Chin Med Sci J
June 2020

Vol. 35, No. 2 P. 151-156
doi:10.24920/003606

ORIGINAL ARTICLE

Hypofibrinogenemia Caused by Hemocoagulase Injection: A Retrospective Study on Clinical Laboratory Findings

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Key words: hypofibrinogenemia; hemocoagulase; fibrinogen; fibrinolysis

Objective Hemocoagulase injection based on the venom of *Agkistrodon halys Pallas* is widely used in the treatment of hemorrhagic disorders. This study aimed to characterize the clinical laboratory findings of hemocoagulase-induced hypofibrinogenemia as the associated adverse reaction of hemocoagulase injection.

Methods We retrospectively enrolled 27 in-patients who were treated with hemocoagulase injection for hemoptysis and developed hypofibrinogenemia during the period of January 1, 2015 to March 31, 2018. Clinical data were collected and investigated, including clinical manifestations, hemostatic and fibrinolytic parameters, dosage of hemocoagulase, the medication time, and the cryoprecipitate blood product infusion. Differences in fibrinogen, D-dimer, and fibrin/fibrinogen degradation products (FDP) before, during, and after the application of hemocoagulase injection were analyzed statistically.

Results Plasma fibrinogen level during medication of hemocoagulase injection decreased significantly compared to that before the treatment ($F=1.80$, $P<0.001$), with the average decrease of 2.28 g/L (0.63-3.9 g/L). After withdrawal, fibrinogen level increased significantly compared to that during the medication ($F=-1.20$, $P<0.001$), but was still lower than that before the medication ($F=0.59$, $P=0.03$). The D-dimer level and the FDP level after withdrawal decreased significantly compared to the levels during the medication ($F=0.83$, $P=0.002$; Wilcoxon-test, $Z=-4.54$, $P<0.001$). Spearman's correlation analyses did not find either fibrinogen change during-before the administration or FDP change after-during the administration was associated with the dosage of hemocoagulase ($r=-0.17$, $P=0.40$; $r=-0.28$, $P=0.15$; respectively) and the time of recovery from hypofibrinogenemia ($r=-0.45$, $P=0.05$; $r=0.13$, $P=0.61$; respectively).

Conclusion Monitoring both clotting and fibrinolysis parameters is essential in the management of hemoptysis patients treated with hemocoagulase injection. Clinicians should be aware of hypofibrinogenemia and consider discontinuation of the administration of hemocoagulase whenever necessary.

Received May 13, 2019; accepted November 20, 2019; published online June 9, 2020.
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Chinese Medical Sciences Journal, 35 (2020) 151-156. doi:10.24920/003606

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