Unusual presentation of more common disease/injury

Pulmonary embolus as a first presentation of occult metastatic prostate cancer

S K Mukherjee, A Panthagani, N Ramroop, S Al-Dujaily

Urology Department, Basildon & Thurrock University Hospital, Basildon, UK

Correspondence to S K Mukherjee, suj.mukherjee@gmail.com

Summary

A 65-year-old gentleman with a previous history of pulmonary embolus presented with a subacute onset of shortness of breath, haemoptysis and chest pain associated with a swollen left leg. Ultrasound Doppler scanning of the leg revealed no deep-vein thrombosis. Thereafter, a CT scan of the pulmonary vasculature revealed a large right-sided pulmonary embolus. CT scanning of the abdomen and pelvis was performed to look for evidence of an intra-abdominal source of thrombus and revealed evidence of a moderate sized pelvic mass causing obstructive uropathy. Urological review of the patient revealed a hard prostate and raised prostate specific antigen, consistent with a diagnosis of primary prostatic carcinoma, which after investigation with a radioisotope bone scan was found to have metastasised to the bony pelvis.

BACKGROUND

Venous thromboembolism (VTE) is a well-established complication of malignancy. Despite autopsy and retrospective studies suggesting that cancers of the pancreas, lung and stomach are most strongly associated with thrombosis.^{1 2} Population based studies have identified lung, colon and prostate cancers as having a high rate of VTE association.³

Thrombotic events may in fact be the first presentation of occult cancer; 10% of idiopathic VTEs have an underlying identifiable malignancy. These can manifest as deep vein thrombosis (DVT) or pulmonary embolus (PE) but they can also develop in less common sites.¹ The diagnosis of a malignancy should be suspected in patients with no identifiable risk factors presenting with spontaneous DVT.

We present a case of a gentleman who presented with his second thrombotic event, in whom an occult malignant malignancy was found. Moreover, this was only established as a result of cross sectional imaging performed in order to find the source of his thrombus.

This highlights the importance of considering the possibility of malignancy as a cause of spontaneous DVT even in patients who may have other positive risk factors for thrombus formation.

CASE PRESENTATION

A 65-year-old man presented with a 3 day history of increasing shortness of breath, associated with haemoptysis and occasional fevers. He also had increasingly swollen left leg over the last 5 weeks, first being noted following a short 2.5 hour flight to Tunisia. His exercise tolerance over the past few weeks had decreased to just over one flight of stairs and he reported orthopnoea, which was new. His significant medical history included a previous PE; ischaemic heart disease, hypertension, diabetes mellitus and two previous ischaemic strokes.

On examination, he was found to have bibasal inspiratory crepitations and although both legs appeared oedematous, the left was more pronounced, tender and with erythema.

INVESTIGATIONS

An ultrasound scan arranged in the community by the general practitioner had failed to confirm a DVT. In light of this, a CT pulmonary angiogram was performed which established a diagnosis of a large pulmonary embolism in the right main pulmonary artery. A subsequently performed echocardiogram showed there to be significant right heart strain.

A contrast enhanced CT of the abdomen and pelvis was performed in order to further investigate the origin of the initial thrombus, given the patient's asymmetrical leg oedema. The most striking feature of this was not an intra-abdominal thrombus, but of severe left sided hydronephrosis and hydroureter caused by a soft tissue mass of 3.3×4.2 cm in the left hemi pelvis, with lymphadenopathy in the right hemi pelvis. Routine biochemical blood tests showed acute kidney injury.

DIFFERENTIAL DIAGNOSIS

An initial differential diagnosis included congestive cardiac failure, community acquired pneumonia and a thromboembolic event, given his previous history and an arterial gas showing Type 1 respiratory failure (PO₂ 7.51).

TREATMENT

Treatment with low-molecular weight heparin was initiated for the PE.

A review from urology was sought in order to identify the nature of the mass and to help relieve the obstructive uropathy. Digital rectal examination showed a hard prostate and a prostate specific antigen (PSA) level was requested. This was raised at 244.7 ng/ml, making for a convincing diagnosis of carcinoma of the prostate.

A nephrostomy tube was inserted with good results. Further investigation revealed the presence of skeletal metastatic lesions. The patient is currently undergoing hormone therapy with luteinising hormone-releasing hormone analogues after being discussed at the local urology multidisciplinary team meeting.

OUTCOME AND FOLLOW-UP

Regular outpatient follow-up with urology is ongoing. Initially an antegrade stent was attempted but this failed. A month later, this was successful, most probably due to the effect of hormone treatment in reducing the size of the pelvic mass.

As this second embolic event has an obvious precipitant, there was no investigation of this patient for any inherited thrombophilia.

The patient is currently on long-term anticoagulation with warfarin.

DISCUSSION

An association between cancer and thrombosis was first posed by Armand Trousseau, recognising a link between thrombophlebitis migrans and occult malignancy.^{1–4} The pathogenic mechanisms for the association include hypercoagulability due to activation of clotting by tumour cells, vessel-wall injury and stasis.²

Several studies have suggested that patients presenting with idiopathic VTE are more likely to have underlying cancer than those in whom a secondary cause of thrombosis is apparent.³ In this case, the patient gave a clear and convincing history for PE, and on further questioning it was apparent that he had a number of risk factors for venous thrombo-embolism, most prominent of which being a previous PE shortly after a myocardial infarction 9 years previously.

