Revista de Gastroenterología de México xxx (xxxx) xxx–xxx

REVISTA DE GASTROENTEROLOGÍA DE MÉXICO
www.elsevier.es/rgmx

LETTER TO THE EDITOR

Periprocedural and perioperative anticoagulation management strategies in liver cirrhosis

Estrategias de manejo perioperatorio y periprocedimiento de la anticoagulación en la cirrosis hepática

Dear Editors,

We have read the consensus statement by Velarde-Ruiz Velasco et al.[1] with great interest and would like to share the following thoughts and questions. It is important to emphasize that there is a significant prevalence of comorbid cardiovascular conditions, such as non-valvular atrial fibrillation, venous thromboembolism, and splanchnic venous thromboembolism of 5%, 7%, and up to 24%, respectively, according to epidemiological data.[2] Moreover, in a cohort study conducted within the time frame of 2012 and 2019, the prescription and use of direct oral anticoagulants (DOACs) increased from 20 to 77%, showing a significant increase in prescription trends with DOACs in the liver cirrhosis population.[2]

Given the above, we strongly believe that special and meticulous care, in a multidisciplinary fashion (e.g., the inclusion of a hematologist or vascular medicine specialist with expertise in thrombosis and hemostasis) should be considered, and reasonable recommendations should be provided within the Velarde-Ruiz Velasco consensus paper,[1] not only for thromboprophylaxis, but also for patients currently taking DOACs for the abovementioned clinical cardiovascular indications. Recently, different medical societies have published clinical practice guidelines with their own recommendations regarding the perioperative and periprocedural management of diverse antithrombotic therapies, including DOACs and antiplatelet therapies. Such recommendations apply to our liver cirrhosis population.[3,4]

Importantly, Velarde-Ruiz Velasco et al.[1] failed to provide detailed recommendations on how to approach significant adverse effects of anticoagulants, including DOACs, such as the occurrence of major life-threatening bleeding events. This encompasses knowing the *what, when, which, and how*, when considering potential clinical indications for rapid and appropriate reversal strategies in a cirrhotic patient taking DOACs; for example, in the setting of intracranial bleeding, life-threatening GI bleeding with hemorrhagic shock, or the need of urgent/emergency surgical intervention that cannot be delayed (e.g. acute cholecystitis or appendicitis). How do the consensus authors tackle these challenging clinical scenarios? Would they consider nonspecific or specific reversal agents, like 4-factor prothrombin concentrates (4F-PCC) or andexanet alfa (AA)?[5] When should 4F-PCCs be considered over AA and vice versa? Does the high-risk baseline hypercoagulable/prothrombotic status of our patients (e.g. non-valvular atrial fibrillation with a CHA2DS2-VASc score > 7 points or recent severe venous thromboembolism within 90 days) need to be better screened or risk stratified, before making such tough decisions in a multidisciplinary manner? The International Society on Thrombosis and Haemostasis recently published an updated guidance document for DOAC reversal strategies.[5]

Lastly, Velarde-Ruiz Velasco et al.[1] recommended low molecular weight heparin over unfractionated heparin for thromboprophylaxis. We disagree with this recommendation, especially in clinical scenarios in which advanced chronic kidney disease (CKD stage 4 or 5 according to the KDIGO classification, defined by a GFR < 30 ml/min $\times$ 1.73 m^2) and advanced liver cirrhosis coexist (e.g. Child-Pugh class C or MELD score > 20 points). Furthermore, there is a scarcity of randomized, prospective data addressing these clinically relevant caveats.[6,7] We prefer unfractionated heparin due to its excretion through the reticuloendothelial system, including the liver, thus avoiding bioaccumulation and bleeding complications.

Financial disclosure

No financial support was received in relation to this article.

Conflict of interest

The authors declare that there is no conflict of interest to disclose.

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