patients-CNP, with normal values of LE; 1-SEP, with abnormal values of LE; 1 patient-CPP with normal values of LE, HCV-1a, DAAs therapy; 4-AVP (1 with abnormal values of LE, HCV-1a, DAAs therapy; 1 with abnormal values of LE and advanced fibrosis, HCV-3a, DAAs therapy; and 2-HCV-4a/4c/4d, one with normal values of LE, DAAs therapy, and the other with abnormal values of LE and cirrhosis, DAAs therapy). Positive results were shown in serum (71%), plasma (13%), PBMCs (79%) and RBCs (83%) analyzed samples in the CPP and AVP groups by ddPCR.
Conclusion: A total of 80% HCV-cure with DAAs was shown in the CPP and AVP groups, but 10% and 29% of OCI was shown in these groups, respectively, by ddPCR. HCV/OCI positive results were shown in patients with HCV 1a, 1b, 3a, or 4a/4c/4d genotypes, with normal or abnormal values of LE, and/or advanced fibrosis, and/or cirrhosis. Droplet ddPCR was more sensitive than RT-PCR for OCI detection. OCI and HCV positive patients should be newly evaluated for a reinfection or relapse possibility and avoid HCV transmission.

THU350

Strong correlation between HBsAg, ALT and HDV-RNA levels in patients with chronic hepatitis D. Results of phase 3 D-LIVR study.

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Background and aims: Several new treatments for chronic hepatitis B are focused in achieving a decline in HBsAg levels. Some of these new molecules are evaluated in patients with chronic hepatitis D (CHD). The aim of this study is to evaluate whether ALT, HBsAg and HDV-RNA levels correlate in untreated patients with CHD.
Method: In this study, hepatitis delta virus (HDV)-RNA, hepatitis B surface antigen (HBsAg) and hepatitis B virus (HBV)-DNA were prospectively quantified in 407 patients with compensated liver disease who enrolled in the on-going Phase 3 HDV D-LIVR trial (NCT03719313). At baseline, demographic data, clinical and biochemical characteristics were collected. HBV and HDV serological and virological markers were measured. Descriptive statistics were used to summarize demographic and clinical baseline characteristics. Pearson correlation coefficients were computed for ALT, HBsAg and HDV-RNA in the full population of 407 subjects, the population of 146 subjects over 45, and the population of 261 subjects younger than 45 years old. Significance levels are provided for the test of the null hypotheses when the correlation is 0.
Results: 407 patients were included, mainly male (69%), with a mean age of 45 years old, Caucasians (73%) and with liver cirrhosis (26.5%). At baseline in the entire cohort, mean HDV-RNA levels were 4.98 ± 1.17 logIU/ml, HBsAg levels 10079 IU/ml and mean ALT 100.05 ± 67.7 IU/ml. HDV-RNA and HBsAg levels showed positive correlation (0.154) with strong statistical significance (0.0018) (Table 1). In patients older than 45, HDV-RNA and HBsAg levels did not show a statistically significant correlation. However, in patients younger than 45, HDV-RNA and HBsAg levels showed positive correlation (0.162) with strong statistical significance (0.0089). HBsAg levels and ALT showed a negative correlation, meaning that ALT levels tend to decline when HBsAg levels are high. This correlation showed statistical significance across all groups.

Table 1. Correlation of ALT, HBsAg, and HDV RNA in the full population, subjects over 45, and subjects 45 years and younger in the D-LIVR study

	Correlation coefficient	Significance level
All subjects N = 407		
HDV RNA – ALT	0.097	0.0499
HBsAg - ALT	-0.248	<0.0001
HDV RNA – HbsAg	0 .154	0.0018
Subjects ≥ 45 years N = 146		
HDV RNA – ALT	0.095	0.2552
HBsAg - ALT	-0.248	0.0026
HDV RNA – HbsAg	0.100	0.2288
Subjects < 45 years N = 261		
HDV RNA – ALT	0.106	0.0862
HBsAg - ALT	-0.242	<0.0001
HDV RNA – HbsAg	0.162	0.0089

Conclusion: In untreated chronic hepatitis D, HDV-RNA and HBsAg levels show positive correlation mostly in younger people. Normal ALT levels are associated with significantly increased HBsAg levels. Monitoring of HDV-RNA and HBsAg serum levels in patients with chronic hepatitis D provides insight in the design of new therapeutic strategies.

