Metabolic Dysfunction-Associated Steatotic Liver Disease in Chronic Hepatitis C Virus Infection: From Basics to Clinical and Nutritional Management

Abstract

Metabolic dysfunction-associated steatotic liver disease (MASLD) is closely associated with obesity and other cardiometabolic risk factors. MASLD has rapidly become the most common cause of liver disease worldwide, currently affecting 38% of the global population. Excess weight causes chronic inflammation and the activation of different pathways involved in liver damage. MASLD can progress from simple steatosis to steatohepatitis, giving way to its inflammatory component, metabolic dysfunction-associated steatohepatitis (MASH), previously recognized as non-alcoholic steatosis hepatitis (NASH). Chronic hepatitis C virus (HCV) infection remains a significant challenge to liver health as it triggers hepatic inflammation, metabolic disruption, and hepatic steatosis. The convergence of MASLD and chronic HCV infection can significantly alter the course of liver disease and accelerate the progression to severe liver damage. Currently, HCV treatment has a high cure rate. However, in patients who achieve a sustained virological response after treatment with direct-acting antivirals, weight gain, and excessive calorie intake may contribute to increased liver steatosis and a higher risk of liver disease progression. Therefore, the effective clinical and nutritional management of HCV patients, both before and after viral eradication, is crucial to reducing the risk of death from hepatocellular carcinoma. Understanding the complex interactions between MASLD and HCV infection is crucial for managing these patients appropriately. Herein, host and viral mechanisms inducing liver damage during the coexistence of MASLD and HCV infection are described, and their therapeutic and dietary management are discussed.

**Keywords:** diet; hepatitis C; hepatocellular carcinoma; inflammation; liver damage; obesity.

Evaluation of ploidy and the DNA index by flow cytometry in central nervous system tumors: a review

Abstract

Research on central nervous system tumors (CNSTs) has a significant impact on the diagnosis and prognosis of patients. Currently, CNSTs are classified according to the schema proposed by the World Health Organization (WHO), which considers clinical, histopathological, and molecular characteristics, highlighting the importance of tumor biology for accurate diagnosis and optimal treatment approaches. Despite these advances, assessing DNA ploidy-a marker of tumor aggressiveness-remains complex in CNSTs. This review investigates the utility of DNA index (DNAi) and DNA ploidy analysis by flow cytometry in diagnosing CNSTs and prognosing their outcomes. We systematically reviewed studies in the PubMed database from 1990 to the present using the keywords "DNA Index", "Brain", "Flow cytometry", and "Ploidy". We identified 151 studies, 36 of which met our inclusion criteria. We found considerable variation in sample sizes and methodological variation across the studies. Discrepancies between the reported DNAi and ploidy values were observed. Aneuploidy is generally associated with more aggressive tumors, although exceptions exist. Higher DNAi levels correlate with increased malignancy, notably in glioblastomas, astrocytomas, and meningiomas, whereas diploid astrocytomas and oligodendrogliomas are associated with shorter survival rates. DNA ploidy assessment via flow cytometry could predict CNST behavior, yet methodological issues with tissue selection, adequate control samples, and technique variability remain. DNAi and ploidy assessments show promise as prognostic markers in CNSTs. However, the standardization of flow cytometry protocols and alignment with the current WHO classification schema are essential steps to integrate ploidy analysis in routine CNST assessment.

**Keywords:** CNST; DNA index; Flow cytometry; Ploidy.

De Novo RB1 Germline Variant in Retinoblastoma with Two Subsequent Independent Neoplasms: Case Report and Literature Review

Abstract

Variants in the *RB1* gene are associated with retinoblastoma (RB) development, and their presence in germline cells considerably increases the risk of subsequent malignant neoplasms (SMNs) in RB survivors. We report a female patient with bilateral RB who developed two SMNs in less than ten years, with a de novo pathogenic nonsense variant in *RB1* [NM\_000321.3:c.306T>A, p.(Cys102\*)] in heterozygosity. The updated literature review of similar cases of SMN in patients with a previous diagnosis of RB reveals a wide range in both the type of subsequent malignancy and the age at which these SMNs develop. In addition, we identified only three cases with two SMNs following RB diagnosis, with at least one of these being an EWS. This case broadens the clinical and genetic landscape of RB, demonstrates the importance of a multidisciplinary approach in these patients, and highlights genetic diagnosis as a mandatory feature for management.

**Keywords:** RB1; RB1 germline pathogenic variant; de novo variant; retinoblastoma; subsequent neoplasms.

Social Media Use and Fear of Missing out: An Exploratory Cross-Sectional Study in Junior High Students from Western Mexico

Abstract

**Background/objectives:** The increased use of social media in Mexico has given rise to the "fear of missing out" (FoMO) phenomenon, especially among adolescents. This study aimed to measure the extent of FoMO among junior high school students in the metropolitan area of Guadalajara, Mexico, during the COVID-19 pandemic. Additionally, this study explored the association between FoMO levels and demographic characteristics, as well as the type and frequency of social media use.

