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Case Report

Obese MAFLD Secondary to SARS-COV 2 Infection in a Young Adult: A Case Report

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Abstract

We present an interesting case of liver complication after acute SARS-COV-2 infection associated with neurological complication in a 27-year-old male Cuban patient, who lives in Uruguay. Attended to consultation due to He reports that since the beginning of the year he began to experience pain in Lower limbs with foot cramps that made it impossible to walk at times and felt abdominal pain. After making an exhaustive clinical evaluation of the patient, it was determined that he had a metabolic associated fatty liver disease with sensitive polyneuropathy of the lower limbs. When referring to management, we first observed that vitamin therapy as well as acupuncture help improve the quality of live as well as relieve pain, stress and anxiety. On the other hand, vitamin therapy and physical exercise are two points in common in treatment of both entities.

Although it was shown that acting on the risk factors and modifying them we can achieve a notable improvement and thus ensure a better quality of life for the patient.

Keywords: *SARS-COV 2; MAFLD; Liver Enzyme Alterations; Liver Injury*

Abbreviation

MAFLD: Metabolic Associate Fatty Liver Disease

Introduction

SARV-COV-2 has spread rapidly throughout the world, infecting millions of people [1]. Initially, an adaptative immune response is observed that results in a great inflammation, which later results in tissue damage [2]. Knowledge regarding the acute phase of the disease is abundant with respect to knowledge regarding both short and long-term complications [1,3].

Complications vary according to the severity of the acute phase, the patient´s symptoms as well as the type of treatment. In addition to this, there is evidence of involvement in all systems, but one of the most frequent is neurological complications whose spectrum fluctuates from fatigue, headache, muscle weakness, myalgia to more serious conditions [4,5].

Another of the system affected is the gastrointestinal system, which shows a slow recovery from symptoms [1,3]. Consequently, its is vitally important to highlight the alterations in liver enzymes during the acute phase, based on hepatocellular damage and biliary stasis, which may remain its alteration for weeks up to month [6,7].

One criterion to consider is the liver damage associated with COVID-19, which is understood as all liver damage or involvement in the course of the disease and its treatment with or without prior liver condition [8], which includes in its spectrum from cytotoxicity to replication viral activity in the liver [9,10].

Aim of the Study

The aim of our work is to describe a case of metabolic associated fatty liver disease as a complication of COVID 19 in a young man after several months where acupuncture, change in lifestyle and dietary pattern where the key factor.

Case Presentation

A 27-year-old male, who in December 2020 suffered from COVID-19 which only had symptomatic treatment from his home. He reports that since the beginning of the year 2021 he began to experience pain in Lower limbs with foot cramps that made it impossible to walk at times. A lumbosacral spine tomography was performed which did not show any structural affectation. In addition to the questioning, the patient reported that he had taken a large amount of pain killers without any relief. He has a history of bronchial asthma and in his childhood he was treated for a kidney problem. His mother is hypertensive. The patient does not smoke, drinks occasional alcohol and has a cup of coffee when he gets up every morning. His eating habits, according to him, are somewhat messy as he eats a lot of beef and at meals he can eat up to 5 plates of food. In the patient Interview, he reported feeling abdominal pain, sometimes weakness, anxiety, irritability and fatigue at times. Physical examination revealed:

- Weight: 105 kg
- Height: 1.80m
- Body mass index: 32.40 Kg/m^2
- Hip circumference: 110
- Abdominal circumference: 104
- His Blood Pressure was controlled (125/80 mmHg). His Pulse rate was normal (85 bits per minute). His Respiratory rate was normal (18 per minute). His abdomen was not distended. His liver was no palpable. No palpable masses were felt and his bowel sounds were active. The neurological examination did not reveal any significant element.

Abdominal ultrasound showed:

- Diffuse increased echogenicity of the liver parenchyma in keeping with mild hepatic steatosis. Liver contours are smooth and there are no focal hepatic lesions. Portal vein is patent and has anterograde flow.
- Normal gallbladder and biliary tree.
- Normal Spleen.

