Nephroquiz
(Section Editor: M. G. Zeier)

Reversible paraparesis in multiple myeloma with renal failure

Case

In August 2005, a 55-year-old man was referred urgently to our hospital for the sudden onset of paraparesis. His past medical history was remarkable for hypertension, renal failure due to unclassified glomerulopathy diagnosed in 1974 and requiring haemodialysis since April 2004 and IgG Kappa multiple myeloma (MM) diagnosed in April 2003 with a unique lytic lesion of L3 vertebral body. The MM was treated successively by melphalan-prednisone, vincristine-adriamycin-dexamethasone and thalidomide-dexamethasone. An autologous stem cell transplantation was performed in February 2005. Due to the reappearance of the monoclonal component, treatment with thalidomide (200 mg/d) and dexamethasone was begun 2 days before referral. On admission, neurological examination showed muscle weakness predominantly in the lower limbs with tendinous arreflexia and absence of pyramidal syndrome. The patient did not mention any rachidian traumatism or intake of new treatment. Urgent MRI of the spinal cord was performed which did not show any medullar nor radicular compression but revealed the presence of the known and unchanged vertebral lesion.

Questions

What is the cause of this sudden paraparesis?
Paraparesis due to severe hyperkalaemia related to the treatment with thalidomide.

Blood test results showed severe hyperkalaemia at 8.4 mmol/l, whereas the last dialysis session (4 h) had been performed 2 days before. Calcaemia, phosphoraemia, CPK and LDH were normal. The patient’s kalaemia used to be within the normal range and he denied any intake of K⁺-rich food, new treatment or stop of kayexalate. Electrocardiogram showed left bundle branch block with QRS enlargement and PR interval lengthening (Figure 1A), which did not exist on baseline electrocardiogram. Haemodialysis was performed. After a 4 h session, muscle weakness had completely resolved and serum potassium concentration had reached a normal level of 4.4 mmol/l. The following day, neurological examination was normal. Electrocardiogram displayed the disappearance of QRS enlargement, returning to baseline (Figure 1B). Thalidomide dose was tapered to 100 mg/d, with monitoring of kalaemia. No severe hyperkalaemia recurred thereafter.

Comment

Thalidomide, an anti-angiogenic drug, is increasingly used in the treatment of multiple myeloma (MM) and has proved to be active in 37% of patients with refractory or relapsing MM [1]. Its side effects include peripheral neuropathy, constipation, sedation, hypothyroidism, skin rashes and venous thrombosis. However, patient’s tolerance to thalidomide is often good. Renal failure is a common complication of MM. In two studies on the use of thalidomide in patients with renal failure and MM, Harris et al. [2] and Fakhouri et al. [3], reported six and one patient, respectively, who developed severe (6.6–9.1 mmol/l) unexplained hyperkalaemia which in four cases were fatal. Hyperkalaemia usually occurs during the first month of the treatment, but may also occur later during the treatment by thalidomide (up to sixth month), and hyperkalaemia has been reported with different thalidomide dosage (100–400 mg/d). The mechanism underlying the hyperkalaemia related to thalidomide remains unclear. It may be related to the lysis of MM cells. Cany et al. [4] reported one patient who developed tumour lysis syndrome one week after starting thalidomide but in the case of our patient, no such signs was present. Hyperkalaemia might also result from an extracellular shift of potassium. Interestingly, however, no hyperkalaemia has been reported using thalidomide in 29 haemodialysed patients treated for uraemic prurit [5]. In addition, medullar or radicular compression remaining the main cause of paraparesis in MM patients, diagnosis of hyperkalaemia could have been delayed with a life-threatening prognosis.

Thus, practitioners must be aware that thalidomide use in MM patients with renal failure may be associated with severe and even fatal hyperkalaemia that may mimick neurological compression. Hyperkalaemia should be evoked in this setting, as treatment is urgent and rapidly efficient.

Conflict of interest statement. None declared.

References


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Received for publication: 11.1.06
Accepted in revised form: 8.2.06