Prostate cancer is known to be associated with coagulopathy, commonly with an increased risk of VTE.⁵ However, current literature does not advocate routine investigation for occult malignancy in those with non-idiopathic pulmonary embolism, questioning the benefit of such exhaustive investigation given that a significant proportion (approximately 40%) have metastatic disease when diagnosed.^{1–2} Moreover, it is not current practice to perform such investigations in patients with apparently unprovoked PE without any symptoms suggestive of cancer.

The relatively high incidence of occult prostate cancer is well documented, both from autopsy specimens and from samples extracted during prostatectomy for benign prostatic hyperplasia.^{6–8} These tumours are more commonly lower grade (Gleason score <7) and encapsulated.⁷ These cases are usually insignificant. It is more uncommon to find metastatic prostate cancer that remains asymptomatic, as was seen in this case. Patients with disseminated disease often present with lower urinary tract symptoms or bony pain from osseous metastases. Our literature search retrieved no case reports of a PE as the presenting feature, without lower urinary tract symptoms.

Current guidelines in the UK do not advocate routine screening for PSA in asymptomatic individuals as there is a risk of over-investigation and misdiagnosis. However, in this case it is likely to have been elevated for a considerable time, given the level on admission (244.7 ng/ml). Furthermore, it proved to be diagnostic in view of an otherwise unexplained unilateral pelvic mass. Indeed, such a high level would also suggest metastatic disease.

It is possible that this patient may have only been diagnosed with his condition following further radiological

investigation for deteriorating renal function as a result of obstructive uropathy. Prostate cancer is known to be associated with obstruction of the urinary tract, commonly bilaterally due to obstruction at the bladder neck or both ureters. Data on the incidence of unilateral hydronephrosis and hydroureter are less well documented in the literature, as we present here.

Expert review of the initial CT scan showed that the soft tissue mass lay close to the bifurcation of the left common iliac vein. Compression of this vessel by the mass could not be excluded, and this could explain the unilateral leg swelling. Indeed, the prolonged history of leg oedema in this case would not be a classical presentation of a deep leg vein thrombosis. Furthermore, vascular compression may have contributed to thrombus formation.

In summary, we present a case of asymptomatic, disseminated prostatic malignancy with life-threatening complications, which may easily have gone undetected without cross-sectional imaging of the abdomen.

This case highlights the need to consider occult malignancy in patients with VTE, particularly in older and higher risk patients even if an identifiable risk factor for thrombophilia is apparent. In older males, a PSA test could be a quick and cost effective screening tool.

Learning points

- ▶ VTE in older patients carries a higher risk of occult malignancy, and as such a lower threshold for investigation is recommended.
- ▶ Metastatic prostate carcinoma can remain asymptomatic yet still have serious sequelae.
- ▶ In older male patients, PSA screening may be justified in patients presenting with coagulopathy.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Rosovsky R**, Lee AY. Evidence-based mini-review: should all patients with idiopathic venous thromboembolic events be screened extensively for occult malignancy? *Hematology Am Soc Hematol Educ Program* 2010;**2010**:150–2.
2. **Sørensen HT**, Møller-Jensen L, Steffensen FH, *et al*. The risk of a diagnosis of cancer after primary deep venous thrombosis or pulmonary embolism. *N Engl J Med* 1998;**338**:1169–73.
3. **Lee AY**, Levine MN. Venous thromboembolism and cancer: risks and outcomes. *Circulation* 2003;**107**(Suppl 1):117–21.
4. **Di Nisio M**, Otten HM, Piccoli A, *et al*. Decision analysis for cancer screening in idiopathic venous thromboembolism. *J Thromb Haemost* 2005;**3**:2391–6.
5. **Adamson AS**, Francis JL, Witherow RO, *et al*. Coagulopathy in the prostate cancer patient: prevalence and clinical relevance. *Ann R Coll Surg Engl* 1993;**75**:100–4.
6. **Hayat MJ**, Howlader N, Reichman ME, *et al*. Cancer statistics, trends, and multiple primary cancer analyses from the Surveillance, Epidemiology, and End Results (SEER) Program. *Oncologist* 2007;**12**:20–37.
7. **Montironi R**, Mazzucchelli R, Santinelli A, *et al*. Incidentally detected prostate cancer in cystoprostatectomies: pathological and morphometric comparison with clinically detected cancer in totally embedded specimens. *Hum Pathol* 2005;**36**:646–54.
8. **Breslow N**, Chan CW, Dhom G, *et al*. Latent carcinoma of prostate at autopsy in seven areas. The International Agency for Research on Cancer, Lyons, France. *Int J Cancer* 1977;**20**:680–8.

This pdf has been created automatically from the final edited text and images.

Copyright 2012 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Mukherjee SK, Panthagani A, Ramroop N, Al-Dujaily S. Pulmonary embolus as a first presentation of occult metastatic prostate cancer. *BMJ Case Reports* 2012;10.1136/bcr.11.2011.5196, Published XXX

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow

Keep up to date with all published cases by signing up for an alert (all we need is your email address) <http://casereports.bmj.com/cgi/alerts/etoc>