

## Enoxaparin-sodium/heparin/warfarin

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**Heparin-induced thrombocytopenia and elevated INR: case report**

A 78-year-old man developed heparin-induced thrombocytopenia (HIT) during treatment with enoxaparin-sodium and heparin [sodium UFH and calcium heparin]. Additionally, he exhibited elevated INR level during treatment with warfarin [*not all routes and dosages stated*].

The man, who had a history of chronic kidney disease, arterial hypertension and recurrent deep vein thrombosis, was admitted to a hospital in Italy with acute respiratory and renal failure. His ongoing medications included warfarin along with amlodipine, atorvastatin, cinacalcet, calcium and vitamin D supplementation. He reported developing generalized malaise, muscle ache and fever one week prior to the presentation. At the time of presentation, his vital signs were as follows: BP of 190/90mm Hg, body temperature of 37.8°C, HR of 108 bpm (sinus tachycardia), RR of 18 bpm and oxygen saturation of 97%. Laboratory tests showed hypocapnic hypoxaemia with metabolic acidosis, serum creatinine of 9 mg/dL, sodium of 126 mmol/L, potassium of 5.7 mmol/L and elevated INR of 8.37.

Due to the elevated INR level, the man's warfarin was stopped, and he received vitamin-K. A CT-scan led to the diagnosis of viral pneumonia. He was then transferred to the ICU. A nasopharyngeal swab showed negative result for COVID-19, but due to high suspicion of COVID-19 infection, off label therapy was started with hydroxychloroquine, azithromycin, tocilizumab and unspecified steroids. In the following two days, his INR level decreased to 1.5, but no improvement was noted in his renal function. Hence, on hospital day 3, haemodialysis was started. During the first dialysis session, a single bolus dose of heparin [sodium UFH] 5000IU was administered (at this time, his platelet count was  $305 \times 10^3 /\mu\text{L}$ ). In the following day, he received one dose of enoxaparin 40mg. On the next day, a drop in his haemoglobin level was noted, and heparin administration was stopped. After two days, melena was noted. At this time, his haemoglobin level was 8.5 g/dL, which further decreased to 7.8 g/dL after one day (platelet count  $219 \times 10^3 /\mu\text{L}$ ). He received packed RBCs. After that, no bleeding was noted and his haemoglobin level remained stable. On day 10 (from first heparin administration), platelet count improved to  $153 \times 10^3 /\mu\text{L}$ . He then started receiving SC heparin [calcium heparin] 5000IU two times a day. On day 4 of therapy, RT-PCR confirmed COVID-19 infection, which led to the diagnosis of acute renal failure and pneumonia secondary to COVID-19 infection. In seven days, the platelet count decreased to  $49 \times 10^3 /\mu\text{L}$ , and heparin was stopped due to the suspicion of HIT. Based on IgG specific chemiluminescence test for heparin-PF4 antibodies and analysis using 4T score, HIT was confirmed. On the next day, he complained of right lower extremity pain, and a whole leg ultrasound showed a right common femoral deep vein thrombosis. Hence, argatroban was started. With the argatroban treatment, platelet count improved to  $267 \times 10^3 /\mu\text{L}$ , and no thrombotic events or bleeding complications were noted. He was then discharged on warfarin. At the time of discharge, his INR was 2.7.

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