OBJECTIVE: The mean background gamma count for patients in surgery was 2166 counts with a standard deviation of 990 counts. The mean ex-vivo gamma counts of the adenoma was 2233 with a standard deviation of 2058 counts. The mean % of background with a range of 3-106 days. The mean adenoma weight was 0.58gms with a standard deviation of 0.44gms and a median of 0.49gms. All adenomas were reported as hyper cellular consistent with a parathyroid adenoma.

RESULTS: Sixty patients underwent minimally invasive parathyroidectomy for a single adenoma between October 2007 and October 2008. There were 14 men and 46 women with a combined average age of 63 years with a range of 3-106 days. The mean adenoma weight was 0.58gms with a standard deviation of 0.44gms and a median of 0.49gms. All adenomas were reported as hyper cellular consistent with a parathyroid adenoma.

FIGURE 4. Correlation of adenoma weight and change in intraoperative % change in PTH levels. All 8 of the patients for whom data was collected did not meet the 20% Norman rule however.

CONCLUSIONS: Some surgeons are now performing minimally invasive parathyroidectomy using radioguided techniques and/or intraoperative parathyroid hormone monitoring to minimize risk for surgical failure. Many surgeons continue to use both of the techniques to minimize the risk of repeat surgery. The relationship between parathyroid hormone levels and adenoma weight has not been well described thus far in the literature. This study helps delineate what relationships are or are not present between PTH, gamma counts, and adenoma weight.

REFERENCES:

CONTACT:
Brendan Stack, MD, FACS, FACE
University of Arkansas for Medical Sciences
Office: 501-686-5140
Fax: 501-686-8029
bstack@uams.edu

ADDITIONAL DATA:
1. Patients who underwent parathyroidectomy for primary hyperparathyroidism were included if the weight of the single gland was performed. Our institutional review board approved the review of these patient records for this study. All patients were operated on by the senior author of this paper. Clinic PTH, intraoperative PTH, gamma counts, and adenoma weight were collected from the patient’s medical record. All pathology reports confirmed hypercellularity of the parathyroid gland reported as an adenoma.

2. The weight of a parathyroid gland removed during parathyroidectomy is considered to be a function of background gamma counts with a standard deviation of 3-106 days. The mean adenoma weight was 0.58gms with a standard deviation of 0.44gms and a median of 0.49gms. All adenomas were reported as hyper cellular consistent with a parathyroid adenoma. The weight of an adenoma is significantly higher than a normal gland and adenoma weight is proportional to a patient’s PTH levels. Adenomas are often attributed to an unregulated increase growth at the cellular level of the mitochondria as well as an increase in number of parathyroid cells.

3. The mean % of background % Drop in PTH was 72.1 +/- 17.2 %. All but 5 of the 68 patients who underwent surgery by the senior author of this paper. Clinic PTH, intraoperative PTH values, gamma counts and pathology reports confirmed hypercellularity of the parathyroid gland reported as an adenoma.

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6. Sixty patients underwent minimally invasive parathyroidectomy for a single adenoma between October 2007 and October 2008. Many surgeons are now performing minimally invasive parathyroidectomy using radioguided techniques and/or intraoperative parathyroid hormone monitoring to minimize risk for surgical failure. Many surgeons continue to use both of the techniques to minimize the risk of repeat surgery. The relationship between parathyroid hormone levels and adenoma weight has not been well described thus far in the literature. This study helps delineate what relationships are or are not present between PTH, gamma counts, and adenoma weight.

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