

Patient information from BMJ

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Serotonin syndrome

Serotonin syndrome is a bad reaction to a substance called serotonin. It happens when someone gets too much serotonin from certain medicines. Serotonin is found in some medicines including antidepressants and migraine treatments.

Serotonin syndrome is not usually dangerous if you get treatment and your serotonin levels return to normal. But if your symptoms are severe, or if you don't get treatment, it can cause death.

If you are taking medicines that contain serotonin, your doctor should explain how to take them safely. You can use our information to talk to your doctor if you are concerned.

What is serotonin syndrome?

Serotonin is a substance produced in the brain. It helps your nervous system to send messages around your body. It is especially important in helping your digestive system to work properly. But it also does other jobs, including helping to:

- Control your mood
- Regulate your sleep
- Keep your bones strong, and
- Clot your blood when you have an injury.

Not having enough serotonin can cause problems with your nervous system. So some people need to take medicines that contain it. These medicines are used to treat conditions such as depression, migraine, and severe pain.

But having too much serotonin can also cause problems. This can happen if you take too high a dose of a medicine that contains serotonin or if you take more than one medicine that contains it.

Serotonin syndrome can also be the result of an **overdose**, when someone deliberately takes too much of medicines that contain serotonin.

Remember, **severe serotonin toxicity is a medical emergency** that can cause death.

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If you take medicines that contain serotonin and have symptoms that you think are linked to those drugs, or if you think that someone you know has taken an **overdose** of these drugs, such as antidepressants, **get medical help straight away**.

Medicines that contain serotonin include:

- Many types of antidepressant
- Some migraine treatments
- Some opioid painkillers, and
- The herbal supplement St. John's wort.

If you're not sure if your medicines contain serotonin, you can ask your doctor or pharmacist.

What are the symptoms?

The symptoms of serotonin syndrome can vary depending on how much excess serotonin someone has in their system. Your doctor may call this your level of **toxicity**.

If someone has a fairly low level of excess serotonin, their symptoms will mainly affect the muscles and limbs. These symptoms will include:

- Stiff muscles, and
- Twitching and jerking that you can't control.

If someone has a higher level of excess serotonin they may also have symptoms such as:

- Anxiety, confusion, and agitation
- Diarrhoea
- Fever
- Excessive sweating, and
- Dilated (wide open) pupils.

Tests for serotonin syndrome are not usually needed, because your doctor should be able to diagnose it from your symptoms, and by asking about your medicines. But your doctor may suggest tests, including blood and urine tests, just to make sure.

What treatments are available?

The treatments someone needs for serotonin syndrome will depend on how much excess serotonin is in their system and how badly it is affecting them.

Mild, moderate, and severe toxicity

If you've got a low level of excess serotonin that's causing mild symptoms that are not life threatening, you have what doctors call **mild toxicity**. The only treatments you should need are:

- Stopping taking the medicines that have caused the problem. You will probably have to start taking something similar again, when you have recovered. But you will probably start with a lower dose. And this will only happen once your doctor is sure that it is safe

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- Being monitored for a short while, to make sure you don't get worse.

If you've got slightly more severe symptoms, what doctors call **moderate toxicity**, the treatments you need will probably include:

- Stopping taking the medicines that have caused the problem until you can safely start taking them again
- Being monitored for at least six hours, to make sure you don't get worse, and
- Taking medicines to deal with anxiety and agitation caused by the excess serotonin.

If you've got very severe symptoms that are possibly life threatening, you have what doctors call **severe toxicity**. The treatments you need may include:

- Stopping taking the medicines that have caused the problem
- Cooling you down quickly if you've got a high fever
- Making sure you can breathe easily. You may need to have a breathing tube inserted if your muscles have stiffened and this is affecting your breathing, and
- Taking medicines to deal with anxiety and agitation.

If someone has taken an overdose they may also be given **charcoal** to swallow. Charcoal helps to soak up any toxins in the digestive system so that your body doesn't absorb them.

What to expect in the future

If you have been treated for serotonin syndrome, your doctor should make sure that you have the information you need about serotonin toxicity before you start taking any similar medicines again.

For example, your doctor should advise you that you should not take more than one medicine that contains serotonin or that helps your body to produce it.

If you've got an ongoing problem like depression or migraine, you will probably need to start taking medicines that contain serotonin again. So your doctor may want you to start with a lower dose, and they should monitor you carefully for a while until it's clear that the dose is safe.

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