Rectus sheath hematoma following enoxaparin administration

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ABSTRACT

Low-molecular-weight heparin, including enoxaparin, has efficacy comparable to that of unfractionated heparin and is considered the first-line option for thromboprophylaxis due to a decreased risk profile. This paper presents a rare case of epigastric artery rectus sheath hematoma following enoxaparin injection, resulting in multiorgan failure secondary to hemorrhagic shock. Discussion of this case may assist clinicians in the recognition and treatment of similar cases.

KEYWORDS Case report; critical care; enoxaparin; geriatrics; low-molecular-weight heparin; rectus sheath hematoma

When managing patients at risk for venous thromboembolisms, clinicians often follow established guidelines for anticoagulation—most commonly using heparin drugs, direct factor Xa inhibitors, and warfarin.¹ Low-molecular-weight heparin (LMWH), a newer anticoagulant with efficacy comparable to that of unfractionated heparin, is often preferred due to its decreased risk of major bleeding² and heparin-induced thrombocytopenia.³ As such, most guidelines recommend LMWH as a first-line option for postoperative patients needing thromboprophylaxis.¹ Rarely, rectus sheath hematomas (RSH) develop secondary to LMWH administration. This paper presents a patient who developed a fatal RSH following enoxaparin administration, believed to be due to increased Valsalva effort because of her constipation.

CASE DESCRIPTION

A 76-year-old woman was transferred to the critical care unit for atrial fibrillation with rapid ventricular response secondary to pseudoephedrine intake. Upon admission, the patient received full-dose enoxaparin (70 mg/0.7 mL subcutaneously every 12 h) for thromboprophylaxis. Five days later, she was found unresponsive and hypotensive on the commode. She regained consciousness and reported severe abdominal pain. Computed tomography disclosed a large left RSH with active peritoneal hemorrhage anteriorly with an air-fluid level (likely

from the inferior epigastric vessels). The patient denied any recent falls or trauma. Laboratory studies were significant for elevated lactic acid level (2.3 mmol/L), hyponatremia (123 mmol/L), and decreased estimated glomerular filtration rate (56.52 mL/min). Packed red blood cell transfusions were performed, and enoxaparin and metoprolol were discontinued. The patient remained critically ill following an unsuccessful interventional radiology—guided embolization of the inferior epigastric artery and a subsequent exploratory laparotomy with ligation of active arterial bleeding from the left inferior epigastric artery. Multiorgan failure syndrome, worsening lactic acidosis, and declining hemoglobin ensued. A second laparotomy found the entire colon and gallbladder to be necrotic, with continued active bleeding from the retropulsion peritoneal site. The patient soon died.

DISCUSSION

The adverse effects of LMWH have been well established, but life-threatening abdominal hematomas following administration are rare, with very few reported cases. Many of these cases occur in older patients,^{4–7} which raises the question of whether enoxaparin administration is appropriate in these patients. One such case led the authors to report that risk factors for the development of severe spontaneous hematomas include higher doses of LMWH, preexisting renal impairment, older age, and concomitant administration of medications that affect hemostasis.⁷ Another notable risk

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factor for RSH is direct injury to the muscle or indirect damage due to excessive forceful contraction—including activities with increased Valsalva effort.⁸ This is perhaps the most applicable risk factor in this case, other than advanced age and anticoagulation therapy, as the patient had been found unconscious and hypotensive on the commode due to a vagal event secondary to constipation. The lack of a posterior rectus sheath below the arcuate line allows for inferior epigastric artery RSH to be more massive due to this lack of anatomical restriction, and this absence of a tamponade effect may partially explain the increased mortality rate associated with RSH.⁸

Overall, this case emphasizes the rare but increasingly reported adverse effects of severe hematomas following LMWH administration. Providers should understand that patients on anticoagulation therapy require continual evaluations. Elderly patients require close monitoring following enoxaparin administration, especially if they complain of constipation. While RSH is typically self-limiting, clinicians should be aware of the most common presenting RSH symptoms, including abdominal pain (84%–97%), palpable abdominal wall mass (63%–92%), and abdominal tenderness (71%).⁸ Treatment of these abdominal hematomas includes discontinuation of LMWH, administration of protamine, and guided embolization of the bleeding vessel, with laparoscopic ligation as a second-line modality.

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