

Risks associated with your anaesthetic

Section 9: Serious allergy during an anaesthetic (anaphylaxis)

When you have an anaesthetic you will receive a number of drugs. These may include: injections into a vein or a muscle or elsewhere; anaesthetic gases; pills, tablets or liquids to swallow; suppositories.

You may also be given fluids into a vein to prevent dehydration, and you will be in contact with cleaning fluids and equipment in the operating theatre. All these things can cause allergic reactions of varying severity. This article gives information about these reactions.

What is anaphylaxis?

Anaphylaxis is an extreme form of **allergy**. Allergic reactions can happen in response to many things – pollen, dust, bee stings, nuts and antibiotics are common causes. These things are called **antigens**. Rarely, anaphylaxis happens during an anaesthetic, either caused by one of the anaesthetic drugs or by other substances used during the operation.

We meet thousands of antigens in everyday life and they usually do us no harm whatsoever. Sometimes, for reasons we don't fully understand, the body makes substances called **antibodies**, which are special to each antigen and recognise the antigen if they meet it again in the future. The antibodies recognise the antigen just as we recognise someone we have met previously. This is known as **sensitisation**. If they meet the same antigen again at a later date, the antibodies may react against the antigen and cause the release of histamine and other chemicals. These chemical substances released are called **mediators** and they cause the symptoms of allergy.

If only small amounts of mediators are released the symptoms are minor – for example, hay fever or skin rashes. If very large amounts are released very rapidly there

may be severe wheezing, low blood pressure or swelling inside the throat, and this is called anaphylaxis. In extreme cases anaphylaxis can be life-threatening. You may have seen newspaper articles about people who have died from anaphylaxis to peanuts, but this is fortunately very rare.

Other similar types of reaction

There are some reactions that appear similar but are not due to antibodies. There are a number of mechanisms for these reactions. Some of them are called anaphylactoid reactions. It can be more difficult to identify the exact cause of these reactions.

How is anaphylaxis treated?

- ▶ Any medicine that might have caused the reaction should be stopped immediately.
- ▶ If the pulse is weak, the affected person should be laid flat on their back and their legs should be raised. This is the quickest way to improve the blood pressure.
- ▶ Adrenaline is the most effective drug treatment and is given as a series of injections.
- ▶ In hospitals, oxygen and an intravenous drip are also used.
- ▶ Antihistamines, steroids and asthma treatments might be needed.

Usually the symptoms will settle down quite quickly, but continued observation will be required, often necessitating an overnight stay in hospital. Rarely, treatment in the Intensive Care Unit (ICU) will be required.

All anaesthetists are trained in how to treat anaphylaxis if this occurs during anaesthesia. Adrenaline is immediately available in every operating theatre.

It is extremely important that any episode of anaphylaxis is investigated in detail, so that the drug or other substance responsible can be identified and avoided in the future. Investigations include blood tests taken at the time of the reaction and then skin testing at a later date.

How frequently do anaesthetics cause anaphylaxis?

Nobody knows this exactly. At the moment, the best estimate is that a life-threatening allergic reaction (anaphylaxis) happens during 1 in 10,000 to 1 in 20,000 anaesthetics.¹

Most people make a full recovery from anaphylaxis. We do not know how many anaphylactic reactions during anaesthesia lead to death or permanent disability. One review article suggests that 1 in 20 serious reactions can lead to death, but this is only one person's estimate.² This would mean that the chance of dying as a result of an anaphylactic reaction during anaesthesia is between 1 in 200,000 and 1 in 400,000 anaesthetics.

What can cause anaphylaxis during an anaesthetic?

During any operation and anaesthetic, it is normal to have contact with a wide range of antigens (unfamiliar substances). Any of these could potentially cause an allergic reaction, but some are more likely to do so than others.

