

CASE REPORT

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Diet-related Improvement of Non-Alcoholic Fatty Liver Based on Iranian Traditional Medicine (Persian Medicine): Case Report

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ABSTRACT

Background: NAFLD is the most common cause of chronic liver disease worldwide. The recommended therapy is lifestyle modification, which consists of dietary interventions and physical activity. The first line of treatment in Iranian Traditional Medicine (ITM) regardless of the type of disease is following the six essential principles named Setteh-ye- zarourieh, of which diet is the most important. The long process of treating NAFLD requires a comprehensive lifestyle design, which can be suited for the patients.

Case Presentation: A 57-year-old woman is a known case of NAFLD (grade II-III) accompanied by Insulin resistance, obesity and abnormal liver function tests (LFT). The accompanied sign and symptoms were heartburn, taste of acid, constipation and moderate weakness. The quality of life assessment was performed with SF-36 questionnaire.

Intervention: The patient underwent three months of dietary treatment based on Iranian Traditional Medicine (ITM).

Conclusion: Insulin resistance, obesity and LFT levels improved completely in 3 months and grading of fatty liver decreased to I-II. Afterwards the liver improved entirely and remains healthy after 2 years.

Keywords: Non-alcoholic fatty liver, Persian Medicine, Diet, Iranian Traditional Medicine, Insulin resistance

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Introduction

The prevalence of non-alcoholic fatty liver disease (NAFLD) is increasing along with obesity and metabolic syndrome [1]. NAFLD is the hepatic presentation of metabolic syndrome and one of the major health problems worldwide. NAFLD is an umbrella term beginning with accumulation of triglycerides in the liver (simple steatosis) and can progress to steatohepatitis, fibrosis, cirrhosis even hepatocellular carcinoma. The global prevalence of NAFLD is about 30%, which can increase to 40%-90% in obese individuals [2-4]. The prevalence of NAFLD in Iran is 39.9% [5]. Insulin resistance is the major risk factor for this disorder [6]. Insulin resistance is when cells in the muscles, liver and fat don't respond properly to insulin. There is no approved drug for treatment of NAFLD. To date, lifestyle modification with focus on diet regulation and physical activity is the preferred protocol for NAFLD treatment. There are few clinical trials to show the benefits of the particular diet, for instance Mediterranean diet [4].

Persian medicine as an old and deep-rooted school of medicine has various therapies for liver disease [7].

The first step of the approach to any disorder including NAFLD is lifestyle management, via the six essential principles (Setteh-e-Zarourieh) that include the following:

1. air
2. foods and drinks
3. sleep and wakefulness
4. depletion of harmful matters and retention of necessary matters
5. movement and rest

6. emotions

The rules pertaining to "foods and drinks" are the most important among the mentioned factors.

The patient presented in this case is one of the participants of the clinical trial named "Investigation of Dietary Management Based on Iranian Traditional Medicine Effect on Insulin Resistance in patients with Non- Alcoholic Fatty Liver Disease".

Case Presentation

The patient was a 57- years- old woman who was incidentally diagnosed with NAFLD one year ago by ultrasonography. During this time, the severity of fatty liver increased from grade II to II-III in spite of receiving Metformin and Vit D. On admission, she mentioned the following habits and symptoms in medical history: fast eating, heartburn, taste of acid, constipation, moderate weakness and day napping. The findings in physical exam included a weight of 76 Kg, height of 154 Cm, BMI: 32, waist circumference (midpoint between the lower margin of the rib cage and the iliac crest): 102 Cm, Blood pressure: 120/80 mm Hg, dental indentations on the tongue, narrow and weak pulse. The first laboratory test revealed the following: FBS: 104, Serum Insulin: 13.5, ALT: 102, AST: 118, Chol: 201, TG: 107, HDL: 51, LDL: 128 and HOMA-IR: 3.46.

Homeostatic model assessment (HOMA) is a method for assessing insulin resistance and β -cell function. HOMA-IR formula is (fasting glucose x fasting insulin)/405.

Ultrasound report showed grade II-III of fatty liver.

Based on temperament criteria in ITM, she possessed hot and wet temperament which had changed to cold and wet distemperament.

The patient completed SF-36 questionnaire to

assess quality of life. This is based on 36 items to represent health concepts consisting of physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems and mental health. The primary calculated score was 2635.

Treatment

This trial includes teaching the rules of eating and drinking such as chewing food fully and avoiding consumption of more than one type of food at any meal or drinking any liquid during meals. Some recommendations and abstinences are listed in the table-1.

In addition, foodstuffs that are liver tonic, liver cleansers or hepatoprotective were recommended besides restricting anything that could be harmful for the liver based on ITM manuscripts A list of foodstuffs considering their temperaments and recommended recipes for example Chickpea broth, was provided to the patient. A number of these foodstuffs and their effects on liver summarized in table-2. In Addition, the patient was advised to avoid refined flour, Beef and veal, very sweet foods, barbecued meat especially raw or burned, sweet desserts and drinking cold water.

The patient reported all foods during the week by completing food diary (Figure-1).

She was visited monthly for 3 months while in the last visit, following changes occurred:

Heartburn, taste of acid, constipation and weakness resolved completely. Quality of life score raised to 3440. She had about 12 kg weight loss without calorie restriction. Waist circumference was reduced by 14 cm. Lab tests revealed the following results: FBS: 90, Serum Insulin: 10.7, ALT: 12, AST: 18, Chol: 130, TG: 148, HDL: 45, LDL: 56, HOMA-IR: 2.37. Report of abdominal ultrasound presented the improvement of fatty liver. After 3 months grading improved to I-II. The first ultrasound was performed about 7 months later at the same center which showed the complete recovery from fatty liver. The patient was followed in regular intervals for two years. The last ultrasonography was performed in October 2018 showing no sign of fatty liver.

