CASE REPORT

A 73-year-old woman was diagnosed with primary hyperparathyroidism (Calcium 2.85mmol/l, NR 2.2 – 2.6; PTH 11.9pmol/l NR 1.6–7.2). At another institution she underwent a bilateral neck exploration and the surgeon failed to identify a parathyroid tumour and terminated the operation. After referral to our hospital, an ultrasound scan identified an 8mm diameter lesion within the right thyroid lobe. Fine needle aspiration of the lesion revealed a PTH in excess of 50 000pmol/l from the supernatant. The neck was re-explored and a right hemithyroidectomy was undertaken. At the end of the procedure the intra-operative PTH assay fell by 74%. Histological examination revealed a 6mm parathyroid adenoma (Figure 1). The patient is normocalcaemic at one-year follow-up.

DISCUSSION

Over the years the size of parathyroid glands removed during surgery for primary hyperparathyroidism (pHPT) has been getting smaller [1]. This is believed to be due to the fact that patients are more often referred with milder disease [2], which in turn is associated with smaller parathyroid adenoma size [3, 4]. It has been reported that the discovery of a smaller parathyroid heralds the possibility of multiple gland disease (MGD)[5].

However, there are rare occasions when a very small solitary parathyroid adenoma has been found to be responsible for significant biochemical hyperparathyroidism and for which its excision results in biochemical cure. These instances have been sporadically reported and the terminology for such small glands varies from 'small' to 'tiny' to 'microadenoma' and the definition of these tumours is imprecise (5–7). They have similar biochemical characteristics to larger adenomas. They are typically chief-cell predominant and are often not localised. Chief cells are the PTH-secreting cells compared with oxophil cell whose function is unknown [8]. The dimensions of a normal parathyroid gland are derived from anatomical studies of human cadavers. Wang’s study of 160 cadavers found that the average maximum diameter of a normal parathyroid was 5mm (range 2–12 mm) [9].

A current definition of parathyroid microadenoma does not exist, either by weight or dimension. Most authors choose gland weight as the mode of definition, arguing that the dimensions of a normal parathyroid are variable. McCoy et al [5] selected <200 mg on the basis of a bimodal step-off in the exponential trend line between
tumour weight and multiple gland disease. In other words, tumours less than 200mg were associated with a higher rate of multiple gland disease where the majority (70%) of the second adenomas were larger than 200 mg. Goasguen et al [4] defined microadenoma as tumours weighing less than 100 mg on the basis that normal parathyroids do not exceed 60 mg and to restrict their analysis to a ‘highly homogenous population’. Liechty [7] described three ‘tiny tumours’ as weighing less than 60mg and falling within the normal dimensions described by Wang [9]. On the other hand, Rasbach et al selected dimension of the tumour over weight – as their four tumours had not been weighed by the time they had been identified microscopically [6]. This was the situation in our case.

Recent studies have found the incidence of intrathyroidal parathyroid adenoma to be between 1.4% and 6% [10]. They are typically on the right side and it is postulated that they result from excessive descent during the lower migration of the upper pair of parathyroids [11]. They are often associated with persistent hyperparathyroidism (surgical failure). Ultrasound guided fine needle aspiration for PTH assay is a useful technique to confirm a parathyroid adenoma [12].

Intra-thyroidal parathyroid adenomas account for 3% of parathyroid tumours and can make parathyroidectomy very difficult unless localised. The combination of both entities poses a significant challenge.

CONCLUSION

Very small parathyroid solitary adenomas are a distinct pathological entity which has similar biochemical characteristics to larger adenomas. They are typically chief-cell predominant and are often not localised.

REFERENCES


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Author Contributions

Sarah Louise Winstanley – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Richard John Egan – Substantial contributions to conception and design, Acquisition of data, Drafting the article, Final approval of the version to be published
Michael John Stechman – Acquisition of data, Revising it critically for important intellectual content, Final approval of the version to be published
David Michael Scott-Coombes – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Revising it critically for
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