A patient guide to membranous nephropathy
Queen Elizabeth Hospital Kidney Care Department

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What is membranous nephropathy?
Membranous nephropathy is an uncommon kidney disease that usually affects adults. It is also known as membranous glomerulonephritis or membranous nephritis.

**Primary** (also called idiopathic) membranous nephropathy only affects the kidneys. It is caused by a fault in the immune system. Many people will have special antibodies in their blood which helps identify primary membranous nephropathy.

**Secondary** membranous nephropathy means that the kidney condition is part of another disease such as lupus, hepatitis B or some cancers such as lung, bowel (colon).

Membranous nephropathy occurs when a thin layer in the filtering unit of the kidneys (the glomerulus) becomes inflamed and then appears thickened. This inflammation causes the kidneys to leak protein which can lead to nephrotic syndrome which causes the body to retain excess fluid. This fluid appears as swelling which usually starts in the ankles and feet. Membranous nephropathy can lead to long term kidney damage.

Who is affected by membranous nephropathy?
Membranous nephropathy commonly affects adults over the age of 40 but can occur in younger people. Men tend to be more often affected than women.

What is the outcome following my diagnosis (prognosis)?
The outcome of membranous nephropathy is variable and is not easy to predict at diagnosis. Not everybody will need treatment, sometimes the disease improves on its own, but a small number of people will develop kidney failure. People who have very high levels of protein in their urine or poor kidney function are more likely to need special treatment. A good outcome is remission (no evidence of the disease). This is when protein in the urine either disappears or reduces and kidney function does not fall. Secondary causes such as some cancers,
hepatitis B and the individual response to treatment also affect the results of the treatment.

What do the kidneys do?

Blood flows around the body in blood vessels known as veins and arteries. Blood is taken to the kidneys to be cleaned and filtered of toxins.

The diagram below shows the position of your kidneys, the ureters which carry urine from the kidneys to the bladder, the bladder where urine is held until passed through a tube (urethra) which leads to the outside of the body.
Each kidney contains around one million nephrons (small structures which produce urine). Each nephron contains a glomerulus (a filtering unit) and a tubule (small tube). The glomerulus filters substances, some of which are then reabsorbed in the tubule, whereas excess water and waste products are passed out in urine. The cleaned blood is then re circulated around the body through the renal vein (a vein that drains the kidney).

What is nephrotic syndrome?

Nephrotic syndrome occurs when a thin layer within the glomerulus becomes inflamed and the kidneys leak large amounts of protein from the blood into the urine (proteinuria). This causes fluid retention. Proteinuria can occur without being severe enough to lead to nephrotic syndrome; however it still needs to be recognised. Nephrotic syndrome can occur in a number of different kidney diseases, of which membranous nephropathy is one of the most frequent in adults. Not all patients with membranous nephropathy develop nephrotic syndrome but a large majority will have proteinuria at the time of their diagnosis. Symptoms of nephrotic syndrome can include:

- Fluid retention – swelling in the body
- High cholesterol
• Low blood protein levels
• In severe cases there can be an increased risk of blood clots
• Raised blood pressure

Protein levels are measured by testing the urine.

What are the symptoms of membranous nephropathy?

• Swelling usually starts in the ankles and feet but can also affect the hips and abdomen (tummy). Sometimes people can become puffy around the eyes if there is a lot of fluid retention.
• Frothy or foamy urine
• Some patients may feel weak and experience a loss of appetite
• In severe cases there is an increased risk of blood clots (e.g. deep vein thrombosis or pulmonary embolism) or infections

Some cases of membranous nephropathy are picked up through routine urine tests in people who have few or no symptoms
In secondary membranous nephropathy, there may be symptoms related to the underlying condition.

How is membranous nephropathy diagnosed?

Membranous nephropathy must be diagnosed by a kidney specialist (a consultant nephrologist). They will ask you about your symptoms and examine you to look for signs of nephrotic syndrome.

Urine tests will be carried out to measure the level of protein in your urine and to detect any infections.

