

# Reversal of myelodysplasia with pituitary hormone replacement

## Introduction

This article presents an unusual case of myelodysplasia secondary to panhypopituitarism which was corrected with cortisol and thyroxine replacement.

## Discussion

This 61-year-old man had a pancytopenia with bone marrow studies consistent with myelodysplasia. He also had panhypopituitarism secondary to a large non-functioning pituitary adenoma. The myelodysplastic picture resolved with steroid and thyroxine replacement, suggesting that the myelodysplasia was secondary to the panhypopituitarism.

The anterior pituitary has an established role in the regulation of erythropoiesis and panhypopituitarism is commonly associated with a normocytic anaemia. A retrospective study by Nishioka and Haraoka (2005) demonstrated anaemia in 32% of patients with panhypopituitarism which resolved with hormone replacement. The role of anterior pituitary hormones in the regulation of myelopoiesis and thrombopoiesis is less clear. In the same study of patients with panhypopituitarism, leukocyte and platelet counts were lower than in control subjects, but did not change after hormone replacement.

Thyroid hormones (Moriyama and Fisher, 1975) and testosterone (Dainiak

et al, 1978) both stimulate erythroid progenitors directly, increase erythropoietin production and potentiate the action of

erythropoietin. Growth hormone stimulates erythroid and granulocyte colony formation through insulin-like growth factor-1

## CASE REPORT

A 61-year-old man presented to primary care with a longstanding history of fatigue and episodic frontal headache. His fatigue had worsened over several years, resulting in impediment to occupational and social activities. He noted a reduced appetite with minimal weight loss as well as a loss of libido and erectile dysfunction. He also remarked upon a reduced ability 'to fight off colds and flus'.

He complained of a longstanding history of episodic frontal headache that had been attributed to migraine for which he took sumatriptan. Over the 6 months before presentation, he noticed increasing frequency and severity of headaches, with pain also radiating occipitally. There was never any associated aura, visual disturbance, dizziness or alteration in consciousness.

Blood tests performed in primary care showed white blood cell count  $2.9 \times 10^9/\text{litre}$  (neutrophils  $1.5 \times 10^9/\text{litre}$ ), haemoglobin 118 g/dl, platelets  $138 \times 10^9/\text{litre}$ , thyroxine 5.20 pmol/litre (normal range 7.5–21.1 pmol/litre), thyroid-stimulating hormone 10.93 mIU/litre (normal range 0.34–5.6 mIU/litre). The full blood count was repeated a month later and showed white blood cell count  $2.4 \times 10^9/\text{litre}$  (neutrophils  $1.0 \times 10^9/\text{litre}$ ), haemoglobin 113 g/dl, platelets  $122 \times 10^9/\text{litre}$ .

He was referred to haematology with a persistent pancytopenia and bone marrow studies were performed. Bone marrow aspirate demonstrated several features of dyserythropoiesis including binucleate forms, irregular nuclei and nuclear cytoplasmic asynchrony. Dysgranulopoiesis was also observed but with no excess of blasts. The trephine biopsy revealed a mildly hypoplastic bone marrow with a cellularity of 45%. Myelopoiesis was shifted to the left with giant metamyelocytes, segmented polymorphs and megakaryocytes with variability in lobulation with several hypolobate forms. There was no evidence of infiltration. Bone marrow cytogenetics demonstrated a normal karyotype. This was all in keeping with myelodysplastic syndrome with multilineage dysplasia.

During routine haematology follow-up, thyroid function testing was repeated which showed thyroxine 4.60 pmol/litre (normal range 7.5–21.1 pmol/litre) and thyroid-stimulating hormone 10.00 mIU/litre (normal range 0.34–5.6 mIU/litre) and the patient was referred to endocrinology. Further endocrine testing was performed: 9am cortisol 41 nmol/litre (normal range 200–750 nmol/litre), testosterone <0.40 nmol/litre (normal range 6.1–27.1 nmol/litre), luteinizing hormone 0.4 IU/litre (normal range 1.2–8.6 IU/litre), follicle-stimulating hormone 1.5 IU/litre (normal range 0–19 IU/litre) and prolactin 206 mIU/litre (normal range 56–278 mIU/litre). A short synACTH test was impaired with: time 0 minutes 47 nmol/litre, time 30 minutes 181 nmol/litre and 60 minutes 213 nmol/litre.

Magnetic resonance imaging of the brain showed an expanded pituitary fossa with a 29x21x20 mm lesion, consistent with a large pituitary adenoma that had undergone previous haemorrhage and was associated with chiasm compression (Figures 1 and 2). Visual field testing demonstrated a bitemporal superior visual field defect and optical coherence tomography scanning showed bilateral nerve fibre layer loss.

Treatment for the hypopituitarism was started, initially with hydrocortisone 20 mg at 8am, 10 mg at 2pm, 10 mg at 8pm and subsequently thyroxine 50 µg daily in addition. The patient underwent transphenoidal adenectomy, which was uncomplicated. Following surgery, hydrocortisone and thyroxine replacement, the patient's full blood count normalized within 3 months: white blood cell count  $8.3 \times 10^9/\text{litre}$  (neutrophils  $5.8 \times 10^9/\text{litre}$ ), haemoglobin 132 g/litre, platelets  $186 \times 10^9/\text{litre}$ , and his blood film showed no evidence of myelodysplasia. He was later started on testosterone and his hormone replacement was titrated appropriately. On repeat testing, his visual fields had normalized. Clinically the patient's fatigue and headaches were abolished and he reported feeling 'like a new man'.

