serum concentration of sodium was <135 mEq/L in hypotonic state and water retention.

Results: The incidence of hyponatremia was 9.6% (13/135). A prognostic risk index was identified based on fluid retention and the baseline MELD score (RH-MELD Index) (Table 1). A higher incidence of hyponatremia was observed in patients in category III [RR: 7.96 (95%CI: 1.17-54.06, p=0.034)], when adjusting for diet; patients with protein supplement consumption without a structured diet had a higher risk of hyponatremia [RR: 17.72 (95%CI: 3.50-89.52), p=0.001)].

Conclusions: The results suggest that the incidence of dilutional hyponatremia in outpatients with cirrhosis is frequent; mild alterations in water retention and liver function in the compensated phase represent an early indicator of its development, which can be modified by the indicated diet.

Ethical statement

The protocol was registered and approved by the Ethics Committee. The identity of the patients is protected. Consentment was obtained.

Declaration of interests

None

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Table 1
RH-MELD Index.

Risk categories for Hyponatremia		
(RH-MELD) Categories	N (%)	P value
I: No water retention, MELD ≤9	2/62 (3.2)	Reference
II: Water retention or MELD ≥10	6/55 (10.9)	0.201
III: Water retention + MELD ≥10	5/18 (27.8)	0.010*

* Fisher exact test.

Unadjusted risk: RH-MELD I (reference), II (RR:3.67, CI 95%:0.71-19.01, p=0.121), III (RR:11.53, CI 95%: 2.01-66.13, p=0.006).

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"Explosive" worsening of chronic hepatitis C-associated cryoglobulinemia vasculitis, as unmasking of lymphoma a case report.

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Introduction and Objectives: Hepatitis C virus (HCV)- related lymphoproliferative disease from cryoglobulinemia to B-cell non-Hodgkin lymphoma (B-NHL) through cryoglobulinemic vasculitis (CryoVas). The CryoVas is difficult to diagnose; once diagnosed, we must rule out the HCV infection. We presented a patient with HCV and CryoVas, which presented a sudden "explosive" worsening, warning about the development of a B-NHL.

Materials and Patients: 55-year-old male with HCV and CryoVas; what was the trigger for the diagnosis of HCV twenty years before? He received pegylated interferon and ribavirin without response. The virological, biochemical, and immunological characteristics are shown in Table 1. The flare of CryoVas appeared twice a year at most, limited to purpuric lesions on the legs, below the knees, arthralgia, and fatigue; was often triggered by infections, self-limiting throughout 2 to 3 weeks. The last flare started as usual but getting worse rapidly, spreading to the thighs, abdomen, chest, and upper extremities, plus fever, nocturnal diaphoresis, severe wasting, and inguinal, axillary lymph nodes. Lymph node biopsy shows diffuse large B-cell lymphoma (DLBCL)

Results: He received chemotherapy (CT), previously was re-treated with sofosbuvir/velpatasvir for 12 weeks. Five months after first-line treatment for DLBCL he presented an early relapse and received a second line of CT; at 3-year follow-up is in remission with no relapse of CryoVas, waiting for a bone marrow transplant.

Conclusions: Clinicians treating hepatitis C should be aware of the need to carry out immunological parameters at the basal evaluation, such as cryoglobulins, rheumatoid factor, C4 fraction, and even a flow cytometry in specific patients to the detection of leukemias and/or related lymphomas.

Ethical statement

The identity of the patients is protected. Consentment was obtained.

Declaration of interests

None

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Table 1
Viral, biochemical and immunological parameters during the HCV infection, CryoVas and B-LNH.

Variable	2006 year (y)	Basal 2019 y	SVR12	Last follow up 2022y
Viral load, UI/mL (log)	13466 (4.13)	867277 (5.94)	ND	NR
Genotype	1b	1b	NR	NR
Hemoglobin g/dL	9.9	10.6	12.8	13
Total leukocytes K/μL	NR	8.6	7.6	9
Total lymphocytes K/μL	NR	2.3	1.5	1.9
Platelets	152	88	80	122
AST	40	79	20	21
ALT	83	108	20	29
GGT	38	66	33	NR
LDH	130	370	180	100
AFP	1	2	3	2
FIB4	1.16	4.76	3	0.49
APRI	0.75	2.57	0.71	1.86
Crioglobulins	NR	Positive	NR	Negative

SVR12: Sustained viral response at 12 weeks after treatment, AST, Aspartate aminotransferasec ALT, Alanine aminotransferase; GGT, gamma glutamyl transpeptidase; LDH, lactate dehydrogenase; AFP, alpha-fetoprotein; ND, No detected.

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Intrahepatic Cholestasis Induced by Leflunomide: An Unusual Presentation of DILI

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Introduction and Objectives: Leflunomide is a drug used to treat autoimmune diseases. However, despite its therapeutic benefits, adverse effects have been reported after six months of treatment, including liver damage.

