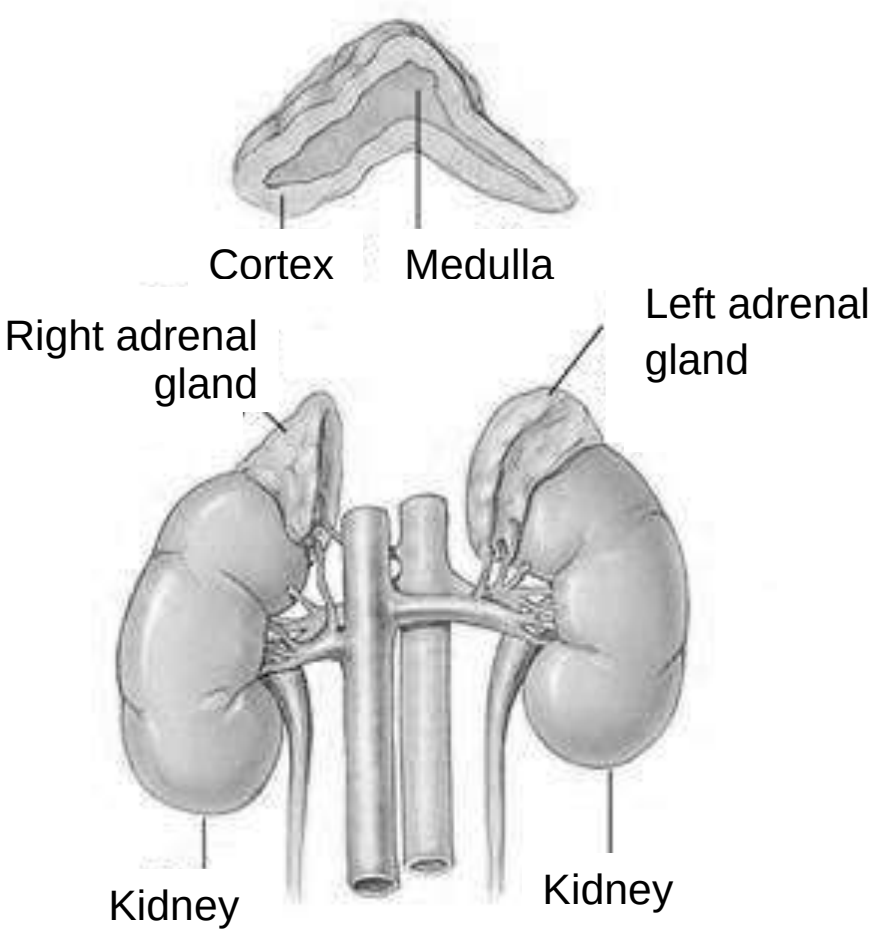
Patient information

Adrenal Investigations

Endocrine Surgery

The adrenal glands sit above the kidneys and consist of two layers. The outer layer being the cortex and inner layer the medulla.

The main role of the adrenal glands is to release hormones into the body. We assess the adrenal glands with imaging studies and tests to see if too much hormone is being produced.



What hormones are produced by the adrenal glands?

- **Aldosterone**

This hormone affects the blood pressure and if too much of it is being released (maybe by a very small tumour) then the person can get high blood pressure and a very low potassium level in the blood often requiring tablets to correct. Too much aldosterone in your blood causes an illness called Conn's Syndrome.

- **Cortisol**

This hormone is released when the body is under stress and helps the glucose balance of the body. It is released after stimulation of the adrenal glands by another hormone called ACTH (Adrenocorticotrohic Hormone), released from the brain.

Cushings Syndrome is when there is an excess of cortisol, this excess cortisol can come from an adrenal tumour. This can result in the patient gaining weight around the centre of the body and face. These patients can also have high blood pressure and many other symptoms including diabetes.

- **Androgens**

These hormones are your sex hormones and can give you abnormal hair growth, male pattern baldness and a change in your voice. Androgens can be released from tumours of the adrenal gland and usually need treatment promptly.

- **Adrenaline/ Noradrenaline and similar hormones**

These hormones are secreted from the Adrenal Medulla and help us deal with stress via the 'flight or fight response' and can make our heart pump faster. However, if we have too many of these hormones unregulated it can be dangerous for the body as it tells the body you are under stress.

What tests do we do when there is a nodule on the adrenal gland?

To find out whether the gland is releasing extra hormones we need to do some tests. These will involve collecting blood or urine from you.

1) Aldosterone

This can be measured by a blood test, and is usually taken with another hormone called Renin. If these results are abnormal sometimes further tests can be required.

2) Cortisol

It is best to take this hormone level early in the morning. One blood sample will give us an idea of whether the adrenal gland is releasing too much or too little. However, it is better to assess this by doing a series of blood tests and giving medicines that either stimulate or suppress the adrenal gland.

To test whether the gland is releasing too much we undertake a dexamethasone suppression test. We start with the screening test (the overnight test) but may need to proceed to the 48 hour tests if the screening test fails.

Overnight Dexamethasone Suppression test

We take a blood test for cortisol and ACTH at 9.00 am and then you will be given a tablet of 2mg of Dexamethasone to be taken at 10pm that evening. We will then take a further blood test for cortisol and ACTH at 9.00 am the next morning.

Low dose Dexamethasone suppression test

This is sometimes needed if the results from the overnight dexamethasone test were not conclusive. We take a blood test for cortisol/ ACTH at 9.00 am on the first morning and then you will be given a tablet called Dexamethasone 0.5 mg every six hours (9.00 am, 3.00 pm, 9.00 pm, 3.00 am) for 48 hours (two days).