Viral hepatitis A/E: Clinical aspects

THU351

Detection of highly variable RNA-containing viral particles on CNT-based electrochemical impedimetric DNA-nanosensors

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Background and aims: Due to the high variability of RNA-containing viruses genome, neither PCR nor ELISA methods give a 100% guarantee. For example, in the case of infection with the hepatitis E virus (HEV), the likelihood of a false negative diagnosis is considered very high. One of the possible ways to overcome this problem in general and for the diagnosis of HEV in particular, may be the use of alternative, non-PCR technologies. CNT-based electrochemical impedimetric DNA-nanosensors make it possible to recognize HEV RNA/cDNA using short probes (less than 20 bp), which sharply increases the likelihood of capturing variable genomes. This ensures high specificity of recognition. We offer a novel highly-performed and selective impedimetric DNA sensor with redox-active nanoporous transducer based on bundles of carbon nanotubes (CNTs) for diagnosing of HEV RNA in clinical samples.
Method: A target double-stranded (ds) cDNA was synthesized by reverse transcription of the total RNA isolated by standard commercial spin-column based kits from the whole blood, serum, feces and urine of patients with confirmed acute HEV diagnosis. A non faradaic impedimetric DNA-sensor is fabricated by depositing the two monomolecular layer of carboxylated multiwalled CNTs with probe single-stranded (ss) DNA molecules. A short (24 bp) DNA oligonucleotide was used as a probe, which was complementary to the most conserved region of the HEV genome and, according to preliminary estimates, is able to recognize about 99% of all sequences

of the HEV genome presented in the GeneBank database (more than 500) and sequenced in Belarus (more than 100). DNA-nanosensors are interdigital electrode structures with the sensitive coating. The electron-dense layers of the probe oligonucleotide and CNTs were fabricated by Langmuir-Blodgett technique. The impedance DNA-nanosensors are utilized as measured capacitance C entering a resistor (R) -capacitor (C) -oscillator. Impedance measurements are performed using the non faradaic impedance spectroscopy at quasi-resonance frequencies of the RC-oscillator.

Results: The capacitive characteristics of the DNA sensors in the frequency range from 100 kHz to 1 MHz after hybridization with targeted DNA at various concentrations have been investigated. It was found that the addition of molten target DNA at low concentrations leads to a significant decrease in capacity over the entire frequency range. Interacting the probe ss-DNA and target ss-cDNA molecules form homoduplexes on the sensor surface that leads to increasing the electron density of the nucleotide CNT-cover, providing capacity reduction due to an emerging screening surface effect.

Conclusion: The novel highly-performed and high-sensitive electrochemical method reliably detects the presence or absence of HEV in a sample in dose-dependent manner and does not demand expensive consumable materials.

THU352

Hepatitis B Delta: assesment of knowledge and practices of French non academic hepato-gastroenterologists

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Background and aims: Hepatitis B-Delta (BD) is uncommon or underestimated in France; there are no data from hepato-gastro-enterologists (HG) practicing in non-university hospitals or in private practice on the management of BD hepatitis in France. The aim of this study was to evaluate the knowledge and practices concerning the diagnosis and treatment of BD hepatitis among HGs practicing in non-academic settings.

Method: A Google form questionnaire was sent to senior or junior non-academic from May to September. The following were evaluated: demographic data, predominant specialty, status, modality of virological diagnosis and screening for hepatitis BD according to HBs status, evaluation of hepatic fibrosis, modalities of treatment (Pegylated interferon, Bulevirtide, combination).

