

# Association between an iodine-based contrast medium and hyperthyroidism

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## BACKGROUND AND AIM:

There is an increasing use of computed tomography (CT) scans with an iodine-based contrast medium. Last year, a large University Hospital in Denmark performed 50.000 CT scans where each injection contained between 3500 and 7000 µg free iodine corresponding to 23-45 times normal daily intake. We wished to investigate if patients with newly diagnosed hyperthyroidism had been exposed to an iodine based CT scan within 1 year prior to symptoms of hyperthyroidism.

## MATERIALS AND METHODS:

All patients with newly diagnosed hyperthyroidism (either first time episode or recurrent) through 1 year (2010) were linked individually with a register for CT scans performed in 2009 and 2010. Only cases where a CT scan was performed prior to an outbreak of hyperthyroidism were included.

## RESULTS:

230 new cases of hyperthyroidism were originally classified as: 101 patients with Graves' disease (73 new, 28 with recurrent), 72 with multinodular goitre, 9 with amiodarone or iodine-induced hyperthyroidism, 8 with HCG-induced hyperthyroidism, 26 with subacute thyroiditis, 11 with postpartum thyroiditis, 1 with painless thyroiditis, 1 was Ipilimumab-induced and finally 1 induced by Interferon. Fourteen patients, corresponding to 0.0003% of all contrast injections, but 6.1% of all patients with hyperthyroidism, had undergone a CT scan before the outbreak of

hyperthyroidism. Based on type of hyperthyroidism, 1/101 (1%) had Graves' disease, 11/72 (15%) had multinodular goitre and the last 2 had hyperthyroidism induced by Ipilimumab and Interferon.

## CONCLUSION:

From a radiologist's point of view: A CT scan with iodine-based contrast induces extremely seldom hyperthyroidism. From an endocrinologist's point of view: A CT scan with iodine-based contrast performed within 1 year prior to symptoms seems significantly associated with outbreak of hyperthyroidism in a multinodular gland (15%) as opposed to Graves' disease.