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Table: Selected baseline characteristics

| Parameter (CAP) | NCPs (n = 4,500) | CPs (n = 489) |
|-----------------|------------------|--------------|
| Age, years      | 52.2 (11.0)      | 59.6 (9.4)   |
| Female, %       | 55.2             | 62.4         |
| NAFLD, %        | 56.5             | 67.4         |
| Provider        | 20: 17: 16       | 28: 11: 7    |
| Gastroenterologist:  Internalist: GP, % | 55.2 | 62.4 |
| Aspartate transaminase:  platelet ratio index* | 586; 0.62 (0.96) | 86; 1.09 (1.57) |
| Fib-4* | 493; 1.56 (1.42) | 71; 4.68 (5.28) |
| NAFLD fibrosis score* | 454; -1.13 (1.63) | 66; 1.74 (2.04) |
| Quan-Charlson Complexity Severity Index* | 1.9 (1.5) | 4.4 (1.9) |
| Adaptive Diabetes | 0.1 (0.4) | 0.4 (1.0) |
| Hypertensive disease* | 64.8 | 81.8 |
| Oesophageal varices* | 1.2 | 33.3 |
| Heart failure* | 2.2 | 13.3 |
| Heart failure* | 2.2 | 13.3 |
| Heart failure* | 2.2 | 13.3 |
| Heart failure* | 2.2 | 13.3 |

Data are mean (SD) or n; mean (SD) unless stated

*Assessed by univariate analysis for statistical significance: p <0.001 for NCPs vs CPs.
†Multivariate logistic regression analysis for atherosclerotic CVD, adjusted for demographic factors: odds ratio 1.34 (1.02, 1.78); p < 0.05 for CPs vs NCPs.

Conclusion: This study found that patients with NASH are often not diagnosed until an advanced stage, suggesting the need for greater disease awareness to avoid diagnostic inertia and to better assess the burden associated with NASH. These data also suggest that NASH correlates with a higher risk of developing comorbidities, especially CVD and T2D, particularly as patients progress to cirrhosis.

THU059
NAFLD association with renal impairment in type 2 diabetes patients
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Background and aims: Non-alcoholic fatty liver disease (NAFLD) and type 2 diabetes (T2DM) frequently coexist in high-risk metabolic patients. NAFLD and T2DM share a multisystemic involvement and the coexistence of both may increase the organ damage, worsening the patient prognosis. The aim of this study was to evaluate the role of NAFLD in the development and severity of extrahepatic conditions in a well-characterized T2DM cohort.

Method: Prospective cohort with case-control analysis comprising 230 T2DM subjects with 60 non-diabetic subjects matched by age with available transient elastography data. Patients were selected from the Outpatient Diabetes Clinic of Vall d’Hebron Hospital and the Primary Healthcare centres within its catchment area. Diabetic nephropathy (DN) was defined as the presence of microalbuminuria >30 mg/dl. According KDIGO guidelines, we defined renal impairment (RI) as a urine albumin:creatinine ratio >30 mg/g and chronic kidney disease (CKD) as an estimated glomerular filtration rate (eGFR) ≥60 ml/min per 1.73m². NAFLD was defined as Controlled Attenuation Parameter (CAP) ≥275 dB/m and/or Fatty liver index (FLI) ≥60 after exclusion of the other liver diseases and alcohol consumption over 30 gr/day in males and over 20 gr/day in females. Multivariate regression analysis was performed to identify predictors of extrahepatic diseases.

Results: Patients with T2DM with NAFLD (n = 134) presented higher rates of arterial hypertension (76.1% vs 61.5%, p 0.047) and obesity-BMI ≥30 kg/m² (61.2% vs 23.1%, p < 0.001) than T2DM non-NAFLD (n = 52). Distribution for gender, age and presence of dyslipidemia were similar between groups. Respect to T2DM complications, 38.6% of T2DM-NAFLD patients showed DN compared to 19.6% T2DM-nonNAFLD subjects (p 0.014). No statistical differences were found for diabetic retinopathy (25.4% vs 30.8%, p 0.45) or peripheral neuropathy (19.4% vs 17.3%, p 0.74). Of note, T2DM-NAFLD patients showed worse median creatinine and eGFR values (0.85 ± 0.26 vs 0.74 ± 0.14, p 0.001 and 80.1 ± 7.4 vs 86.1 ± 10.1, p 0.004, respectively), and also presented a higher proportion of RI (71.6% vs 49.0%; p 0.004) and CKD (14.2% vs 3.9%, p 0.049) respect to T2DM subjects without NAFLD. Median liver stiffness did not differ among patients with and without RI or CKD. In multivariate analysis the presence of NAFLD (HR = 2.48; 95%CI 1.61–5.32, p 0.019) was associated with the development of RI, independently of well-known risk factors, such as arterial hypertension (HR = 3.23; 95%CI 1.58–6.58, p 0.001) or advanced age (HR = 2.79; 95%CI 1.40–5.56, p 0.003).

Conclusion: Our results suggest that NAFLD poses an increased risk of extrahepatic diseases in T2DM patients, including other metabolic conditions and specially kidney disease. Renal function in diabetic patients with NAFLD should be screened and monitored closely, since NAFLD may lead to further worsening of kidney disease.

