Images in Nephrology
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Hyperparathyroidism in a diabetic patient on dialysis

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A 58-year-old male, who had type II diabetes and was on haemodialysis (HD) for 3 years, was referred for management of refractory hyperparathyroidism in 2006. In 2003, he started HD due to diabetic renal failure, after which vitamin D analogue together with oral calcium carbonate and sevelamer hydrochloride was administered, so that serum calcium and phosphate levels were controlled properly. Serum intact parathyroid hormone (iPTH) levels were <200 pg/dl. However, in 2006 serum calcium began to rise above 11 mg/dl and iPTH reached 400 pg/dl despite intravenous vitamin D administration. On admission, corrected calcium was 13.3 mg/dl, phosphate 6.2 mg/dl, alkaline phosphatase 1070 IU/l and iPTH 1640 pg/ml. 99mTc-methoxyisobutylisonitril (MIBI) scintigraphy revealed one enlarged functional parathyroid gland in the right lower region of the neck, which was shown as a irregularly enhanced nodule with calcification by a computed tomography (CT) scan (Figure 1a–c). Surgical parathyroidectomy (PTx) was performed and two parathyroid glands were removed. The right lower gland weighed 4000 mg and the other was almost normal without hyperplasia. Histology of the enlarged gland showed monotonous cellularity accompanied by all three typical features: breach of the glandular capsule, abnormal mitoses and cellular invasion into blood vessels, although the presence of at least two of the three is enough for diagnosis of parathyroid carcinoma (Figure 2a–c). The patient is now free of vitamin D and phosphate binder and no evidence of either local resistance or remote metastasis is found.

In general, few diabetic patients on dialysis develop secondary hyperparathyroidism with the indication of PTx, partly because PTH release is inhibited by hyperglycaemia or insulin deficiency [1,2]. Therefore, when a relatively rapid rise in PTH is detected early on the maintenance HD especially in diabetic patients, the possibility of parathyroid carcinoma should be taken into consideration, even though rare [3].

Conflict of interest statement. None declared.

References

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Fig. 1. Radiological study for cervical mass lesion. CT scan revealed the nodule with calcification at the right lower region of the neck (red arrow) in the axial (a) and reformatted frontal image (b). 99mTc-MIBI parathyroid scintigraphy (c) showed only one hot spot at the right lower gland (white arrow).

Fig. 2. Histopathological assessment. (a) Breach of the glandular capsule, (b) abnormal mitosis (red arrow) and (c) cellular invasion into blood vessels were compatible with parathyroid carcinoma (a: haematoxylin and eosin; original magnification, ×100; b: haematoxylin and eosin; ×400; c: elastica van gieson; ×200).