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Graves' disease: Is it better to start with lower-dose therapy?



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Graves' disease is a common cause of hyperthyroidism or 'overactive thyroid'. It affects about 2 out of every 1,000 men (0.2%) and 20 out of every 1,000 women (2%). This often leads to a visible enlargement of the thyroid gland. This swelling in the neck is called a goitre. The internal consequences of an over-function of the thyroid are more serious though. If the thyroid produces too much of particular types of hormones, it can cause an increase in the metabolic rate, rapid heart rate and nervousness.

Graves' hyperthyroidism is caused by a malfunction of the body's own immune system. It produces antibodies that allow the thyroid to grow and release too many hormones. The overproduction of hormones can be reduced with anti-thyroid medications. Using these drugs, though, is something of a balancing act. If the dose is too low, recurrences could be more common. If the dose is too high, adverse effects are a problem. Relatively common adverse effects include allergic skin reactions (rashes) and, rarely, a reduction in particular defensive cells of the immune system. This makes the person more vulnerable to infections.

In June 2009 the US regulatory authority FDA (the Food and Drug Administration) issued a safety alert about a particular anti-thyroid medication: propylthiouracil has been found to cause severe damage to the liver. If you are taking this medication, you can talk to your doctor about the benefits and possible harms of taking it and find out about the warning signs of liver damage.

Researchers are still looking for a way to find the best dose for each patient. The latest findings are described in a systematic analysis of the available trials, published by researchers from the Cochrane Collaboration, an international network of researchers. They analysed 26 trials involving nearly 3,400 participants who had treatment for at least six months and were followed up for at least a year. The analysis showed that two particular variations of treatments for Graves' hyperthyroidism have been tested the most in trials. One of the strategies was to start with a relatively high dose. The alternative involved starting off with a lower dose that was then increased over the following weeks.

The trials showed that there were fewer adverse effects if the dosage was slowly increased. Out of 100 people who used this treatment, 9 stopped taking the medication (9%).

About 5 in 100 developed a skin rash (5%). In comparison: out of 100 people who started with the high dose, 16 stopped taking the medication (16%) and 10 out of 100 had a skin rash (10%).

There is still not enough evidence to know whether one of these two types of treatment result in more recurrences, though.

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Glossary

hormones

“Hormones” is the collective term for different types of messenger substances in the body. They are produced in different organs or tissues and released into the blood or the lymphatic system to be distributed throughout the body. Hormones only have an effect on those parts of the organism that have a corresponding docking site. This is how hormones can have such specific effects. Insulin, estrogens, vasopressin and thyroxine are some well-known hormones. Many medical ingredients imitate the effect of hormones.

Cochrane Collaboration

The Cochrane Collaboration is an international network of thousands of researchers and others. They work together in teams called Cochrane Review Groups to answer questions about health care by doing systematic reviews of evidence. To achieve this, the members of the Collaboration have developed systems and methods for systematically finding and analysing the results of trials of health care interventions. The goal of the Cochrane Collaboration is to help patients, health care practitioners and others make more informed decisions about health care. You can read more about the Cochrane Collaboration at their website.

evidence

Evidence is what we call scientific proof from well-conducted, good-quality scientific trials that have been carefully designed to answer specific questions. Depending on the types of questions, different scientific research methods (types of study) are most appropriate to find reliable answers to these questions. Randomized controlled trials (RCTs), for example, are the best way to get reliable evidence on the effectiveness of medical treatments (interventions). This type of study, however, is not the best form of evidence for all possible questions, and does not provide the best answers to all kinds of questions, either. Epidemiological studies, for example, are very suitable for establishing well-founded proof for the spreading of a disease in the population.

immune system

The immune system is the body’s defense system and its task is to protect the body against germs or degenerated cells (like cancer cells). The immune system is very

complex and has not been understood in every detail yet. There are two components: the cellular immune defense (for example “scavenger cells” and “killer cells”) and the complement system (“antibodies”, for example).

Sources

IQWiG health information is based on research in the international literature. We identify the most scientifically reliable knowledge currently available, particularly so-called “systematic reviews”. These summarise and analyse the results of scientific research on the benefits and harms of treatments and other health care interventions. This helps medical professionals and people who are affected by the medical condition to weigh up the pros and cons. You can read more about systematic reviews and why these can provide the most trustworthy evidence about the state of knowledge here (URL: <http://www.gesundheitsinformation.de/evidence-based-medicine.61.en.html>) . The authors of the major systematic reviews on which our information is based are always approached to help us ensure the medical and scientific accuracy of our products.

Abraham P, Avenell A, McGeoch SC, Clark LF, Bevan JS. Antithyroid drug regimen for treating Graves' hyperthyroidism. *Cochrane Database of Systematic Reviews* 2010, Issue 1. [Cochrane summary (URL: <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003420/frame.html>)]

Peixoto MB, Buescu A, Goncalves MRB, Albernaz MDS et al. Antithyroid drugs for the treatment of graves disease: A randomized clinical trial. *Endocrinologist* 2006; 16: 344-8. [Endocrinologist summary (URL: http://journals.lww.com/theendocrinologist/Abstract/2006/11000/Antithyroid_Drugs_for_the_Treatment_of_Graves.12.aspx)]

US Food and Drug Administration (FDA). *FDA Alert: Propylthiouracil-Induced Liver Failure*. Rockville: FDA. 4 June 2009. [Full text (URL: <http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/DrugSafetyInformationforHeathcareP>)]

The German Institute for Quality and Efficiency in Health Care (IQWiG)

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

Evidence basis of our health information

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at **www.informedhealthonline.org**

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