Patient Resource

Membranous Nephropathy

What is it?

Membranous nephropathy (MN) is one of a larger group of kidney diseases known as glomerulonephritis (GN). MN affects the glomeruli – the tiny filters of the kidneys responsible for filtering waste and excess fluid from the blood. Membranous nephropathy specifically affects the membrane of the glomeruli.

Here's what happens in MN:

- A deposit (often due to an antibody[1]) imbeds itself in the filter (glomerulus) of the kidney.
- The deposit triggers an immune response[2], which results in damage to the membrane of the kidney filter.
- The damage allows blood proteins to leak into the urine.
- There are two types of MN that require different treatment strategies: idiopathic and secondary.
    - Idiopathic MN is caused by an antibody created by your own body.
    - Secondary MN can be caused by infection, medication, cancer, or other disease processes related to the immune system.

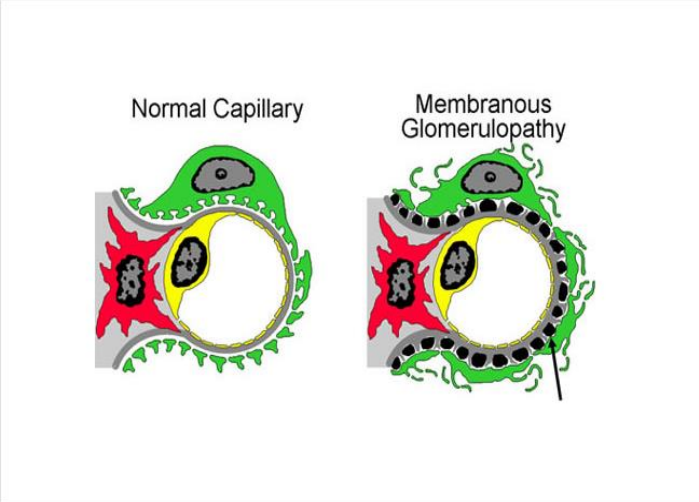

Figure source: https://unckidneycenter.org/kidneyhealthlibrary/glomerular-disease/membranous-nephropathy/

The symptoms of MN:

- Patients with MN may go a long time without symptoms. However, even without symptoms, the disease can cause damage.
- Here are the most common symptoms:
    - Fatigue (feeling tired).

The complications of MN may include:

- Declining kidney function, which may lead to kidney failure over time requiring dialysis or transplant.
- Elevated cholesterol (fats) in your blood.

[1] Antibodies are protective proteins produced by your immune system. They attach to antigens (foreign substances) — such as bacteria, fungi, viruses and toxins — and remove them from your body. Source: https://my.clevelandclinic.org/health/body/22971-antibodies.

[2] Immune response is how your body recognizes and defends itself against bacteria, viruses, and substances that appear foreign and harmful. Source: https://medlineplus.gov/ency/article/000821.htm.

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- Swelling (edema) – puffiness in the legs, ankles, feet, and/or around the eyes.
- Foamy or bubbly urine – due to excess protein leaking into it from the kidneys.
- Weight gain – caused by fluid retention, not actual fat gain.

- Blood clots – the clotting system may not work as well due to protein loss.
- High blood pressure – the kidneys help regulate blood pressure, so damage to the kidneys can cause it to rise.
- Higher risk of strokes and heart attacks.

What happens after you have been diagnosed with MN?

- After your kidney biopsy is reported and a final diagnosis of MN is made, your kidney doctor (nephrologist) and/or kidney care team will often need further tests to determine which type of MN you have.
- These tests may include urine tests, blood tests, and diagnostic scans.
- Your kidney doctor and/or kidney care team will also discuss appropriate treatment with you.

How is MN treated?

The treatment of membranous nephropathy may include:

- **General measures:** Interventions to improve symptoms and prevent complications such as:
  - Dietary changes to reduce swelling and blood pressure, including a low salt diet.
  - Medications to reduce the risk of complications, slow the progression of kidney damage, and manage symptoms.
  - You may be prescribed medications that:
    - Reduce the amount of protein in your urine.
    - Reduce swelling.
    - Lower your blood pressure.
    - Reduce the cholesterol (fats) in your blood.
    - Prevent clotting.

- **Therapies:** Medications that treat the underlying cause of the disease. If your MN is related to your immune system, you may be prescribed medications that suppress the immune system (immunosuppressive treatment).
- A portion of patients will go into remission spontaneously, without immunosuppressive treatment. Your kidney doctor and/or kidney care team may monitor you for 6-9 months before deciding whether immunosuppression is needed.