Materials and Patients: A 19-year-old female from Acayucan, Veracruz, without significant hereditary or family history, drug addiction denied, with a pathological history of hypothyroidism for 2 years and rheumatoid arthritis since the age of 15, treated with leflunomide 20 mg, chloroquine 150 mg, levothyroxine 100 mcg. She presented in October 2022 with nausea, vomiting, postprandial abdominal pain, jaundice. Abdominal ultrasound revealed chronic calculous cholecystitis. Laparoscopic cholecystectomy was performed in December 2022 without complications. After surgical treatment, he persisted with jaundice, alteration of liver function tests of mixed pattern that evolves to cholestatic pattern (R factor 0.2, see Table 1). Non-reactive to viral hepatitis A, B and C, HIV, negative antibodies ANA, AML, AMA, anti-DNAds, anti-Smith, anti-Rho, complement C3 145 and C4 33. Cholangiography, with hepatomegaly, diffuse hepatic steatosis without evidence of biliary lesions. Liver biopsy showed features of portal and lobular hepatitis, intracytoplasmic and intracanalicular cholestasis, macrovesicular steatosis, and F2 fibrosis according to METAVIR (Fig. 1), which were not consistent with autoimmune or viral disease. RUCAM score with possible relation to hepatoxicity (4 points), so it is considered drug-induced liver injury (leflunomide).

Results: Leflunomide was discontinued and treatment was adjusted to chloroquine 150 mg and prednisone 50 mg. Clinical and biochemical improvement was observed.

Conclusions: This case highlights the importance of suspecting DILI in patients treated with potentially hepatotoxic drugs and with alterations in liver biochemistry. It is a rare disease for which there are no specific markers. Therefore, liver biopsy is a useful tool for early diagnosis.

Ethical statement

The identity of the patients is protected. Consentment was obtained.

Declaration of interests

None

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

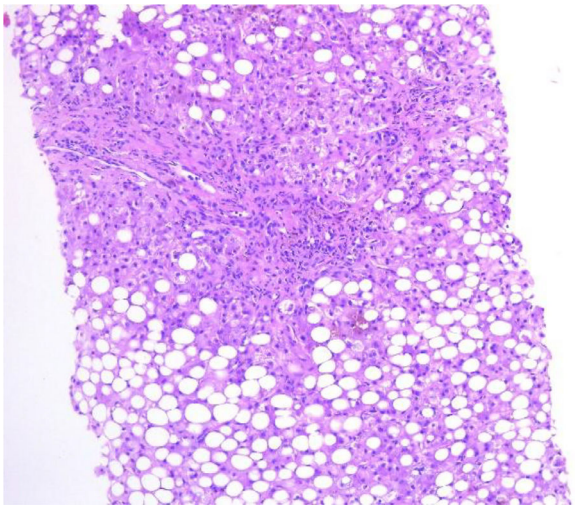

Figure 1. Liver tissue with widened portal spaces, mild inflammatory portal infiltrate, thick droplet steatosis, intracytoplasmic and ductal cholestasis.

Table 1
Control of laboratory studies

Leflunomide is discontinued

PARAMETER	11-Feb	23-Feb	23-Mar	21-Apr	24-May	5-Jul
Total bilirubin (mg/dL)	3.8	4.1	8.61	14.5	8.15	0.76
Direct bilirubin (mg/dL)	2.47	3.3	6.64	7.81	-	0.34
Indirect bilirubin (mg/dL)	1.33	0.8	1.97	6.77	-	0.42
AST (U/L)	65	95	277	236	168	48
ALT (U/L)	18	29	41	64	101	50
Alkaline phosphatase (U/L)	253	142	569	217	146	132
GGT (U/L)	245	413	322	702	607	154
TG (mg/dL)	-	-	803	411	225	155
Cholesterol (mg/dL)	-	-	324	289	296	194

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Evaluation of the effect of Cinnamomum cassia oil on markers of oxidative stress and its modification in gene expression in a diabetic rat model induced with alloxane.

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Introduction and Objectives: Diabetes Mellitus (DM) is a chronic hyperglycemia disorder presenting alteration of biochemical markers, proinflammatory activity, and oxidant stress (OS). There are treatments for DM but they can have adverse effects, so plants are an alternative to new therapeutic compounds. Cinnamomum cassia (cinnamon) has been shown to have antidiabetic and antioxidant activity. The objetive of this study was to evaluate the effect of Cinnamomum cassia oil (CCO) on oxidative stress markers and their modification in gene expression in a diabetic rat model induced with alloxan.

Materials and Methods: Experimental, prospective and comparative study with female and male Wistar rats. Groups (n=6): Sham (SH), Diabetic (D), CCO, D with CCO (D+CCO) and D with metformin (D+MET). From serum and liver tissue, biochemical and antioxidant markers were measured respectively, as well as gene expression. Ethics Committee approval under HI17-00002 registry.

Results: No significant difference in ALT and AST was observed between the SH and CCO groups at the dose used (300 mg/kg) (Figure 1A y B). Group D presented an increase in glucose (GLU) compared to SH (Figure 1C). A significant decrease in GLU, urea nitrogen (BUN),