

Diagnosis

Sheets of Cells With Amyloid Deposition

Bed-sheets of Cells and Armadillo

Medullary carcinoma cells arrange themselves into sheets; the cells that form these sheets contain excess calcitonin that is eventually converted into amyloid protein. These amyloid deposits can be stained with Congo Red dye and will exhibit the pathognomonic apple-green birefringence when viewed under polarized light.

Increased Calcitonin with Pentagastrin Infusion

Up-arrow Cow-throne with Pentagram-gas

As a diagnostic test, a synthetic peptide hormone called Pentagastrin can be administered to a patient in order to stimulate the release of calcitonin from C cells, which can then be measured and compared to baseline levels. Patients with medullary thyroid cancer will have levels markedly above normal or baseline after pentagastrin infusion.

Risk Factors

MEN 2A and 2B

2 MEN with (A) Apple and (B) Bee

These two subsets of the multiple endocrine neoplasia (MEN) syndromes both involve medullary thyroid cancer and pheochromocytomas. MEN 2A also classically includes parathyroid hyperplasia, while MEN 2B also manifests with mucosal neuromas, or more specifically oral ganglioneuromatosis. Both of these syndromes are inherited in an autosomal dominant fashion via the RET oncogene on chromosome 10.