ment in myeloperoxidase anti-neutrophil cytoplasmic antibody vasculitis. Rapid investigations and treatment are necessary and can substantially modify the course of this condition.

When the natural history of anti-neutrophil cytoplasmic antibody-associated vasculitis was described in 1958, it frequently proved fatal. Without effective treatment, patient survival averages almost 5 months from diagnosis. The introduction of glucocorticosteroids in the 1960s extended average survival by around 8 months. This changed radically when Fauci and Wolff (1973) pioneered the use of cyclophosphamide. Rituximab was later trialled as a first-line induction therapy for anti-neutrophil cytoplasmic antibody vasculitis and showed equivalent efficacy with no excess of adverse effects (Jones et al, 2010). Once disease quiescence is achieved, maintenance therapy is needed to prevent disease relapse.

Untreated, systemic vasculitis is associated with a high mortality rate. Therapies have led to marked improvements in survival of 84% and 76% at 1 and 5 years respectively (Samarkos et al, 2005). Important predictors of death include age, serum creatinine level at presentation, disease extent and severity at diagnosis (Fauci and Wolff, 1973).

Conclusions

The kidney is the most commonly affected vital organ in anti-neutrophil cytoplasmic antibody-associated vasculitis. This case demonstrates a rare cause of pyrexia of unknown origin, with no initial evidence of clinical organ involvement. It highlights the need for close monitoring and follow up of such patients. BJHM

Akar H, Ozbasli-Levi C, Senturk T et al (2002) MPO-ANCA-associated small vessel vasculitis presenting as fever of unknown origin. *Nephron* **92**: 673–5

Efstathiou SP, Pefanis AV, Tsiakou AG et al (2010) Fever of unknown origin: discrimination between infectious and non-infectious causes. *Eur J Intern Med* **21**: 137–43

Fauci AS, Wolff SM (1973) Wegener's granulomatosis: studies in eighteen patients and review of the literature. *Medicine* **52**: 535–61

Jones RB, Tervaert JW, Hauser T et al (2010) Rituximab versus cyclophosphamide in ANCA-associated renal vasculitis. *N Engl J Med* **363**(3): 211–20

Ohnuma K, Hosono O, Katayose T et al (2010) Microscopic polyangiitis initiated with liver dysfunction, calf pain and fever of unknown origin. *Rheumatol Int* **30**: 1651–6

Samarkos M, Loizou S, Vaiopoulos G, Davies KD (2005) The clinical spectrum of primary vasculitis. *Sem Arth Rheum* **35**: 95–111

Shields O (2011) Pyrexia of unknown origin and pulmonary fibrosis as a presentation of MPO-ANCA associated vasculitis. *BMJ Case Rep* Apr 15 doi: 10.1136/bcr.01.2011.3692

LEARNING POINTS

- A pyrexia of unknown origin is the result of inflammatory conditions in around a third of cases.
- A pyrexia of unknown origin can proceed clinical evidence of end-organ involvement in myeloperoxidase anti-neutrophil cytoplasmic antibody-related vasculitis.
- Patients with myeloperoxidase anti-neutrophil cytoplasmic antibody-related vasculitis with no apparent end-organ involvement need close monitoring and follow up.

Haematuria: an uncommon presentation of a common vascular diagnosis

A 63-year-old man presented to urology with isolated new onset haematuria. He had sinus tachycardia and no other haemodynamic compromise. His computed tomography scan confirmed an infra-renal abdominal aortic aneurysm with communication to the inferior vena cava causing an aorta-caval fistula (*Figure 1*).

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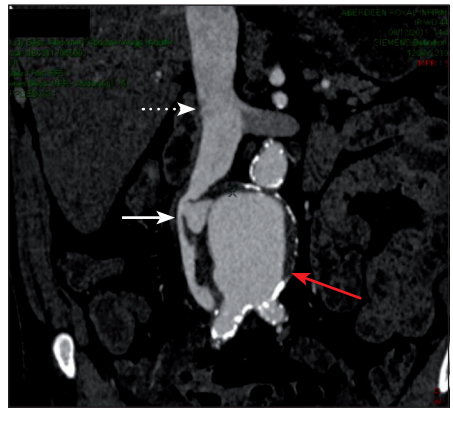
Abdominal aortic aneurysms can rupture into the retroperitoneum or into the peritoneal cavity; rarely they can rupture into the inferior vena cava. This can present as high output cardiac state and failure. Transmission of venous hypertension to the hypogastric vessels leads to venous congestion of the pelvic veins around the bladder causing haematuria as in this patient. The venous pressure increase may be regional and restricted to the venous system below the aneurysm as in this patient (Brewster et al, 1977).

The abdominal aortic aneurysm was successfully treated with an endovascular repair which sealed the fistula communication. BJHM

Brewster DC, Leslie WO, Darling RC (1977) Haematuria as a sign of Aorto-Caval Fistula. *Ann Surg* **186**(6): 766–71

Figure 1. Computed tomography angiogram showing communication between aorta and inferior vena cava. Red arrow: abdominal aortic aneurysm; solid white arrow: site of fistula between abdominal aortic aneurysm and inferior vena cava; dotted white arrow: arterial contrast opacifying the inferior vena cava.



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