You will undergo an ultrasound scan of your kidneys, ureters and bladder to check for two kidneys and display any problems with your kidneys such as kidney stones.
A kidney biopsy is usually needed. This is a procedure which involves taking two tiny pieces of your kidney tissue which are then examined under a powerful microscope allowing a definite diagnosis to be made. This procedure is covered in a separate leaflet, please ask a member of the team if you wish to understand this procedure in more detail.

You will undergo blood tests which check your
- Kidney function – this is often normal in patients with membranous nephropathy
- Liver function – to measure the protein levels in your blood
- Full blood count – to check for other problems such as anaemia
- Cholesterol levels which are often raised
- Immunology blood tests to look at how the immune system is working and to check for PLA2R auto–antibodies (antibodies used to identify membranous nephropathy)
- Blood glucose to check for diabetes

**How is kidney function measured?**
Kidney function is assessed through blood tests which measure waste products called urea and creatinine in the blood. From the tests, an estimate of how well your kidneys are working can be made. This is called estimated glomerular filtration rate (eGFR).

**How is urine protein measured?**
Urine protein is measured in a laboratory, using the albumin/creatinine ratio (ACR) test (a technique used to identify kidney disease). The kidneys should not leak any protein.

A chest x–ray may also be needed to check for any problems with the lungs such as fluid present.
How is membranous nephropathy treated?

- **Diuretics (water tablets)** such as furosemide or spironolactone can be used to reduce fluid retention and help with swelling. These may make you pass more urine and should be taken in the morning.

- **ACE (angiotensin converting enzyme) inhibitors** such as ramipril or ARBs (angiotensin II receptor blockers) are used to reduce the protein loss from the kidneys and also help to control your blood pressure.

- **Other blood pressure tablets** may also be needed such as Doxazosin.

- **Statins (medication to lower blood cholesterol)** such as simvastatin or atorvastatin may be used to reduce raised cholesterol levels.

- **If blood protein levels are very low** then treatment may be given to reduce the risk of blood clots. This may include aspirin, warfarin or enoxoparin injections.

- **Immunosuppression** – this treatment is used to reduce the activity of the immune system and stop the inflammation being caused in the kidneys. Immunosuppression is not recommended for everyone with membranous nephropathy and is usually reserved for those with severe cases of the disease. In many cases, your doctor will suggest a period of observation ‘watching and waiting,’ before considering immunosuppression, to allow the condition chance to improve on its own.

- **Modified Ponticelli regimen** – when immunosuppression is recommended, a six month course of treatment called modified Ponticelli regimen can be effective. This involves alternating months of prednisolone (steroids) and cyclophosphamide (immunosuppression). This requires regular hospital appointments and blood tests to monitor the kidney function and to check for side–effects. Most people tolerate treatment well. Side effects are usually easily managed and if necessary the treatment dose will be reduced or temporarily stopped. The treatment plan will be discussed with you and you will be asked to sign a consent form before starting cyclophosphamide.
Other treatments

Other immunosuppression treatments used in membranous nephropathy include ciclosporin and tacrolimus (tablets). Alternatively, Rituximab, which is a treatment given by drip is sometimes used. Rituximab is usually only available for people whose condition has not responded to other immunosuppression medications. Treatment for the underlying condition is usually given in cases of secondary membranous nephropathy.

What can I do to keep myself healthy?

Smoking

Not smoking is important to reduce the risk of raised blood pressure and to reduce the risk of heart disease and strokes which are also linked to kidney disease. You can get help to stop smoking from your family doctor and local pharmacies (chemist). If you do not pay for prescriptions then nicotine replacement therapy (such as patches or chewing gums) will be free of charge.

Contraception and pregnancy planning

It is important for women with membranous nephropathy to use effective contraception and to plan pregnancy. This is because all kidneys diseases, including membranous nephropathy can cause serious complications during pregnancy. Many women with kidney disease have successful pregnancies but pre-pregnancy counselling is very important and the risk of complications is much lower for women whose kidney disease is in remission when they conceive. Specialist pregnancy care from combined kidney and obstetric services is important for women with significant kidney disease. Some medicines can be harmful during pregnancy and will need to be stopped before you try to get pregnant. In particular, you must not take cyclophosphamide during pregnancy or conceive for at least 3 months after treatment. Some medications are also harmful during breastfeeding. You may want to read our separate leaflet on ‘Kidney disease and pregnancy’ for more information.