This means you have to set your alarm to take the tablet in the middle of the night. We take a further blood test at 9.00 am on the third morning.

High dose Dexamethasone suppression test

This is the same as the low dose test but with a slightly higher dose tablet (2mg) and is often undertaken if the low dose test was difficult to interpret.

We take a blood test for cortisol at 9.00am on the first morning and then you will be given a slightly higher dose tablet (2mg) to be taken every six hours (9.00am, 3.00pm, 9.00pm, 3.00am) for 48 hours (two days). We take a further blood test at 9.00am the third morning.

3) Androgens and Sex Hormones

This consists of having one blood test in the morning which will be combined with another of your blood tests.

4) Adrenaline and Noradrenaline

To understand if you are putting out too much of this hormone, we will ask you to have a blood test, called plasma metanephrines and to possibly undertake three 24 hour urine collections. Metanephrines are the breakdown products of adrenaline and noradrenaline and are a better form of measuring these hormone levels.

We will give you all of the equipment and written information needed to complete the urine test. A member of the nursing staff can also explain the procedure to you before you leave clinic.

All urine passed over the 24 hours is put into a container that contains a small amount of acid.

Do not pass urine straight into the container. The acid burns! You can then start the second collection, complete that and continue to the final one.

Other tests that may be needed:

If you have to have any of the tests listed below you will be given more in depth information about the tests.

- **CT scan**

This scan involves a series of X-rays taken while you are lying on a trolley. You will go through a large machine that looks like a large ring. This gives us a better view of the adrenal gland.

The scan can be used for diagnosis and follow up to ensure there is no size change.

- **MRI scans**

This scan involves magnetic radiation. It can sometimes give us a lot of extra information. It involves lying still whilst going through a large round magnet, (you must not have any metal on or in your person e.g. pacemakers). If you have a pacemaker you will not be allowed to have an MRI unless the pacemaker is MR compatible.

The MRI is a difficult scan to do and may be quite claustrophobic but gives excellent information about the tumour, and they will give you headphones for music to make it easier.

- **MIBG scan (Nuclear medicine)**

If you are producing too much Noradrenaline, Dopamine and / or Adrenaline this is the test to try to find out which adrenal this is coming from. It is carried out in the Nuclear Medicine Department.

- **Venous sampling**

This is a test sometimes performed to identify which gland is causing Conn's syndrome or Cushing's syndrome. This is a test in which local anaesthetic is injected in to your groin.

A small cut is made in your groin and a thin tube is placed into the vein in the groin. A wire is then passed down this tube and blood samples taken from the vein that drains your adrenal glands.

This is usually a day case procedure, however you sometimes need to stay in hospital overnight so that we can observe your groin as bleeding and a large bruise may occur requiring treatment. This test is done in the X-ray Department because you have to have X-rays taken to ensure the wires are in the correct position.

Feedback

Your feedback is important to us and helps us influence care in the future.

Following your discharge from hospital or attendance at your outpatient appointment you will receive a text asking if you would recommend our service to others. Please take the time to text back, you will not be charged for the text and can opt out at any point. Your co-operation is greatly appreciated.

Further information

If you need any further information please contact Rachael Ireland
Endocrine Surgery Specialist Nurse
Tel: 0151 706 5107
Text phone number: 18001 0151 706 5107

Shirley Cottenden
Secretary to Miss Waghorn/ Miss S Shore
Tel: 0151 706 3412
Text phone number: 18001 0151 706 3412

Author: Endocrine Surgery
Review Date: August 2023

All Trust approved information is available on request in alternative formats, including other languages, easy read, large print, audio, Braille, moon and electronically.

يمكن توفير جميع المعلومات المتعلقة بالمرضى الموافق عليهم من قبل الائتمان المستشفى عند الطلب بصيغ أخرى، بما في ذلك لغات أخرى وبطرق تسهل قراءتها وبالحروف الطباعية الكبيرة وبالصوت وبطريقة برايل للمكفوفين وبطريقة مون والكترونيا.

所有經信托基金批准的患者資訊均可以其它格式提供，包括其它語言、易讀閱讀軟件、大字體、音頻、盲文、穆恩體（Moon）盲文和電子格式，敬請索取。

در صورت تمایل میتوانید کلیه اطلاعات تصویب شده توسط اتحادیه در رابطه با بیماران را به اشکال مختلف در دسترس داشته باشید، از جمله به زبانهای دیگر، به زبان ساده، چاپ درشت، صوت، خط مخصوص کوران، مون و بصورت روی خطی موجود است.

زانیاریی پێوەندیدار بەو نەخوشانەی لەلایەن **تراستەوە** پەسەند کراون، ئەگەر داوا بکرێت لە فۆرماتەکانی تردا بریتی لە زمانەکانی تر، نیزی رید (هاسان خوێندنەوە)، چاپی گەورە، شریتی دەنگ، هێڵی موون و ئەلیکترۆنیکی هەیە.

所有经信托基金批准的患者信息均可以其它格式提供，包括其它语言、易读阅读软件、大字体、音频、盲文、穆恩体（Moon）盲文和电子格式，敬请索取。

Dhammaan warbixinta bukaanleyda ee Ururka ee la oggol yahay waxaa marka la codsado lagu heli karaa nuskhado kale, sida luqado kale, akhris fudud, far waaweyn, dhegeysi, farta braille ee dadka indhaha la', Moon iyo nidaam eletaroonig ah.