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Re. Re.: "Immunothrombotic dysregulation in Chagas disease and COVID19: a comparative study of anticoagulation"

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Abstract

Re. Re.: "Immunothrombotic dysregulation in Chagas disease (CD) and COVID-19: a comparative study of anticoagulation": In the commentary on our paper, Hasslocher-Moreno made the point that indeterminate and digestive forms are not related to thromboembolic events, only thrombogenic alterations occur in CD with cardiopathy, however there is indirect evidence related to thombotic alterations, such as cerebral thrombosis. Our assertion is based on previous data discussed in this letter.

Keywords Chagas disease · COVID-19 · Thrombosis

Dear Editor,

In the commentary on our paper [1], Hasslocher-Moreno [2] made the point that it is incorrect that indeterminate and digestive forms are not related to thromboembolic events and these events occur only in Chagas disease (CD) with cardiopathy. Our assumption is based on previous data in subjects with asymptomatic CD, which reported an increased prothrombin fragment 1 + 2, D-dimer, PAI-1, tissue factor pathway inhibitor antibodies (aTFPI), fibrinogen, ATM complex (T/IXa/Xa/Xia-AT), and degradation products of the fibrinogen/fibrin [3, 4]. Even though the results are inconclusive, there is still a strong evidence that in subjects with CD and without cardiomyopathy, the treatment with benznidazole reduces the hypercoagulable state. In particular, it decreases prothrombin fragment 1 + 2 (F1 + 2) and endogenous thrombin potential (ETP) [5, 6].

It is not known whether there are hypercoagulant mechanisms involve in the esophagus and/or intestine in indeterminate forms for CD. However, there is indirect evidence that in other clinical form of CD such as meningoencephalitis [7], the prothrombogenic activity may be present through an increase of neutrophil extracellular traps (NETs).

In the central nervous systems, there is increase in NETs of rats [8], dogs, and common possums, infected by *Trypanosoma cruzi* (*T. cruzi*) [9]. It is known that soluble molecules of *T. cruzi* stimulate neutrophils, resulting in the formation of NETs [10]. These are composed of DNA, histones, and elastase, which are promoters of immunothrombosis [11, 12]. In addition, NETs are recognized in different intestinal pathologies with disorders inflammatory that promote thrombosis and facilitate cancer progression [13].

Therefore, it cannot be ruled out that patients with CD, presenting with megaoesophagus or megacolon, do not have hypercoagulability. Specific studies are required in this pathology. More information on microthrombosis and endotheliopathy in CD is found in our work [1].

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Data availability The data can be obtained upon request to the corresponding author.

Declarations

Conflict of interest The authors have declared no competing interests in this study.

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