Men should use barrier methods of contraception (condoms) during and for 3 months following treatment with cyclophosphamide.
Preventing infections

Kidney disease increases the risk of common infections. You can protect yourself by having an influenza (flu) vaccine every year. A vaccine to protect you against the most common form of pneumonia (lung infection) is available. If possible we recommend that you have your vaccines several weeks before you start your modified Ponticelli treatment course. If you cannot have vaccinations before treatment, we will advise you as to when these can be received which is usually a minimum of 3 months after treatment.

It is important to seek medical advice if you have signs of an infection as this can be more serious with kidney disease.

Maintaining a healthy diet

Eating a healthy diet with plenty of fruit and vegetables and avoiding lots of sugary and fatty foods is important in maintaining a healthy weight. Losing weight if you are overweight will help your overall health.

Salt intake

Salt causes the body to retain fluid which can increase blood pressure. It is important not to add salt to your foods and you should try and reduce the amount of salt in your diet. Salt is found in processed foods.

If you would like more information about staying healthy please ask your doctor or nurse. Alternatively you can visit the following websites;

• NHS Choices; www.nhs.uk
• NHS Live Well; www.nhs.uk/LiveWell
• British Heart Foundation; www.bhf.org.uk

Exercise

Keeping fit and healthy is really important. You should try and exercise for 30 minutes a day, 5 times a week. This can be broken down into ten minute sessions if you tire easily.
Cholesterol levels

Raised cholesterol levels can increase the risk of heart disease and strokes, as does kidney disease. Cholesterol levels can be raised when the kidneys are leaking protein. It is important these levels are lowered, often by using statins which are tablets taken every day. Eating a healthy diet can help too.

Do I need to avoid any medicines?

People with kidney disease should avoid non-steroidal anti-inflammatory medications (medications used to treat pain, fevers and inflammatory conditions) such as ibuprofen and diclofenac. If your kidney function is low then your doctor or nurse will advise if other medicines should be stopped or avoided. It is important to tell anyone treating you for a medical condition that you have a kidney disease.

What do I do if I experience diarrhoea and vomiting?

If you have diarrhoea and vomiting, it is important not to take your blood pressure tablets (such as ramipril or losartan) or water tablets (such as furosemide or spironolactone) until you have recovered. Seek medical advice if you have diarrhoea and vomiting that lasts for more than 24 hours.

Who do I contact if I have any queries about my kidney disease or treatment?

Clinical Nurse Specialist: 0121 627 2518 or 07827232646
Monday to Friday 8.15–4.15

Kidney Assessment Team: 0121 371 3017
Monday to Friday between 08:00 – 20:00
Weekends and Bank Holidays between 08:00 – 16:00
You can also contact your kidney specialist (consultant nephrologist) by calling his or her secretary at the Queen Elizabeth Hospital, Birmingham.

**What about the future?**

The response to treatment can vary and people will respond differently. It is very important to attend hospital appointments so that you can be monitored closely and you can report any new or worsening symptoms.

Around 15% (15 out of 100) of people with membranous nephropathy eventually develop kidney failure, and will require treatment to replace kidney function which is known as dialysis. Usually this occurs 5 to 10 years after diagnosis but in some cases kidney failure can occur more rapidly. People who develop kidney failure due to membranous nephropathy and who are otherwise fit enough can be considered for kidney transplantation. The disease sometimes recurs in kidney transplants but this is not common and does not necessarily stop the transplant from being successful.

**My hospital appointments:**

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**Blood tests I am due:**

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Questions I want to ask?

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My flu jab date: ....................................................................................................

My pneumonia jab date: ...........................................................................................

Other useful organisations:
www.patient.co.uk
www.edren.org
www.RareRenal.org
www.britishkidney–pa.co.uk
www.kidney.org.uk

The Trust provides free monthly health talks on a variety of medical conditions and treatments. For more information visit www.uhb.nhs.uk/health-talks.htm or call 0121 371 4323.

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