**Methods:** A cross-sectional survey was conducted from November 2021 to January 2022 in four junior high schools. A total of 1264 students (656 females and 608 males) aged 11-16 years completed the Fear of Missing Out Scale, adapted to the Mexican context. Data on demographics, social media usage, and school shifts were collected. Statistical analyses were performed using *t*-tests, ANOVA, and correlation coefficients.

**Results:** The mean FoMO score was 1.79 ± 0.64, with higher scores observed in females (*p* < 0.001) and students attending morning shifts (*p* = 0.001). Significant associations were found between higher FoMO scores and the use of social media platforms like Instagram, TikTok, and Pinterest (*p* < 0.001 for each). The most frequently used social media platforms were WhatsApp (1093), TikTok (828), and Instagram (583). Participants who used social media all week exhibited significantly higher FoMO scores than those who used it only on weekends (*p* < 0.001).

**Conclusions:** FoMO is a significant phenomenon among junior high school students in Guadalajara, Mexico, particularly among females and those who use multiple social media platforms. The findings suggest a need for interventions to manage social media use and mitigate FoMO-related negative health outcomes in this population.

**Keywords:** FoMO; adolescence; internet; mental health; social media.

Impact of Dietary Patterns and Serum Amino Acid Profile on Metabolic Syndrome Development in Mexican Women with Polycystic Ovary Syndrome

Abstract

Polycystic ovary syndrome (PCOS) is the main endocrine disorder in women of reproductive age worldwide. This condition is often associated with various metabolic alterations that contribute to the development of metabolic syndrome (MetS). Recent research suggests that branched-chain amino acid (BCAA) dysregulation is observed in PCOS. This study aims to investigate the relationship between dietary patterns, body composition, metabolic analytes, and serum amino acid levels in Mexican women with PCOS. Utilizing a cross-sectional design, we found that both study groups, PCOS (*n* = 24) and PCOS + MetS (*n* = 21), exhibited increased relative fat mass and dietary habits characterized by high simple sugar intake and low protein consumption, correlating with levels of relative fat mass and leptin. Notably, serum concentrations of BCAAs and glutamic acid were significantly elevated in the PCOS + MetS group. Our findings suggest that a metabolic approach may enhance the prediction and management of MetS in women with PCOS, highlighting the importance of dietary interventions in this population.

**Keywords:** BCAA; PCOS; diet; metabolic syndrome; nutrition.

Impact of the COVID-19 Pandemic Onset on the Early Careers of Pediatric Oncology Health Professionals and Researchers: A Report From the Children's Oncology Group Young Investigators Committee, Young SIOP Network, and Young SIOPE

Abstract

**Introduction:** The COVID-19 pandemic onset had a global debilitating impact on individuals and on burgeoning careers. In 2021, the Children's Oncology Group Young Investigators Committee, Young SIOP (International Society of Paediatric Oncology) Network, and Young SIOPE (European Society for Paediatric Oncology) co-sponsored a survey to explore the impacts of the first year of the pandemic on early-career pediatric oncology professionals with respect to working practices, productivity, professional and career development, personal wellbeing, and changing childcare needs.

**Methods:** The survey comprised demographic, multiple-choice, and free-text questions, and was distributed via email and social media with English, French, and Spanish versions available. Descriptive statistics and chi-square tests were used to compare quantitative data by self-designated gender and country of origin. Qualitative data were described using content analysis.

**Results:** Professionals (N = 499, 26.3% male, 77.2% MDs) in 48 countries (77.6% high income) responded in English (79.4%), Spanish (12.4%), and French (8.2%). Respondents had difficulty obtaining and keeping jobs (26.9%), worsened overall academic productivity (50.7%, with higher rates among bench scientists, p < 0.01), and decreased career opportunities (40.9%). Childcare challenges impacted 56.7% of respondents and was felt more negatively among women (p = 0.008) and in high-income settings (p < 0.0001). Qualitative data (n = 300) highlighted these differences were often attributable to diminished professional/personal boundaries and impacted their personal wellbeing.

**Conclusion:** The COVID-19 pandemic significantly impacted early-career academic and clinical professionals working in pediatric oncology, with unique challenges noted among those with childcare responsibilities. Career disruptions that resulted from the pandemic should be considered and mitigated by governing bodies and hiring institutions.

**Keywords:** COVID‐19; career opportunities; early career; health professionals; pediatric oncology.