Femoral Neuropathy: A Rare Presentation of Retroperitoneal Hematoma with Review of Literature

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Received: 19 March 2019 / Accepted: 20 April 2019 / Published online: 24 June 2019
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Abstract Hematomas in close compartments and in pelvic gutters are always challenging to treat and diagnose. A young female on apixaban for recently diagnosed pulmonary thromboembolism (PE) presented to us for the complaints of right sided lower limb weakness. Neurological examination was positive for the right femoral nerve distribution deficit. Computed tomography (CECT) showed large right sided iliopsoas hematoma. Anticoagulation was stopped and was given blood transfusions with which she improved without need of any surgical evacuation. We hereby aim to enrich the understanding of our readers regarding this topic with a review of our experience and other recent publications in medical literature. It is important for the internists to be aware of varied and atypical presentations of retroperitoneal hematoma (RPH) especially following surgical/orthopaedic procedures or in association with anticoagulants and antiplatelets.

Keywords Psoas hematomas · Femoral neuropathy · Coagulopathy · Trans arterial embolization · Lenk's triad

Introduction

RPH is a rare entity that could be fatal if not diagnosed during early stage [1]. Awareness of this clinical entity is of extreme importance due to simulation in its clinical features with other more common and benign abdominal pathologies like acute pancreatitis, appendicitis etc. Rarely,

hematomas can present with mass effect compromising even the function of surrounding adjacent organs. This paper discusses about a 49-year old female who presented with neurological symptoms and was found to have RPH on further evaluation.

Case Description

A 49-year old female was recently evaluated for sudden onset shortness of breath and chest pain. Investigation confirmed Factor V Leiden mutation related PE (Fig. 1a). She was started on novel oral anticoagulant (NOAC), oral apixaban 10 mg twice daily for a week followed by 5 mg twice daily. After three weeks, she came to emergency for the new complaints of right-sided hip pain, numbness and weakness of right lower limb. There was no recent history of trauma, fall, chest pain, fever, diarrhoea or NSAID abuse. Examination revealed soft, nondistended abdomen with tenderness in right lower quadrant without peritoneal signs. Neurological examination suggested reduced sensation and motor weakness in right femoral nerve distribution. Vascular examination confirmed both limbs to be well perfused with good capillary refill. Anticoagulation with apixaban was stopped immediately and two units of PRBCS were transfused in view of drop in hemoglobin (fall in Hb from 11.1 to 9.6 gm/dl) and hypotension (91/60 mmHg). In view of recent history of anticoagulation and rapid fall in Hb, suspicion of internal bleeding was kept. Urgent CECT abdomen/pelvis showed large right iliopsoas hematoma extending up to the right iliopsoas tendon at the level of right femoral lesser trochanter (Fig. 1b, c). Angiography did not reveal any active oozing blood vessel. She was kept under hourly neuro checks for next 48 h which did not show any progression of

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Fig. 1 **a** CT chest (transverse view) Hypodensities within the inferior left proximal and right subsegmental branches suggestive of pulmonary thromboembolism. **b** CT abdomen/pelvis (transverse view), **c** (coronal view). Large right iliopsoas retroperitoneal hematoma

her neurological signs and symptoms. She continued to improve with medical management alone. Her vitals gradually stabilised, serial Hb monitoring showed stable trend with no clinical neurological deterioration. At present, patient follows with us as an outpatient and planned for repeat imaging after 6 weeks.

Our second experience was with a 55-year old female who suffered spontaneous mesenteric hematoma [2]. Unlike our first case, this patient did not have any neurological compromise and was not on any blood thinners like aspirin or warfarin. No cause could be found despite extensive haematological workup. This patient also improved with conservative management without any recurrence.

demonstrating haematocrit level, measuring approximately 17.6 (CC) $\times$ 11.0 (T) $\times$ 7.5 (AP) cm, extending up to the right iliopsoas tendon at the level of the right femoral lesser trochanter

Discussion

Abdominal pain, postural symptoms, pallor and fatigue are the common symptoms known to be associated with RPH. In order to timely diagnose and treat RPH, awareness about its rare presentations is of utmost importance. Table 1 describes the recent publications on RPH, associated comorbidities with treatment and outcome. Recent surgical interventions, orthopaedic procedures or the anticoagulant use are crucial clues which physicians should not forget to ask while history taking and physical examination.

