Topically applied heparin in venous thrombosis, why not using it: A review of literature

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Abstract

Superficial vein thrombosis (SVT) is a condition of clotting of superficial veins associated with minimal inflammatory components, while superficial thrombophlebitis (STP) is defined as a condition of minimal thrombosis of superficial veins associated with inflammation or infection. In UK it is estimated to have 400 cases of SVT in every 100 000 person per year in comparison to 125 000 case annually in the United States. SVT and STP tend to occur more in old ages because of increased incidence of varicose veins, with a tendency toward working population. Women are affected more in the UK, but the San-Valentino study showed a similar rate. Obese low mobility people, pregnant ladies, females on contraceptives and hormone replacement therapy (HRT) are more affected by the two conditions. Conventional treatment of both conditions is conservative and usually includes pain killers, compression, anti-inflammatory creams and elevation. Anticoagulation is indicated in some cases, whether systemic or topical. SVT and STP are better prevented than treated, and some simple steps help to achieve that goal. Removal of intravenous (IV) catheters after maximum 48 hours of usage and avoidance of small veins while puncturing are some but not all. Low molecular weight heparin (LMWH) and nitroglycerin patches distal to peripheral lines can also prevent SVT and STP. Exercise is recommended while total bed rest is not in such cases. Antibiotics are usually conserved for cases with proved source of infection.

Discussion

One double blinded randomized controlled study (RCT), concluded that the application of topical 1000 IU .g1 is an effective treatment for superficial thrombophlebitis caused by IV catheters. The study has proven that topical heparin hastens the healing process, which decreases the comfort caused by phlebitis, especially in patients with more than one lesion who needs a new catheter to be inserted. In this study diagnosis of phlebitis was made by 10 nurses, and the course progression by 19 [4]. A Research by Angiology suggested that topical heparin can effectively modulates the microcirculations and increase diffusion throughout the skin. Those proposed actions were noticed in many trials and expert opinions, the use of topical heparin is not yet standardized and its use is limited to some centers only. It still lacks the enough evidence because of deficiency in large pharmaceutical investments in this field, yet it has shown many beneficial effects in clinical practice. Scientifically speaking, three main effects of heparin on skin can be observed; a)the anti-coagulation effect, b)modulatory effect on microcirculation, c)the effect on skin permeability allowing increased diffusion of drugs [1-3].

Our main concern in this paper is to review the literature regarding the use of topical heparins in SVT and STP. Although it was mentioned in many trials and expert opinions, the use of topical heparin is not yet standardized and its use is limited to some centers only. It still lacks the enough evidence because of deficiency in large pharmaceutical investments in this field, yet it has shown many beneficial effects in clinical practice. Scientifically speaking, three main effects of heparin on skin can be observed; a)the anti-coagulation effect, b)modulatory effect on microcirculation, c)the effect on skin permeability allowing increased diffusion of drugs [1-3].

An RCT published in 2003 claimed that local application of heparin had an efficacy comparable to LMWH [10]. In 2003, and 2005 two studies of the same design [11,12] concluded that LMWH is equally effective in comparison with topically applied heparin regarding the reduction of erythema, swelling and pain. Another study [13], compared LMWH with topically applied heparin in alleviating the above mentioned symptoms. In this study it was concluded that pain relief in the group which received topical heparin was better achieved than the control group. Reduction of other inflammatory symptoms (redness and swelling) was more remarkably obvious. Moreover the reduction in the thrombus size after two weeks of treatment was three times bigger in the group which used topical heparin.

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Conclusion

Topically applied heparin has shown a promising role in treatment of SVT and STP. Recent literature has shown its effectiveness in the reduction of inflammatory sign accompanying those conditions. However there is still no enough evidence supporting the role of locally applied heparin in prevention of complications e.g. deep venous thrombosis, pulmonary embolism as compared to LMWH.

Nevertheless, many institutes have included topically applied heparin in their guidelines for treatment of SVT and STP, and so far they have increased the patients’ satisfaction for faster pain relief, which is the main disturbing element of those diseases.

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