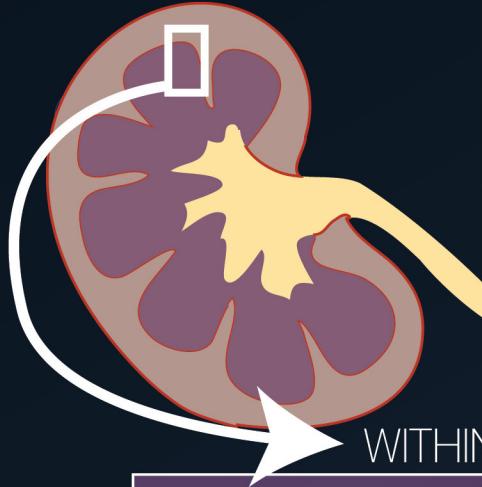


lupus nephritis

PATHOPROFILE

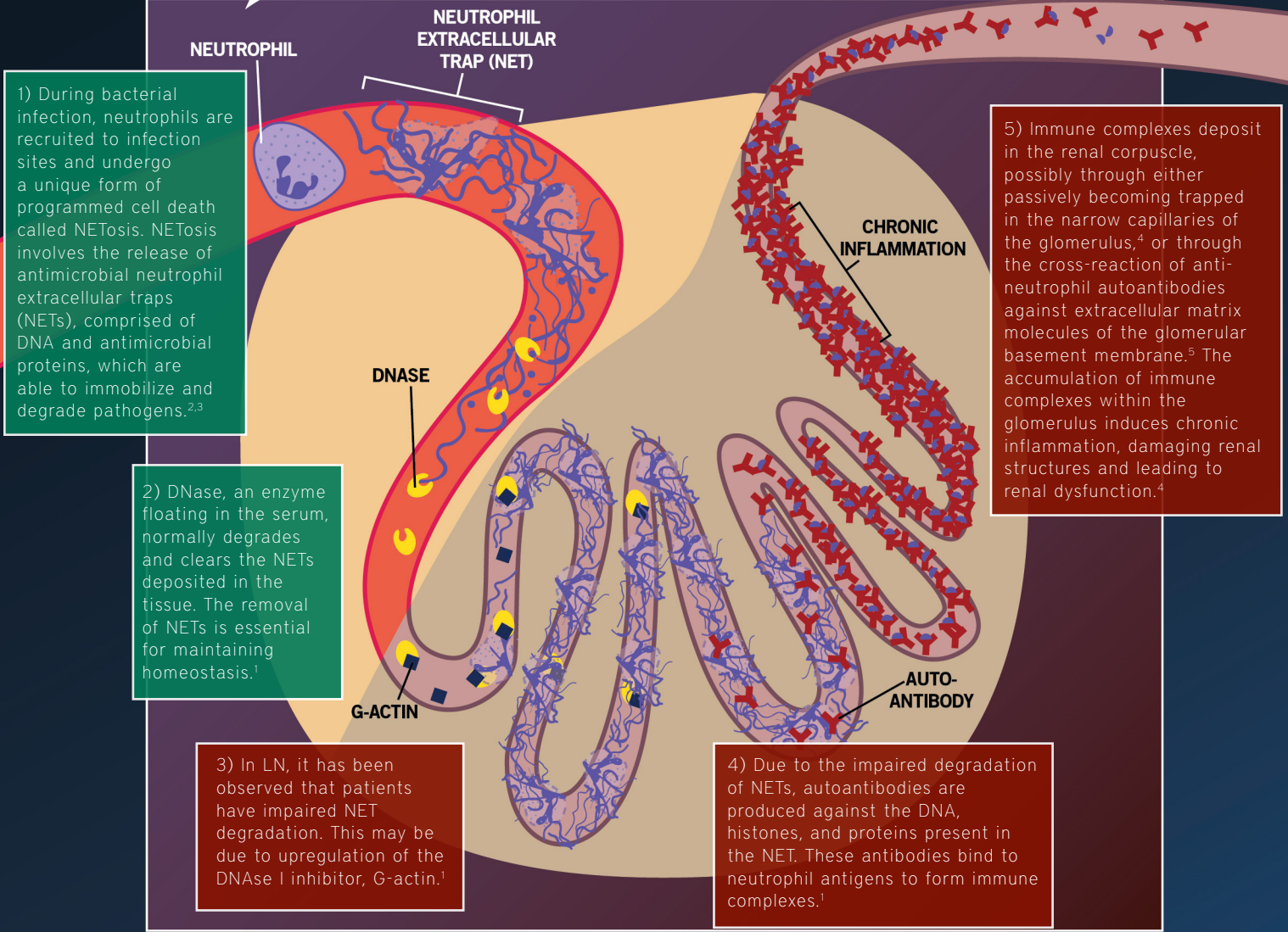


Lupus nephritis (LN) is the inflammation of the kidney caused by systemic lupus erythematosus (SLE), which is an autoimmune disease involving neutrophils. Neutrophils are a class of circulating immune cells that can immobilize and kill invading microbes by generating neutrophil extracellular traps (NETs). In usual circumstances, NETs are removed from the body in order to maintain tissue homeostasis and avoid autoimmunity. However, it has been implicated that there is an impairment of NET degradation in LN, resulting in the initiation of an auto-inflammatory response that involves the production of autoantibodies against neutrophil DNA and proteins. LN is characterized by renal inflammation, progressive renal dysfunction, and often mortality.¹

CONTRIBUTORS

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WITHIN THE RENAL CORPUSCLE:



1) During bacterial infection, neutrophils are recruited to infection sites and undergo a unique form of programmed cell death called NETosis. NETosis involves the release of antimicrobial neutrophil extracellular traps (NETs), comprised of DNA and antimicrobial proteins, which are able to immobilize and degrade pathogens.^{2,3}

2) DNase, an enzyme floating in the serum, normally degrades and clears the NETs deposited in the tissue. The removal of NETs is essential for maintaining homeostasis.¹

3) In LN, it has been observed that patients have impaired NET degradation. This may be due to upregulation of the DNase I inhibitor, G-actin.¹

4) Due to the impaired degradation of NETs, autoantibodies are produced against the DNA, histones, and proteins present in the NET. These antibodies bind to neutrophil antigens to form immune complexes.¹

5) Immune complexes deposit in the renal corpuscle, possibly through either passively becoming trapped in the narrow capillaries of the glomerulus,⁴ or through the cross-reaction of anti-neutrophil autoantibodies against extracellular matrix molecules of the glomerular basement membrane.⁵ The accumulation of immune complexes within the glomerulus induces chronic inflammation, damaging renal structures and leading to renal dysfunction.⁴

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