

Kidneys, the Complement System, and Complement 3 Glomerulopathy

The complement system. Part of your immune system, the complement system triggers inflammation to prevent infections. It also produces complement 3 protein, which plays a key role in your immunity to many diseases.

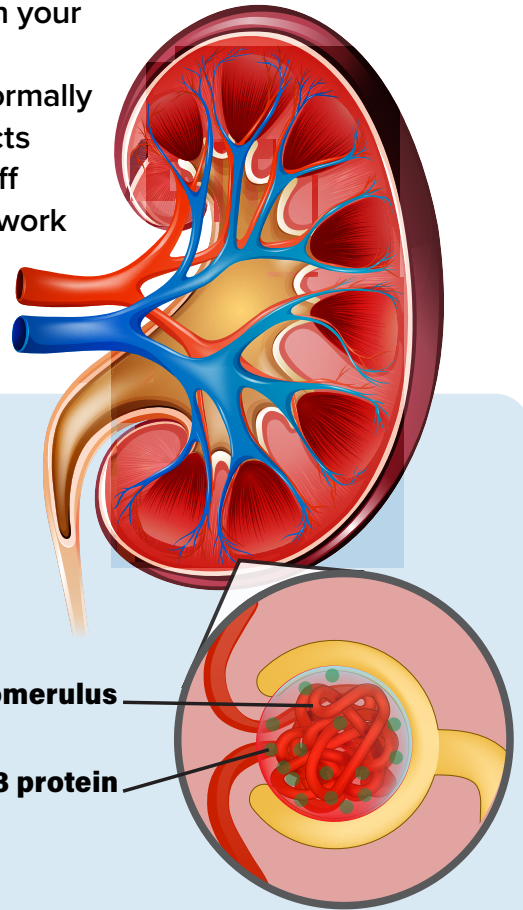
When the complement system becomes abnormally activated, such as in C3G, breakdown products of C3 become lodged in the kidney, setting off reactions that injure the glomeruli, the tiny network of blood vessels that cleans out your kidneys.

The two main forms of C3 glomerulopathy share similar causes and symptoms:

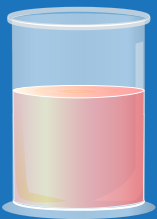
Dense deposit disease (DDD). This rare condition happens when there's too much C3 protein in your renal glomeruli, the tiny network of blood vessels that cleans out your kidneys.

The cause can be genetic or not. Gene mutations may cause it. But environmental triggers can also play a role. In other cases, autoantibodies can block protein activity that's related to your body's immune response.

C3 glomerulonephritis (C3GN). This form of glomerular disease looks similar to DDD on a biopsy. But the deposits are more widespread. In C3GN, like in DDD, there's a ton of C3 in your renal glomeruli. The signs and the causes of C3GN are the same as in DDD, too.



If you have DDD or C3GN, you might have:



- Proteinuria, or dark and foamy urine
- Swelling in many places of your body
- ◀ **Hematuria**, or blood in your urine
- Kidney malfunction
- Less urine
- High blood pressure
- Low levels of protein in your blood
- Lower alertness

Reviewed by Minesh Khatri on Dec. 24, 2022

SOURCES: Cleveland Clinic: "Glomerular Diseases," "Complement System." NORDE: "NIH GARD Information: Dense deposit disease," "C3 Glomerulopathy: Dense Deposit Disease and C3 Glomerulonephritis." National Center for Advancing Translational Sciences: "Dense deposit disease." Up To Date: "Patient education: Glomerular disease (Beyond the Basics)."

Illustrations: bluringmedia/Getty (kidney); ttsz/Getty (glomerulus and hematuria)