Results: 129 HGs (H 58, 1%) of age :44, 8 (13, 4) answered this survey. The number of patients (pts) followed by HG was: : 1 (0–30). The search for delta infection in all HBs antigen positive pts was performed by 89.1% of HGs and not by 10%: juniors 77.8%, seniors 84.4%, p = 0.009; in any pts carrying HBs antigen with anti HBe: juniors 67%, seniors 92%, p = 0.002, in any pts infected with HIV (juniors 83.8%, seniors 95.4%, p = 0.064. Concerning fibrosis assessment, among the non-invasive markers of fibrosis: the fibrotest was never used by 47% of the respondents, the fibrometer was never used by 55% of the respondents. APRI and FIB 4 were not used; the delta fibrosis score adapted to hepatitis Delta was used by 13% of the HGE. Fibrosis assessment was mainly done by Fibroscan® in 77% of cases and liver biopsy in 81% of cases. Treatment was proposed for patients >F2 in 49% of cases, whatever the transaminase level, and for all patients by 39% of the Gs. The HGE proposed treatment with pegylated interferon in 48.4% of cases, Bulevirtide in 43% of cases, and a combination of the two in 42% of cases. Half of the HGs referred their patients to an academic collegue. Among the criteria for treatment efficacy, a decrease or normalization of transaminases was retained by 84% of the HGs; 60% of the HGs defined VR by a cancellation or a 2-log decrease of viral replication; and a PVR by a disappearance of RNA after 12 (45.4%) or 24 months (16%) with normal transaminase activity. Discussion: The number of respondents to this survey is low despite the number of reminders, reflecting the rarity of the disease or its lack of awareness in non-academic settings, HGs often refer their patients to another colleague, the search for BD infection is not systematically performed, elastometry and liver biopsy are most often used to assess fibrosis.

Conclusion: The results of this survey show a certain degree of ignorance of BD hepatitis by non-academic HGs; the modalities of diagnosis and the need for systematic screening of BD infection in any HBsAg patient should be recalled by the learned societies.

THU353

Hepatitis E seroprevalence in solid organ transplant recipients in Croatia

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Background and aims: Hepatitis E virus (HEV) is an emerging infectious disease and growing concern in Europe. After solid organ transplantation (SOT), patients are at greater risk of developing acute and chronic graft hepatitis with progression to cirrhosis. The consumption of undercooked or raw pig meat is the main route of HEV infection in developed countries. However, risk factors for the acquisition of HEV among SOT recipients are incompletely understood. This study aimed to determine the exposure of HEV in the SOT cohort.

Method: In this cross-sectional study, 639 SOT recipients were screened during routine post-transplant outpatient visits during 2002–2017 for anti-HEV IgG seroprevalence; 420 after liver transplantation (LT) and 219 after kidney transplantation (KT). Serum samples were tested for anti-HEV IgG using an enzyme immunoassay (Mikrogen, Neuried, Germany). All participants completed a risk factor assessment questionnaire.

Results: Anti-HEV IgG seroprevalence in LT recipients was 21%, and in KT recipients was 16.4%. The majority of the recipients were male (68.4%), median age 58 years (18–80). Anti-HEV IgG positive recipients were older (p = 0.029) and lived more often in a rural area (p = 0.045) than anti-HEV negative recipients. There was no significant difference in HEV seroprevalence regarding the type of transplanted organ, gender, level of education, number of household members, having a farm within a household, type of sewage system, or type of drinking water. Contrary to initial assumptions, production and/or consummation of cured meat and occupational exposure had no statistically significant strength of association with anti-HEV IgG seropositivity.

Conclusion: Our results show that anti-HEV IgG seroprevalence is high among SOT recipients (19, 4%). Socio-demographic factors for exposure to HEV are the basis for further research of sources and routes of transmission and clinical significance of HEV infection after SOT.