SUMMARY

Context: Routine serum calcitonin (CT) measurement in patients with thyroid nodules for diagnosis of medullary thyroid carcinoma (MTC) is controversial.

Objective: To evaluate the diagnostic accuracy of systematic CT measurement in non-multiple endocrine neoplasia type 2 patients with nodular thyroid disease.

Settings: Study conducted at a national healthcare system hospital (outpatient and inpatient sectors).

Subjects: Consecutive patients with nodular thyroid disease (N = 5,817) were studied.

Main outcome measures: Serum CT levels were measured under basal conditions. When basal CT values were more than or equal to 20 and less than 100 pg/ml, testing was repeated after pentagastrin stimulation. Basal or stimulated CT levels greater than 100 pg/ml were indication for surgery.

Results: Fifteen cases of MTC and seven of C-cell hyperplasia (CCH) were identified. MTCs were diagnosed in all patients with basal CT more than 100 pg/ml. The four patients with basal CT ≥ 50 and < 100 pg/ml included two cases diagnosed with MTC and two cases with CCH. In ten patients with basal CT ≥ 20 and < 50 pg/ml, histology confirmed the presence of MTC in four, four others had CCH, and the remaining two were negative for thyroid malignancy. Positive predictive values for basal CT levels in the preoperative diagnosis of MTC were: 23.1% for values ≥ 20 pg/ml, 100% for values ≥ 100 pg/ml, 25.0% for values ≥ 50 and < 100 pg/ml, and 8.3% for values ≥ 20 and < 50 pg/ml. Positive predictive values for the pentagastrin test (≥ 100 pg/ml) were 40% in the entire series.

Conclusions: CT screening of thyroid nodules is a highly sensitive test for early diagnosis of MTC, but confirmatory stimulation testing is necessary in most cases to identify true positive cases.

COMMENT

Medullary thyroid carcinomas (MTC) represent 4-10% of all malignant thyroid neoplasms, and most of them (~75%) are sporadic lesions. By the time patients with MTC present with clinical disease, the condition is usually already metastatic and the outcome poor. Thus, there is a good case for attempting to reach an early diagnosis, using CT measurement, in all patients with thyroid nodules. However, the systematic use of CT measurement in the initial work up (or follow up) of nodule...
patients remains controversial. The recent European thyroid cancer guidelines do advocate its use (see Europ. J. Endocrinol., 2006) while the equivalent U.S. guidelines do not (see Thyroid, 2006).

The prevalence of sporadic MTC in patients with thyroid nodules is low, in the order of 0.3-1.3 %. Does this low prevalence justify CT measurements in all nodular lesions? Plasma CT is a sensitive marker of CT-secreting C-cell disease and, therefore, routine determination of CT permits early diagnosis. The difficulty is that the real aim of screening nodules with CT measurement is not just the detection of smaller tumors (hence, indicating less advanced disease), but to reduce the overall morbidity and mortality of MTC, and this has unfortunately not yet been clearly demonstrated.

In the Editorial accompanying the article (by I. Borget et al.), the group of Martin Schlumberger discusses a medical economic rationale for the early detection of MTC, using CT measurement, and comes to the conclusion that “plasma CT determination in the assessment of thyroid nodule patients appears to be highly favourable compared with a number of other accepted healthy interventions”. At the same time, these authors admit that further studies are obviously needed to confirm the benefits of routine CT screening and that, until then, uncertainties will remain and clinicians should use their own judgment, based on imperfect information.

(Daniel Glinoer, M.D.; Ph.D.)