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Resumo	Priapism, defined as a prolonged and often painful penile erection occurring without sexual stimulation or desire, is a common complication in sickle cell disease (SCD), affecting up to 48% of male patients. This condition presents significant clinical challenges and can lead to erectile dysfunction if not properly managed. Current pharmacological treatments for SCD-related priapism are primarily reactive rather than preventative, highlighting a gap in effective medical intervention strategies. A critical factor in developing priapism is the reduced basal bioavailability of nitric oxide (NO) and cyclic guanosine monophosphate (cGMP) in erectile tissues. New prevention strategies should ideally target the underlying pathophysiology of the disease. Compounds that stimulate and activate soluble guanylate cyclase (sGC) emerge as potential therapeutic candidates since these compounds have the property of inducing cGMP production by sGC. This review explores the potential of sGC stimulators and activators in treating priapism associated with SCD. We discuss the advantages of these agents in the face of the challenging pathophysiology of SCD. Additionally, the review underscores the impact of intravascular hemolysis and oxidative stress on priapism pathophysiology in SCD, areas in which sGC stimulators and activators may also have beneficial therapeutic effects.
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