THU060
The impact of liver fibrosis on the immune response to SARS-CoV-2 vaccination in metabolic associated fatty liver disease patients
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Background and aims: There has been growing concern about the response to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination in patients with chronic liver disease, as it may confer an immunosuppression state, potentially being associated with a lower response to vaccination. However, this issue in metabolic associated fatty liver disease (MAFLD) patients remains unestablished. We aimed to assess the impact of liver fibrosis on the immune response to SARS-CoV-2 vaccination in patients with MAFLD.

Method: Prospective cohort study that included MAFLD patients with complete SARS-CoV-2 vaccination. Patients with previous SARS-CoV-2 infection were excluded. Serum SARS-CoV-2 immunoglobulins (Ig), laboratory and transient elastography (TE) data were assessed 1 month after complete vaccination. Significant fibrosis was defined as...
Non-alcoholic steatohepatitis is also becoming a major liver disease in MAFLD patients to SARS-CoV-2 vaccination. Significant liver fibrosis did not compromise response to SARS-CoV-2 vaccination. There were no differences in SARS-CoV-2 IgG levels between patients with or without significant fibrosis in the first year after transplantation (p = 0.13) in TE, NAFD fibrosis score (p = 0.18), FIB-4 score (p = 0.56), or FAST score (p = 0.24).

Conclusion: In our cohort, all MAFLD patients had Ig response to vaccination. Significant liver fibrosis did not compromise response of MAFLD patients to SARS-CoV-2 vaccination. SARS-CoV-2 vaccination is serologically effective in MAFLD patients, regardless of fibrosis.

THU061 Non-alcoholic steatohepatitis is also becoming a major liver transplant indication in Spain, a historically low risk area

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Background and aims: Non-alcoholic fatty liver disease (NAFLD) is becoming one of the most common chronic liver diseases in Spain, particularly in individuals with features of metabolic syndrome, yet its exact prevalence and incidence are not completely known. In fact, non-alcoholic steatohepatitis (NASH) is a growing indication for liver transplantation (LT) in our setting. Our aim was to describe NAFD evolution as a LT indication and the most frequently found features associated with this indication.

Method: Patients undergoing LT for NASH-related cirrhosis from 2010 to 2020 in five reference LT centers in Spain were included. The medical records of all these patients were reviewed for determining NASH-associated comorbidities. Survival analyses were performed with SPSS to determine survival rates at different follow-up points after LT.

Results: NASH-related cirrhosis was the LT indication in 118 patients from 2010 to 2020. Taking into account the five centers, the percentage of LT for NASH increased 3.8-fold between 2010–2020, from 2.0% to 7.5% (Figure 1). The highest percentage (25.0%) was registered in 2020 in one of the centers. While there were no transplants performed for NASH in some centers in some of the years, mainly in the first years of the study, the number has progressively increased since 2015. Comorbid conditions were found in most patients: 77.1% had obesity, 59.3% type 2 diabetes mellitus (T2DM), 61.9% hypertension (HTN), 37.3% dyslipidemia (DL) and 22.0% a history of prior cardiovascular disease (CVD). While posttransplant complications were frequent, survival was similar to that of other indications with a cumulative proportion surviving of 0.92 and 0.8 at 1- and 5-year post-LT and only 2 cases of graft loss due to recurrence of primary disease. The greatest number of deaths occurred within the first year after transplantation (n = 10), none of them related to primary liver disease.

Conclusion: Non-alcoholic steatohepatitis is an increasingly common indication for LT in our country. However, the incidence is still far from that described in countries like the US. As reported, most of these transplant candidates have significant comorbid conditions associated with posttransplant complications and poorer long-term outcome such as obesity, T2DM, HTN, DL and CVD. Yet, in the short-midterm transplant survival is similar to that reported by the Spanish Liver Transplantation Registry, with a survival rate of 87% and 75% at 1- and 5-year post-LT, respectively.

THU062 Total healthcare cost and characteristics associated with higher change in cost in patients with non-alcoholic steatohepatitis

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Background and aims: The economic burden in patients with non-alcoholic steatohepatitis (NASH) is often underestimated. The AWARE study collected baseline data on patients with NASH to determine the associated healthcare cost burden.

Method: Data were collected from a large US healthcare dataset (electronic health records linked with claims) from 1 October 2015 to 31 December 2020. Adult patients diagnosed with NASH, with no evidence of hepatitis B or C, excessive alcohol use, or liver transplant prior to NASH diagnosis, and with no evidence of pregnancy or cancer in the study period, were included. All diagnoses were made using ICD CM. Total healthcare follow-up costs and change in total healthcare cost post-NASH are reported as mean (standard deviation). The effect on change in cost by baseline characteristics was assessed using a multivariate generalised linear model.

Results: Of 4, 898 adult patients diagnosed with NASH, 489 had evidence of cirrhosis at baseline. Mean follow-up was 22 months for non-cirrhotic patients (NCPs) and 21 months for cirrhotic patients (CPs). Annualised follow-up costs (LSS) were $28, 707 ($140, 814) for NCPs and $84, 582 ($204, 552) for CPs. Among NCPs, approximately 70% had a high annual cost burden (>5, 000) and 38% had a very high cost burden (>15, 000) (Figure). Increases in costs following onset of NASH were $13, 202 ($141, 095) for NCPs and $44, 509 ($177, 055) for CPs. For NCPs, the change in costs post-NASH diagnosis significantly increased (in %) with increasing Quan-Charlson Comorbidity Index score (21% per unit increase) and adaptive Diabetes Complexity Severity Index score (36% per unit increase), increasing use of...