Note: The reference values of the blood markers are in table 1.

Markers	Value	UM
Hemoglobin	14.5	g/l
Hematocrit	0.47	%
Platelets	262	10^9/l
CBC	5.7x 10^9	10^9/l
Glycemia	5.2	Mmol/l
AST	120	UI
ALT	61	UI
Alkaline phosphatase	105	UI
Total Protein	73	g/l
Creatinine	93	Mmol/l
Urea	480	Mmol/l
Triglycerides	1.1	Mmol/l
Cholesterol	6.9	Mmol/l
Total Bilirrubin	49	µmol/l
Globulins	21	g/l
Albumin	32	g/l
GGT	27	UI

Table 1: *Blood markers.*

After making an exhaustive clinical evaluation of the patient, it was determined that he had a complication of COVID-19, for which a sensitive polyneuropathy of the lower limbs was established as a diagnosis, in addition to a metabolic dysfunction associated fatty liver, both of which are caused by starting point of the SARV CoV 2 infection acquired by the patient 6 months ago, the patient also has Grade I Obesity. For pain relief we decided to perform acupuncture therapy assisted with occupational therapy. Acupuncture points were used for pain, stress, insomnia and to strengthen immunity.

He also experienced relief of anxiety and patient start to sleep at least 8 hours. A treatment with B complex vitamins and Vitamin E was started, achieving a significant improvement in the symptoms associated with polyneuropathy.

The most serious issue lies in the metabolic dysfunction that is directly related to the liver. On the other hand, to begin to act on the metabolic dysfunction, it was decided to indicate a standardized diet for the patient in order to achieve a decrease in body weight but avoid complications that could occur in a short period of time. For this reason the following calculations were made to establish a standardized diet: Patient with light physical activity with a total energy expenditure (GET) = 3442 kcal that needs according to macronutrients 344 kcal of protein (86g) 688 kcal from fat (76g) 1893 kcal of Carbohydrates (473g). The calculation was made from the established minimum ranges, it also needs a contribution of Vitamin B6, B12 and Vitamin E. Your daily water needs are 4320 ml per day.

Discussion

This case is no very peculiar since it shows two unequal complications but at a certain point common elements are associated in their management and Treatment. Firstly, the case of peripheral polyneuropathy, a frequent complication [5] but a little rare when we can observe metabolic associated fatty liver disease in a young adult with healthy history.

When referring to management, we first observed that vitamin therapy as well as acupuncture help improve the quality of live as well as relieve pain, stress and anxiety. On the other hand, vitamin therapy and physical exercise are two points in common in treatment of both entities.

When referring to MAFLD, we must emphasize that it is present in a patient with grade I obesity without comorbidities. According to clinical picture and supported by ultrasound together with blood markers, the diagnosis is confirmed.

The dietary readjustment according to the basic needs of the patient with respect to his condition was an important element in the treatment and gradual recovery of the patient. Although there is evidence of an increase in transaminases [11], hence there is no evidence of insulin resistance and therefore we could be present before a patient with MAFLD metabolically obese health. There is no evidence of advanced stages, such as NASH and fibrosis that has not been corroborated by liver biopsy but by the fibrosis marker in non-alcoholic fatty liver disease and by FIB 4 fibrosis Score, also seen in the clinical status of the patient.

Conclusion

COVID-19 is a disease with a high rate of ineffectiveness that can progress from the symptomatic stages to the most serious during its acute phase. Consequently, it brings with it a wide range of complications, especially those that affect the liver. Metabolic associate fatty liver disease is not usually such a frequent complication and less in a young person with a health history. Although it was shown that acting on the risk factors and modifying them we can achieve a notable improvement and thus ensure a better quality of life for the patient.

Ethical Statement

The authors declare that all their institution's protocols have been followed for this study, and that it complies with the ethical standards.

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