TED and smoking: information for patients

About Graves' disease and thyroid eye disease

Hyperthyroidism is a condition where the thyroid produces more thyroxine than is needed by the body. It is also referred to as thyrotoxicosis, or an over-active thyroid. Graves' disease is an autoimmune condition and the most common cause of hyperthyroidism. It is caused by antibodies that stimulate the thyroid gland: the body's immune system responds to the thyroid gland as if it was an infection, leading to an over-active gland.

About one third of people with Graves' disease develop thyroid eye disease (TED). TED is also an autoimmune disease. It occurs when the body's immune system attacks the back of the eye and causes inflammation. This can cause the eyes to be pushed forward ('staring' or 'bulging' eyes) and the eyes and eyelids to become swollen and red. In some cases there is swelling and stiffness of the muscles that move the eyes so that the eyes are no longer in line with each other; this can cause double vision. Rarely, TED can cause blindness from pressure on the nerve at the back of the eye or ulcers forming on the front of the eyes.

TED can happen at any time. It can develop before, during, or after the over-active thyroid disorder is diagnosed, though the two usually come on roughly at the same time. In most cases the eye disease is mild, but it can be a distressing and disfiguring complication that can be difficult to treat.

Cigarette smoking is known to have a major influence on Graves' disease and on TED.

How smoking affects the thyroid and the eyes

Smoke contains thousands of chemicals and some of these can stimulate the immune system to react against the thyroid. Non-smokers or ex-smokers are more likely to be cured of their thyroid over-activity after a course of carbimazole (CMZ) or propylthiouracil (PTU) treatment, than smokers.

Smoking reduces the amount of oxygen in tissues and it has been shown that a low oxygen content makes tissues in the back of the eye prone to inflammation. The association between smoking and TED is strong and is also related to the number of cigarettes smoked per day (1). Overall, if you smoke your chance of developing TED is doubled. If you have radioactive iodine treatment and you smoke you are four times more likely to develop TED.

If you are a heavy smoker, the chances of developing TED is increased eight times compared to non-smokers. The risk seems to decline very rapidly after quitting.

Patients with TED who continue to smoke respond less well to treatments, even the newest treatment options, but this disadvantage seems to disappear soon after giving up smoking.

It is not known whether nicotine itself has an effect on TED. TED experts consider nicotine replacement to help quit smoking is as appropriate in smokers with TED as in other smokers.

Passive smoking may also have a detrimental effect, especially for children – who can also develop Graves' disease and TED. Avoidance of passive smoking is likely to be beneficial.

Vaping and TED

Vaping may be a stepping stone to stopping smoking. There is no research yet on vaping and TED. However, the safest thing for your TED and your general health is to stop doing either.

Key points

- Smokers with Graves' disease are about two times more likely to develop TED (2) and heavy smokers are eight times more likely to develop TED.
- If you develop TED and you continue to smoke you are more likely to suffer the more severe forms of the disease than if you quit (3). These are 'proptosis' or 'exophthalmos' (protrusion of the eyeball) (figure 1), double vision due to squints developing (figure 2) and the most severe form which can cause blindness ('dysthyroid optic neuropathy') (figure 3).



Figure 1



Figure 2



Figure 3

- If you need any specific treatment for your eyes (such as steroids, radiotherapy or surgery), the treatment will not work as well if you continue to smoke (4, 5) because it seems that smoking makes you resistant to treatment and healing of tissues is slower and less complete.
- Apart from the effects of smoking on the eyes of people with Graves' disease, smoking reduces the chance of a cure of the thyroid over-activity after a course of tablets (5) because it is thought that smoking fuels the autoimmune attack on the thyroid and counteracts the effects of the medication.

Your general health can benefit if you quit smoking. Your thyroid health and TED can improve significantly.

Finding help to stop smoking

You can get support to help you arrive at a decision to quit and choose the treatment option that is right for you.

Help is available from your thyroid or eye doctor or your local Patients' Organisation. You are four times more likely to be successful in stopping smoking, and not go back to smoking, by using support services and treatment than trying to stop on your own.

Help is available from health professionals:

- Your GP
- Your thyroid clinic or eye clinic - a doctor or nurse will be able to advise you
- Your local patient support group

Comments from TED patients

The British Thyroid Foundation (BTF) conducted an on-line survey on the first draft of this information. They were grateful for the many helpful comments, which helped them to redraft this information about the effects of smoking on (Graves' disease?) and thyroid eye disease.

Below are comments from TED patients about the benefits of quitting:

I was a smoker when I was diagnosed with TED. I also gave up quickly with Vareniclin. I wish I had realised how easy stopping smoking could be. Also just how much tobacco affects the eyes. TED is a cruel illness but it was in my own hands to stop smoking and shorten the damage to my health and wellbeing. I wish I had known before the damage I was causing myself and it has taken years to get so far and almost better. I have had lots of eye surgery too!

I stopped smoking 8 months ago due to wanting to be at the best level of health and fitness I could be to combat Graves' disease. Until reading [your information] I was not aware of the relationship with smoking and this will give that extra reason on those bad days when temptation calls.

I have now stopped smoking for over a year - the truth is my eyesight has significantly improved as has the protuberance of my eyes - this is what you need to let people know.

I only stopped smoking a week ago. Having read the information has made me even more determined to remain a non-smoker even though I am finding this difficult at times.

On my first consultation, my endo advised about the dangers of smoking and TED and stopped smoking since.

I was never informed of the link between smoking and TED when I had it - this is useful information

I stopped as soon as I was told. Most people with TED will do pretty much anything to improve appearances.

I am classing myself as an ex-smoker even though I have not given up for too long. I am determined not to make my eyes worse by continuing to smoke and therefore I am now (hopefully) an ex smoker.

References

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