/dull face and change in normal colour of body. These are some features described by Unani scholars can be correlated with symptoms of NAFLD. (17–19)
On palpation, the liver feels hard in cases of Waram-e-kabid saudawi, but soft in case of Waram-e-kabid balghami (hepatomegaly) as described by Razi.(16)

6). Treatment:
In Kitab Tadbeer-ul-Asih'ha, Jalinus advised that individuals experiencing a sensation of heaviness in the liver area (right hypochondrium) should adopt Lateef tadabeer and avoid substances that produce thick and viscous humours. This indicates dietary modification is very important in case of liver diseases including NAFLD. Now a day role of diet in production of NAFLD is proved by various scientific studies and dietary modification is advised as part of treatment. Riyazat(exercise) also plays crucial role in management of Sue mizaj kabid barid(morbid cold temperament of liver) as described by Qarshi in Jamiul Hikmat. Apart from that a number of single drugs like Gulesurkh(Rosa damascene), Zafran (Crocus sativus) Afsanteen(Artemisia absinthium) Mako (Solanum nigrum) Kasni (Cichoriumintybus) Luk (Lacciferalacca) Rewand cheeni (Rheum emodi) etc, as well as compound formulations like Majoondabidul ward, Arqemako, Arqekasni, Qusezarishk, Qurse Afsanteen, Dwaulluk are mentioned in Unani for management of liver diseases.(16,20)

7). Complications:
Hkm Azam Khan mentioned if Sue mizaj kabid barid not treated promptly may results in Zofe kabid (steatosis) Wajaul kabid (steatohepatitis) Sooulqinya (anemia with hypoprotenimia), Sigar-e-kabid (cirrhosis) and Istisqa (ascites). Buqrat mentioned Waram-e-kabid sulb is chronic and potentially fatal (cirrhosis). Jalinus mentioned hematemesis may occasionally occur in such cases (esophageal varices). It is also mentioned constipation should be avoided in patients of liver diseases. We know that in ascitic patient constipation is avoided to prevent hepatic encephalopathy. Ismail

Jurjani further mentioned the treatment of Waram-e-sulb which appears in liver is very difficult. If it is treated early then there may some hope of cure, but successful treatment is not guaranteed. Now a day it is proved that the liver fibrosis and cirrhosis have no satisfactory medical treatment except for liver transplant.(7,19)

8). Conclusion:

Non-Alcoholic Fatty Liver Disease (NAFLD) is a prevalent condition linked to affluent societies, especially among obese individuals. It is characterized by the accumulation of fat in the liver, often progressing through a spectrum from steatosis to non-alcoholic steatohepatitis (NASH), and eventually leading to cirrhosis and primary liver cancer.

Although NAFLD is not explicitly described in Unani medicine, it aligns closely with conditions such as Zofe kabid (liver dysfunction). Unani scholars have identified factors contributing to liver dysfunction, including Sue mizaj barid (morbid cold temperament), obesity, dyslipidemia, and poor dietary habits. These factors mirror the risk factors identified in modern medicine, such as metabolic syndrome, obesity, and insulin resistance. The progression of NAFLD in Unani terms can be likened to Waram-e-kabid (NASH) and its subsequent stages, including Waram-e-kabid sulb,tahajjur and istisqa (fibrosis cirrhosis and ascites).Treatment in Unani medicine emphasizes dietary modifications, exercise, and the use of specific herbal formulations to manage liver dysfunction. The importance of preventing further liver damage through early intervention is highlighted, as advanced liver diseases such as cirrhosis have limited treatment options, with liver transplantation being the only definitive solution.In conclusion, NAFLD can be understood through both modern medical and Unani frameworks, with a shared focus on risk factors like obesity, poor diet, and metabolic dysfunction. Early detection and lifestyle changes remain crucial in preventing severe liver complications.

Conflict of Interest: No conflict of interest
Acknowledgements: I acknowledge all authors for their contribution

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