  Immunosuppressive treatment options include:
  - Rituximab
  - Tacrolimus or cyclosporine
  - Cyclophosphamide and prednisone
  - Other medications

- Lab tests: Your kidney doctor and/or kidney care team will follow you closely with frequent urine and blood tests to monitor your response to treatment and help you manage any symptoms.

- Antibiotics during immunosuppressive therapy: If you are receiving immunosuppressive therapy, depending on its type, you may be started on a combination of trimethoprim and sulfamethoxazole. These antibiotics are used to reduce the risk of very serious infection that can occur in patients on medications that reduce the immune response.
- Medication options: Your kidney doctor and/or kidney care team will support you in learning about the medication options that would be best for you.
- Medication cost: BC Renal covers the cost of a wide range of medications used for MN treatment.

- **Important:** Patients need to check with their kidney doctor and/or kidney care team before taking any over-the-counter (OTC) medications and natural health products.
- **Important:** Patients with chronic kidney disease like MN need to keep their vaccinations updated. Some treatments may reduce the effectiveness of vaccination. You are encouraged to discuss with your kidney doctor and/or kidney care team what vaccinations may be appropriate for you.
- **Important:** Pregnancy may impact kidney function. If you are planning a pregnancy, please consult with your kidney doctor.
- **Important:** Smoking cessation is important – it can help slow down the worsening of kidney disease. Your family doctor can provide resources to help quit smoking.

Living with MN

- Support of kidney care team: BC kidney patients registered with BC Renal have access to a comprehensive kidney care clinic (KCC) team that includes nurses, dietitians, and social workers. In most cases, patients will also have access to a pharmacist.
- Support for your wellbeing: It will be important for you to stay active and healthy. The Kidney Foundation's online Kidney Wellness Hub (https://kidneywellnesshub.ca/) has a lot of useful information. It covers staying active, eating well, mental wellbeing, and socially connecting, including peer support groups. It also provides online classes, webinar recordings, and activity suggestions for patients of all ability levels.
- Ongoing follow-up: Though most patients treated for membranous nephropathy with immunosuppression improve, the disease course is unpredictable. Relapses are common, even many years after MN is diagnosed. You will need ongoing follow-up with your kidney doctor and/or kidney care team.
- Risk of kidney failure: There is a portion of MN patients who will end up with kidney failure, despite treatment. If your kidneys fail, your treatment options may include transplant, dialysis, and conservative care[3]. However, a

[3] Conservative care, sometimes called conservative kidney management (CKM) or supportive kidney care, focuses on treating the symptoms of kidney failure to make you feel as well as possible. It does not treat the causes or attempt to cure kidney failure. Although conservative care does not include dialysis or transplant, it does include all of the other parts of kidney care

very small portion of MN patients may experience recurrences of the disease even after transplantation. Your kidney doctor and/or kidney care team will be there to educate and support you throughout your journey.

- Participation in clinical trials: Sometimes, people living with MN may be invited to participate in a clinical trial for new therapies and medications. If you choose to volunteer in a trial, your kidney doctor and/or kidney care team will help you navigate the process.

Further information

- There may be a lot of confusing information about MN and other kidney diseases on the Internet. The following websites are good sources of information for people living with MN:
    - The Kidney Foundation of Canada - https://kidney.ca/
    - Kidney Wellness Hub - https://kidneywellnesshub.ca/
    - BC Renal GN page - http://www.bcrenal.ca/health-info/kidney-care/glomerulonephritis
    - Medication information sheets on the BC Renal GN page - http://www.bcrenal.ca/health-info/kidney-care/glomerulonephritis#Resources (click on Medication information)
    - Membranous Nephropathy webpage – by the University of North Carolina - https://unckidneycenter.org/kidneyhealthlibrary/glomerular-disease/membranous-nephropathy/
    - Membranous Nephropathy webpage – by NephCure Kidney International - https://nephcure.org/intro-to-rkd/types-of-rkd/membranous-nephropathy-mn/
    - Membranous glomerulonephritis (membranous nephropathy) video – by Osmosis - https://www.youtube.com/watch?v=zucxZw069kw
- If you continue having questions about your condition or treatment, please keep track of these questions and ask your kidney doctor and/or your kidney care team.

and support from your team. For more information see this BC Renal's handout: http://www.bcrenal.ca/resource-gallery/Documents/Patient_Guide-Transitioning_to_Conservative_Care-Kidney_Care_Clinics.pdf.