Introduction
Functional parathyroid cysts represent an uncommon cause of primary hyperparathyroidism (PHPT) and an even rarer cause of a cervical mass.
Case report
A 57-year-old woman was referred to our department following emergency treatment of hypercalcaemic crisis (serum calcium 16.4 mg/dl) with i.v. hydration and zoledronic acid. She was found to have multiple vertebral fractures by plain radiographs one month previously. Despite being diagnosed and treated with cinacalcet for PHPT for a year prior to these events and a neck mass was noted, it was considered a cystic thyroid nodule. At presentation she had generalized weakness and left-sided neck discomfort with pressure symptoms. Her corrected serum calcium was 13.1 mg/dl, phosphate 0.9 mg/dl, PTH 330 pg/ml, alkaline phosphatase 260 (ULN 220 U/l), and kidney function was normal. Past history was notable for partial thyroidectomy in the 1970s. On examination, a firm, fixed cervical mass was palpable from the sternal notch to the jaw angle. On ultrasound, the mass was cystic with various septa and measured $9\times4\times4$ cm. Needle aspiration of the cyst evacuated 45 ml of hemorrhagic fluid, with PTH washout levels measuring 570 pg/ml. Within the next 2 weeks, a hematoma formed that resolved uneventfully, but the cyst recurred almost to its original dimensions, again causing local pressure. At surgery, the cyst measured $6.4\times4\times4$ cm and histology was consistent with hemorrhagic cystic necrosis of parathyroid adenoma surrounded by an intact thick (0.2–0.5 cm) fibrous capsule without evidence of local invasion. Postoperatively, serum calcium and phosphate were 8.6 and 3.8 mg/dl respectively. The patient remains normocalcemic on calcium and vitamin D supplementation 9 months after surgery.
Conclusion
This case highlights that a large functional parathyroid cyst can elude diagnosis because of its rarity; however, early identification is crucial for proper patient management.

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EP302

Observational study of PTH secretion dynamics in patients with secondary hyperparathyroidism

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The aim was to analyse dynamics of PTH secretion in dialysis patients during different period of observation and to determine factors of secondary hyperparathyroidism progression. We examined 92 patients, 52f, 40m; age 47.2 ± 11.4 years; dialysis duration 4.9 ± 3.9 years; mean observational period 8.9 ± 4.3 months (6–24). Serum PTH, 25(OH)D3, osteocalcin (OC), C-terminal telopeptide of type I collagen (β-CTx), alkaline phosphotase (ALP), calcium (Ca), and phosphorus (P) were measured initially and at the end of observation. All patients were recommended to follow low-phosphate diet and 74.4% received calcium carbonate. PTH level was 559.6 ± 552.5 initially and 603.9 ± 581.6 pg/ml at the end of observation, $P=0.251$. Frequency of high, normal uremic and low PTH levels was 55.4% vs 57.6%, 20.7% vs 21.7% and 23.9% vs 20.7% respectively ($P>0.05$). P decreased from 2.34 ± 0.67 to 2.14 ± 0.60 mmol/l, $P=0.0003$. In patients with initial hypercalcaemia PTH increased from 525.3 ± 518.4 to 616.2 ± 606.2 pg/ml, $P=0.03$. PTH level at the end of observation correlate with age ($r=-0.25$), OC ($r=0.58$), β-CTx ($r=0.76$), and ALP ($r=0.40$). Strong correlation was found with the initial PTH ($r=0.84$). At the end of observation PTH decreased in 40 patients (43.5%), mean decrease 204.6 ± 250.1 pg/ml; increased in 52 patients (56.5%), mean increase 235.6 ± 274.5 pg/ml. Subgroups with decreased and increased PTH didn't show differences of demographic data, levels of Ca, P, and bone turnover markers. Comparison of initial and repeated PTH level in subgroups with duration of observation 6, 9, 12, and >12 months didn't reveal significant changes. We can assume that in dialysis patients with stable parameters of Ca, P, and bone turnover markers in the absence of therapeutic intervention of secondary hyperparathyroidism PTH level remains unchanged during period of observation up to 12 months and even more. In such patients reasonable interval of PTH measurement should be 6–12 months. Initial level of PTH is the most important predictor of parathyroid function dynamics. Young age, high Ca, P, and bone turnover markers levels are another factors influencing secondary hyperparathyroidism progression.

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EP303

Fragility fractures as the initial manifestation of indolent systemic mastocytosis

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Introduction
Systemic mastocytosis (SM) is a rare disorder characterised by clonal proliferation of abnormal mast cells in several tissues, most often skin and bone marrow. Indolent systemic mastocytosis (ISM) is the commonest disease variant in adults, characterised by very low rate of mast cell proliferation. SM has been recognised as a cause of secondary osteoporosis.
Objective
To evaluate bone mineral density and fragility fractures in ISM patients.
Methods
Fourteen patients (nine women and seven premenopausal), aged 27–63 years (43.4 ± 11.8) diagnosed according to World Health Organization criteria were studied retrospectively. Clinical and biochemical data and bone mineral density (BMD) measurements by dual X-ray absorptiometry at the lumbar spine, the total proximal femur and the lower one-third radius were analysed. *T*-score was used to define osteopenia (<-1 to >-2.5 S.D.) or osteoporosis (-2.5 S.D. or lower) in postmenopausal women or men older than 50 years, and *z*-score <-2.0 for low BMD in younger men and premenopausal women, according to the International Society for Clinical Bone Densitometry. No patient reported other diseases or use of treatments known to affect bone or mineral metabolism, at initial assessment.
Results
Two patients (14.3%) had osteoporosis, two patients (14.3%) had osteopenia and seven patients (50%) had low BMD. BMD was generally lower at the spine than at the hip. Three patients (21.4%) reported fragility fractures: a 43-year-old premenopausal woman and a 38-year-old man had vertebral fractures, while a 31-year-old premenopausal woman had non-vertebral fractures. None of the patients with fragility fractures had cutaneous mastocytosis and only one of them reported a mild episode of anaphylaxis.
Conclusion
Bone involvement is frequent in ISM patients and may be the initial manifestation. Osteoporotic fractures of unknown aetiology should lead to the suspicion of SM particularly in individuals younger than 50 years.

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EP304

Evaluation of clinical and biochemical features of patients with atypical parathyroid adenoma: a retrospective study

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Introduction
Primary hyperparatyhyroidism (PHPT) is usually caused by single or multiple adenomas and cancer is rare accounting for $<1\%$ of all presentations. The presence of certain cytological and architectural features such as adherence to adjacent organs, a solid growth pattern, broad bands of fibrosis, cytological atypia, and an irregular growth contour do not indicate malignancy but are recognised as atypical features encountered more commonly in malignant than benign tumours. Tumours that demonstrate these atypical features and do not fulfill criteria for carcinoma can be classified as atypical adenomas. Herein we aimed to evaluate the clinical and biochemical features of the patients histopathologically diagnosed with an atypical parathyroid adenoma.