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DERMATOLOGIC THERAPY WILEY

LETTER

Sulodexide may be a real alternative to low molecular weight heparins in the prevention of COVID-19 induced vascular complications

Dear Editor,

In their work Demirbaş et al presented a patient with COVID-19-associated superficial thrombophlebitis successfully treated with enoxaparine,[1] a low molecular weight heparin (LMWH) medication and also gave a brief, but detailed overview on SARS-Cov-2 induced coagulopathy and the intensive cross-talk between immune system and hemostasis.[1] Besides the frequently quoted acute respiratory distress syndrome and dysregulation of coagulation and fibrinolytic systems, COVID-19 infection is often associated with complement activation,[1] hypoxaemia,[1] higher blood viscosity,[2] inflammatory endothelial damage (endotheliitis),[3] and arterial hypertension[4] predisposing patients to venous as well as arterial vasculopathy. Demirbaş et al found enoxaparin a putatively beneficial therapeutical agent implicating anticoagulatory and antiinflammatory effects[1]; however, LMWH and unfractionated heparin (UHF) that demands regular monitoring of activated partial thromboplastin time (aPTT) often generate heparin-induced thrombocytopenia (HIT) and occasionally major bleeding.[5] By contrast, theraputic dosages may induce resistance to UHF or LMWH in a certain subset of SARS-CoV-2 infected patients.[5] Danaparoid is a blend of heparan sulfate, dermatan sulfate and chondroitin sulfate and would seem theoretically a candidate against COVID-19-associated vasculo- and coagulopathies but has never been tested extensively for this purpose.[6] According to in vitro studies direct oral anticoagulant medications (DOACs) would represent a predictable effect in COVID-19 however clinical studies have only partially confirmed this theory.[6] The expensive parenteral anticoagulant fondaparinux does not cause HIT however its utility in COVID-19 infection is still under investigation.[6] The application of vitamin-K antagonists is associated with numerous limitations such as the need of routine coagulation monitoring and interactions with food and medications.[6]

Sulodexide (SDX) is a natural glycosaminoglycane composed of 80% fast moving heparin (FMH) plus 20% dermatan sulfate and its in vitro antihemostatic effects are at least comparable with those of enoxaparine.[7] Biological activity comprises arterial and venous antithrombotic and profibrinolytic (increased tissue plasminogen activator level, inhibition of platelet aggregation), antiinflammatory (eg, suppressed interleukin-6 production) and beneficial hemorheologic (lipid profile modification) effects.[7] SDX protects and repairs endothelial layer by glycocalyx restoration and vascular tone regulation,[7,8] displays senolytic activity,[9] and attenuates ischemia-reperfusion injury.[7] Compared with LMWHs it is less likely associated with bleeding risk, much weaker in HIT and renal insufficiency does not demand dose reduction.[7]

In COVID-19 infection the pleiotropic SDX may represent an alternative to LMWH as a prophylactic agent. Unlike other heparins, SDX can be administered orally with sufficient intestinal absorption providing a median bioavailability of appoximately 40% which also eliminates the fear of needles of LMWH injections. It is safe to use in renal insufficiency and less likely related to HIT, major bleeding and drug-induced hypersensitivity compared with LMWHs.[7]

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data openly available in a public repository that issues datasets with DOIs

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