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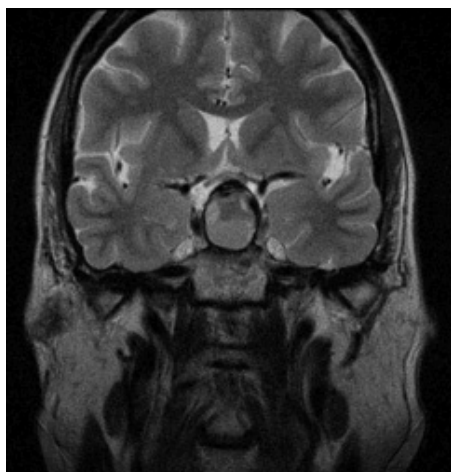


Figure 1. Magnetic resonance imaging of the brain (coronal view).

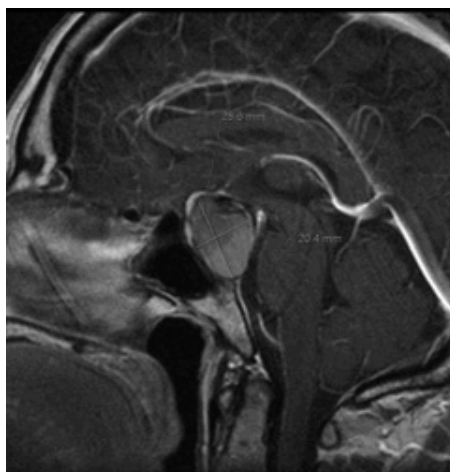


Figure 2. Magnetic resonance imaging of the brain (midsagittal view).

(Merchav et al, 1988). Steroid hormones directly stimulate erythropoiesis, but the mechanism is unclear.

Although normocytic anaemia is common, pancytopenia is a rare idiosyncratic response to panhypopituitarism with evidence limited to isolated case reports and predominantly associated with Sheehan's syndrome (Fatma et al, 2011). A case reported by Hallstensen et al (2001) demonstrated the normalization of both erythropoiesis and myelopoiesis following the administration of cortisol in a patient with hypopituitarism presenting with anaemia and neutropenia.

Holmes et al (2011) reported a similar case to this, with pancytopenia secondary to a macroprolactinoma, but with no myelodysplastic features. To the authors' knowledge, this is the first reported case that demonstrates not only pancytopenia but also myelodysplasia in the context of panhypopituitarism secondary to a pituitary macroadenoma. The resolution of the myelodysplasia with cortisol and thyroxine replacement in this patient suggests that one or both of these hormones play a role in regulating myelopoiesis. **BJHM**

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**LEARNING POINTS**

- Panhypopituitarism should be considered as a rare cause of pancytopenia.
- In patients with abnormal haemopoiesis secondary to hypopituitarism, replacement of pituitary hormones may correct the haematological abnormalities.

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Did someone say: 'short of breath'?

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Case Report

**A feverish jun with a diagno**

**Introduction**  
The differential for a febrile patient presenting with acute sinusitis is wide and an accurate and concise travel history is a crucial first step in reaching a diagnosis. This is particularly important in cases presenting outside of the endemic tropical disease setting. This case report illustrates the diagnostic challenge posed by a patient with a febrile illness and acute sinusitis. Current medical practice such as the use of antibiotics and the use of a proton pump inhibitor can both obscure the clinical picture of several years, which is important for the clinician to be aware of.

**Discussion**  
This case highlights the importance of taking a thorough and accurate travel history in any patient presenting with a fever or the symptoms. Current medical practice such as the use of antibiotics and the use of a proton pump inhibitor can both obscure the clinical picture of several years, which is important for the clinician to be aware of. A large observational study conducted by Holmes et al (2011) showed that of all the malaria cases reported in the UK since 1987, the commonest species was *P. falciparum* (55.9%), followed by *P. vivax* (25.6%), *P. malarie* (16.3%) and *P. knowlesi* (1.6%). Species identification is achieved by conducting a 'thin film' after oral identification of malarial from a 'thick film'. Holmes et al (2011) reported that the variable latency period of *P. vivax* can be

Case Report

**Acute interstitial nephritis caused by two different proton pump inhibitors**

**Introduction**  
Acute interstitial nephritis is an important cause of acute kidney injury and is often associated with a febrile illness. The clinical picture is often non-specific and the diagnosis is often made by renal biopsy. This case report describes a patient with acute interstitial nephritis who had been treated with two different proton pump inhibitors (PPIs) in the previous 3–4 months and before the onset of symptoms.

**Discussion**  
Proton pump inhibitors are one of the most commonly prescribed drug classes and in 2005, the Food and Drug Administration

**CASE REPORT**  
A 67-year-old woman was referred to the medical assessment unit with a 5-month history of general malaise, weight loss and increasing fatigue. She had been treated with two different proton pump inhibitors (PPIs) in the previous 3–4 months and before the onset of symptoms. She had also been treated with two different PPIs in the previous 3–4 months and before the onset of symptoms. She had also been treated with two different PPIs in the previous 3–4 months and before the onset of symptoms.