Discussion

Many efforts have been made in order to find an effective therapy for NAFLD. As yet, lifestyle management is the primary and most efficient treatment [38,39]. Most of studies have confirmed that lifestyle modifications

Table 1-Some Recommendations and Abstinences

Recommendations	Abstinences
Eating when there is "True appetite"	Long- term thirst
Fully chewing food	Very sweet foods especially after a meal
Regular physical activity	Eating with anger, stress or anxiety
Modification of sleeping time	Daytime napping
Drinking liquids like water not during but 1-2 hours after meal	Heavy exercises, intercourse and sleeping immediately after a meal

Table 2- Beneficial Foodstuffs for Liver

	Common name	Traditional name	property	Pharmacological effect in ITM	Pharmacological effect
1	Chickpea	Hommas, Nokhod	Hot and dry	Mofatteh ¹ , Monaghi ² [8]	Antihyperlipidemic [9,10]
2	Celery	Karafs	Hot and dry	Mofatteh [8]	Hepatoprotective [11], Antioxidant [12]
3	Hazelnut	Bondogh, Fandogh	Hot and dry	Moghavi ³	Antioxidant, Anti-inflammatory [13]
4	Squash	Ghar'e	Cold and wet	Liver cooling [14], Mofatteh [15]	Antioxidant [16]
5	Quince	Safarjal, Beh	Cold and dry	Moghavi	Antioxidant, Antihyperglycemic [17]
6	Apple	Tofaah	Hot and wet	Moghavi	Antioxidant activity, Antihyperlipidemic [18]
7	Fig	Teen, Anjir	Hot and dry	Mofatteh [19]	Hepatoprotective [20], Antioxidant activity [21]
8	Saffron	Zaafaran	Hot and dry	Moghavi Mofatteh [22]	Anti-inflammatory [23], Antioxidant activity [24]
9	Spinach	Esfenaj	Cold and wet	Jaali ⁴	Anti-inflammatory [25], Antioxidant activity [26]
10	Curcumin	Zardchoobeh, Oroogh-al-sabbaghin	Hot and dry	Jaali	Antihyperlipidemic [27]
11	Carrot	Jazar, Zardak	Hot and dry	Moghavi, Mofatteh	Antioxidative activity [28]
12	Pomegranate	Romman, Anar	Cold and wet	Moghavi, Jaali, Mofatteh	Radical scavenger Antioxidant, anti-inflammatory [29,30]
14	Common Purslane	Khorfeh,	Cold and wet	Moghavi	Immunomodulatory effect [31]
15	Iranian Damask Rose	Vard, Gol-e-sorkh	Cold and dry	Moghavi	Radical scavenger Antioxidant [32]
16	Cinnamon	Darsini, Darchin	Hot and dry	Moghavi, Mofatteh	Insulin sensitizer [33], Antioxidant [34]
17	Cumin	Zireh, komun	Hot and dry	Moghavi	Anti-inflammatory [35]
18	Black seed	shooniz	Hot and dry	Moghavi	Insulin sensitizer, Antihyperlipidemic [36]
19	Almond	Lowzol holw	Hot and wet	Moghavi	Hepatoprotective, Antihyperlipidemic (18, 19)
20	Ginger	Zanjebil	Hot and dry	Moghavi	Hepatoprotective [37]

1. Mofatteh: liver obstruction reliever by the decrementing blood intensity
2. Monaghi: cleanses the liver by excretion of waste materials
3. Moghavi: protects organ ailments or injuries, tonic, hepatoprotective
4. Jaali: Detergent, cleaner, Scraper [15]

including diet and exercise are the best strategies for this ailment [2,40–42]. Coordination with the culture and taste of patients to choose a diet is also very important. Although NAFLD is not mentioned in ITM references as such, a number of liver diseases such as changes in liver dystemperaments (Soo-e-mezaj), obstructions

(Soddeh) or weakness (Zaf) resemble NAFLD based on pathophysiology. On the other hand, the liver is an important organ in ITM and there are many general therapeutic instructions including diet, without considering a particular disorder. Accordingly, the first step in treatment is lifestyle education based on six essential principles. There

Food Diary (Weekly)

Name: _____ Date: from to

	Breakfast	Morning Snack	Lunch	Afternoon Snack	Dinner
Saturday					
Sunday					
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					

Figure 1: Weekly Food Dairy

is an interconnection between these principles. Although diet is the most important factor, but the rules of sleeping or physical activity should not be forgotten. Depletion of harmful matters is another imperative principle. Thus constipation, urine retention or menstruation disorders should be treated. The second step of treatment in any disorder is nutrition therapy. General nutrition guideline consists of beneficial and harmful foods. Recent studies have confirmed many of them. In addition, Food temperament should be considered as well.

The first process of digestion occurs in stomach. Stomach disorders can lead to liver diseases. Stomach dystemperament causes symptoms

such as fluctuation, heartburn and acid reflux. Therefore, diet should suite the particular stomach problems as well.

Conclusion

The rising prevalence of NAFLD demands finding a definite therapy. The usual NAFLD management is lifestyle modification. Diet and exercise followed by gradual weight loss, improve liver steatosis. ITM-based diet or lifestyle as a whole improved the patient's steatohepatitis and increased her quality of life. Long-term follow-up shows that lifestyle education has been effective.

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