The three most common causes of anaphylaxis during anaesthesia are:³

- ▶ drugs used to prevent movement during surgery (called muscle relaxants or neuromuscular blocking agents). These drugs are never given unless the patient is anaesthetised first.
- ▶ latex (a type of rubber). For many years latex has been used in the manufacture of surgical rubber gloves and other equipment used in operating theatres. Most hospitals are taking steps to reduce the number of latex-containing products they use. The Health and Safety Executive is developing guidelines about the use of latex in operating theatres.
- ▶ antibiotics – these are often needed during surgery.

Your anaesthetist will choose drugs for your anaesthetic taking into account many different factors, in particular the type of operation, your physical condition and whether you are allergic to anything. All drugs, including anaesthetic drugs, are carefully tested before they are licensed for general use. In the UK every serious reaction should be reported to the Committee on the Safety of Medicines, which monitors the safety of all licensed drugs. Your anaesthetist should make sure that this is done.

What factors could make anaphylaxis more likely?

Anaphylactic reactions during anaesthesia seem to occur more in women than in men.

Allergies to certain fruits and nuts, particularly bananas, avocados and chestnuts make allergy to latex more likely. Latex allergy is also seen more often in people who have frequent exposure to latex, e.g. hospital workers and those who have had several surgical operations.

Some people who have multiple allergies or asthma may be more likely to experience anaphylaxis than people who have no known allergies.

Can I be tested for anaphylaxis before I have my anaesthetic?

Routine skin testing is not currently recommended. Skin testing is done by putting a tiny drop of the drug on your skin and pricking the skin lightly with a small piece of plastic shaped like a toothpick. This is not painful. A positive test produces an itchy lump on the skin. Skin testing has to be done by someone who has been trained in diagnosing allergy.

There are two reasons why routine skin testing is not currently recommended before surgery.

The most important reason is that a negative skin test to a particular drug does not guarantee that you will not experience an anaphylactic reaction to the same drug in the future. Skin tests are only a guide because the response of the skin to a tiny amount of the drug is not necessarily the same as giving a much larger dose of the drug directly into a vein during the anaesthetic.

A second reason is that it is possible to become sensitised to some anaesthetic drugs without ever having received the drug previously. Some common chemicals are similar to certain anaesthetic drugs. It is possible to become sensitised to these anaesthetic drugs in everyday life after the skin test has been done.

An important exception is latex allergy. If you have any symptoms of latex allergy – for example, itching or a rash after exposure to latex rubber in children's balloons, rubber gloves or condoms – then you should be tested for latex allergy before your surgical operation. There are two types of test: a skin test and a blood test. Which of the tests you have will depend on their

availability in your locality. If you believe you may be allergic to latex you should tell your GP well in advance of going into hospital for surgery; it is possible for the GP to send a blood sample for latex testing. It usually takes a week or two for the result to come back.

You may already know that you are allergic to certain medicines or substances. When you come into hospital, you will be asked several times if you are allergic to anything. It is very important that you pass on this information to the health professionals looking after you. If your allergy is serious, you may be advised to wear a Medialert bracelet.

What should I do if I think I have had an allergic reaction during an operation in the past?

If you think you might have had an allergic reaction during or after previous surgery, it is important to try to find out whether it was an allergic reaction and what caused it. It may be possible for your GP to find out from your hospital consultant what was the cause of the problem. If your GP thinks it is appropriate, you may be referred to an allergy clinic to help to find the cause.

Where can I get more information about anaphylaxis?

- ▶ Your GP or your anaesthetist.
- ▶ *Suspected Anaphylactic Reactions associated with Anaesthesia*, published by the Association of Anaesthetists of Great Britain and Ireland and the British Society of Allergy and Clinical Immunology.⁴
- ▶ British Allergy Foundation (www.allergyfoundation.com).

Where can I get more information about other unwanted effects of anaesthetic drugs?

- ▶ British Malignant Hyperthermia Association (www.bmha.co.uk).
- ▶ Other pages in this series.

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- 4 Suspected Anaphylactic Reactions associated with Anaesthesia. *Association of Anaesthetists of Great Britain and Ireland and the British Society of Allergy and Clinical Immunology*. (Available online at: www.aagbi.org/guidelines.)



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