Recently, Zeng et al. studied the complications of oblique lateral interbody fusion, an orthopaedic procedure. Out of 235 patients, there was only one incidence of right psoas hematoma [3]. Similarly, Beckman et al. studied bleeding complications post minimally invasive lateral lumbar interbody fusion (LLIF). There were only seven reported cases of psoas hematoma out of 3950 operations. 3/7 cases even required hematoma evacuation but unfortunately none had neurological recovery. Delayed

Table1 Recent articles on psoas hematoma, demographics, baseline comorbidities, clinical presentation and management

Author et al.	Year	Gender/ age (years)	Background case	Location	Presentation	Mechanism of psoas hematoma	Management/ outcome
Magee et al.	2018	M/62	Post-operative (IVC filter placement)	Right sided	Abdominal pain Right lower extremity weakness	IVC filter placement related Anticoagulation	Endovascular retrieval of the IVC filter Evacuation of hematoma
Chung et al.	2018	F/13	Post-operative (posterior spinal fusion)	Right Psoas	Acute abdomen, fever simulating appendicitis	Direct artery injury Not on anticoagulation No coagulopathy	Conservative Improved
Sahu et al. (Present case)	2018	F/49	Factor V Leiden mutation Pulmonary thromboembolism On apixaban BID	Right Iliopsoas	Femoral neuropathy Right sided hip pain Motor and sensory weakness	On anticoagulation INR-1.1	Conservative Improved
Sahu et al. [2]	2018	F/55	None No previous co-morbidities	Mesentery	Acute abdomen	Not on anticoagulation Spontaneous bleeding INR-1.4	Conservative Improved
Kheiri et al.	2018	M/91	Atrial fibrillation On warfarin	Right Iliopsoas	Right thigh pain Wasting of the right quadriceps Power (1/5) at right hip flexors	Coagulopathy INR-5.31	Attempt to IR mediated drainage failed Managed Conservative Delayed recovery
Cua et al. [4]	2018	M/73	PTE and left LL DVT Post tissue plasminogen activator On enoxaparin	Bilateral iliopsoas hematoma	Right leg numbness and weakness which was rapidly followed by right limb weakness	Received thrombolysis in recent past followed by anticoagulation INR not available	Required radiological intervention and drainage of hematoma Partial recovery
Bemora et al.	2018	M/58	Disc herniation (level L3-4)	Psoas	Co-incidental detection of hematoma and disc herniation when patient was evaluated for L3 radiculopathy	Not on anticoagulation INR not available	NA
Saad et al.	2017	M/48	CVA in 2013 MVR in 2014	Iliopsoas	Motor and sensory loss of entire left LL	Coagulopathy INR-9.27	Conservative Improved
Macauley et al.	2017	F/64	PTE, DVT On enoxaparin	Bilateral Psoas hematoma	Weakness of B/L lower limbs B/L femoral neuropathy Hypotension	INR-1.3	Conservative Improved
Daareeawoo et al.	2017	M/39	Elective posterior lumbar spinal fusion (B/L L4/5 and L5/S1 decompression and L4-S1 posterolateral fusion)	Right Psoas hematoma	Tingling sensation in the right thigh Pain and reduced power in the right hip	Injury to lumbar segmental vessel	TAE Improved

DVT deep venous thrombosis, *PTE* pulmonary thromboembolism, *TAE* trans arterial embolization, *MVR* mitral valve replacement, *CVA* cerebrovascular accident, *IR* interventional radiology

suspicion of vascular injury and intervention (avg ~ 1 month post LLIF) were found to be the cause of non-recovery [4]. This study re-emphasised the importance of early suspicion and prompt intervention to avoid permanent neurological deficit.

It is pertinent to mention that only 1/3rd of the patients of abdominal bleeding will have the classical symptoms (flank pain, palpable mass, and hypovolemic shock) of Lenk's triad [5]. Our case is a classic example of the fact that internal bleeding can be a great masquerade as the symptoms could be easily confused with neurological pathologies [2]. Cua et al. highlighted the challenges faced during the management of blood thinner associated bleeding [5]. In case of worsening neurological deficit, timely interventions like trans arterial embolization (TAE) and IR guided drainage of expanding hematoma can be rewarding [5–7].

Conclusion

Take home message for readers including ER physicians and Internists is to perform a thorough neurological evaluation in case of any ER visit especially during immediate post-operative period or if patients are on anticoagulation so as not to miss any evolving neurological compromise secondary to RPH.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Statement The article doesn't contain participation of any human being and animal.

Informed Consent Not applicable.

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