Sensitive Calcitonin Measurement by Two-site Immunometric Assays: Implications for Calcitonin Screening in Nodular Thyroid Disease

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SUMMARY

The aim of this study was to investigate the impact of analytical aspects on the clinical usefulness of calcitonin (CT) measurement. In a retrospective analysis, CT levels measured by a polyclonal immunometric assay (Scantibodies Laboratory, CA, USA) were evaluated in various clinical situations. CT in newly diagnosed medullary thyroid cancer (MTC) (n=20) ranged from 15.5-87130 pg/ml (median 661 pg/ml). Levels >10 pg/ml were seen in 7.3% of 314 patients with benign nodules, 48.9% of 45 patients with impaired kidney function, 97.7% of 87 patients on hemodialysis, 30.2% of 43 patients after renal transplantation, and in 71.0% of 31 patients with critical illnesses. Subgroups of patients were reevaluated by two monoclonal immunometric assays specific for mature CT. CT levels measured by the monoclonal immunometric assays were highly correlated to the polyclonal assay results in MTC patients, but were significantly different with a lower incidence of elevated levels in patients with renal disease and critical illnesses. In conclusion, highly sensitive assays with cut-off values of 10 pg/ml or below are mandatory for CT screening in nodular thyroid disease. The specificity of CT measurement in patients with renal disease and critical illnesses is higher with monoclonal assays specific for monomeric CT. These methodological aspects have to be regarded if CT measurement is used for decision making in nodular thyroid disease. (Clin. Lab. 2002;48:191-200)