

ATHEROEMBOLIC RENAL DISEASE [AERD]

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INTRODUCTION

- **Cholesterol crystal embolism (CCE)** is an under recognized multisystemic disease caused by the displacement of cholesterol crystals from atheromatous aortic plaques to distal vascular beds, leading to ischemic injury of target organs, particularly the kidneys, i.e., atheroembolic renal disease.
- **AERD**- Renal failure secondary to occlusion of renal arteries, arterioles, and glomerular capillaries with **cholesterol crystals** originating from atheromatous plaques of the aorta and other major arteries.
- Atheromatous material can be dislodged spontaneously or after **intravascular trauma or anticoagulation**.
- The exact prevalence of atheroembolic renal disease is unknown - **an underdiagnosed condition**.
- AERD is often associated with **irreversible** organ damage with **a poor prognosis**.

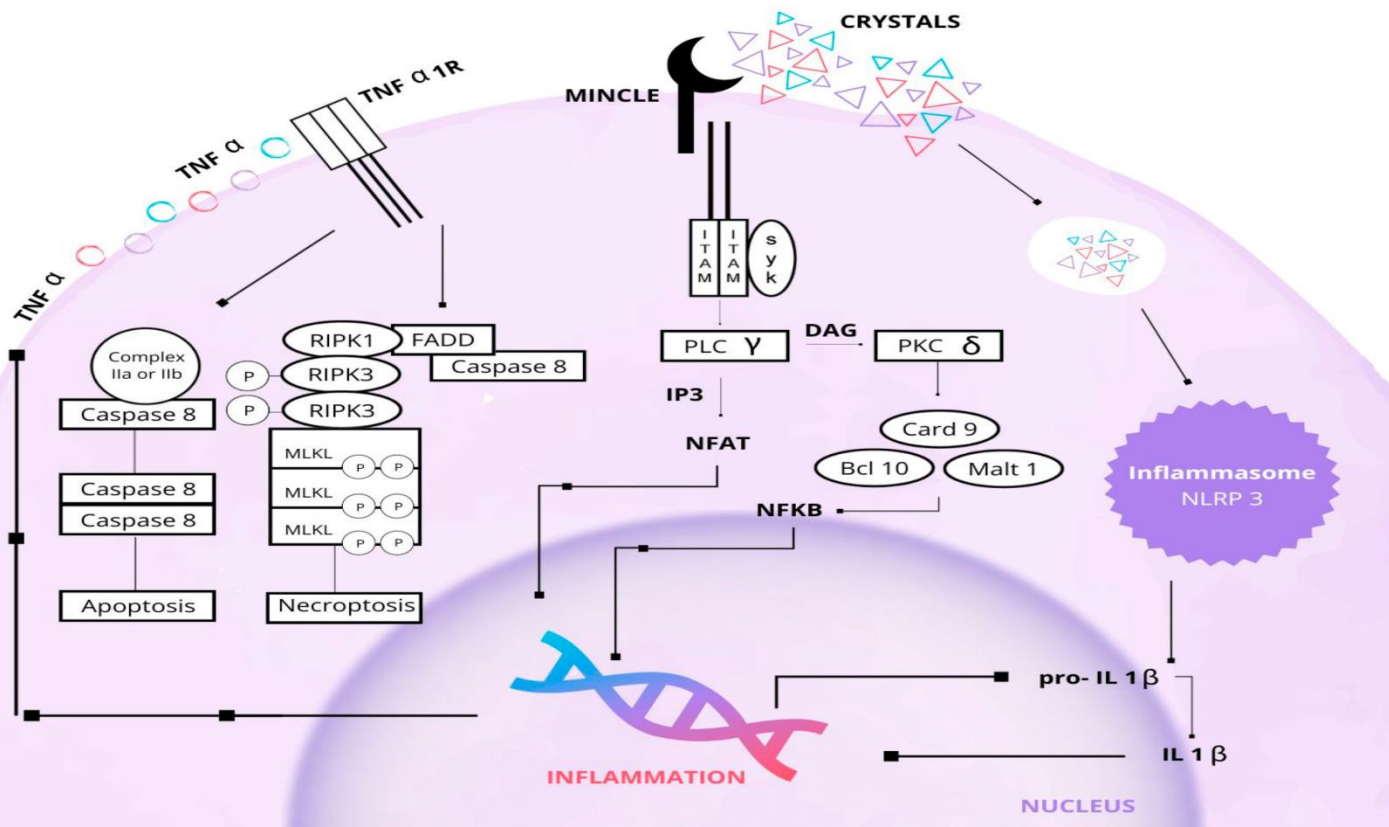
CCE risk factors

- Male sex
- Age > 60 years
- Dyslipidemia
- Smoking
- Diabetes
- Hyperglycemia
- Hypertension

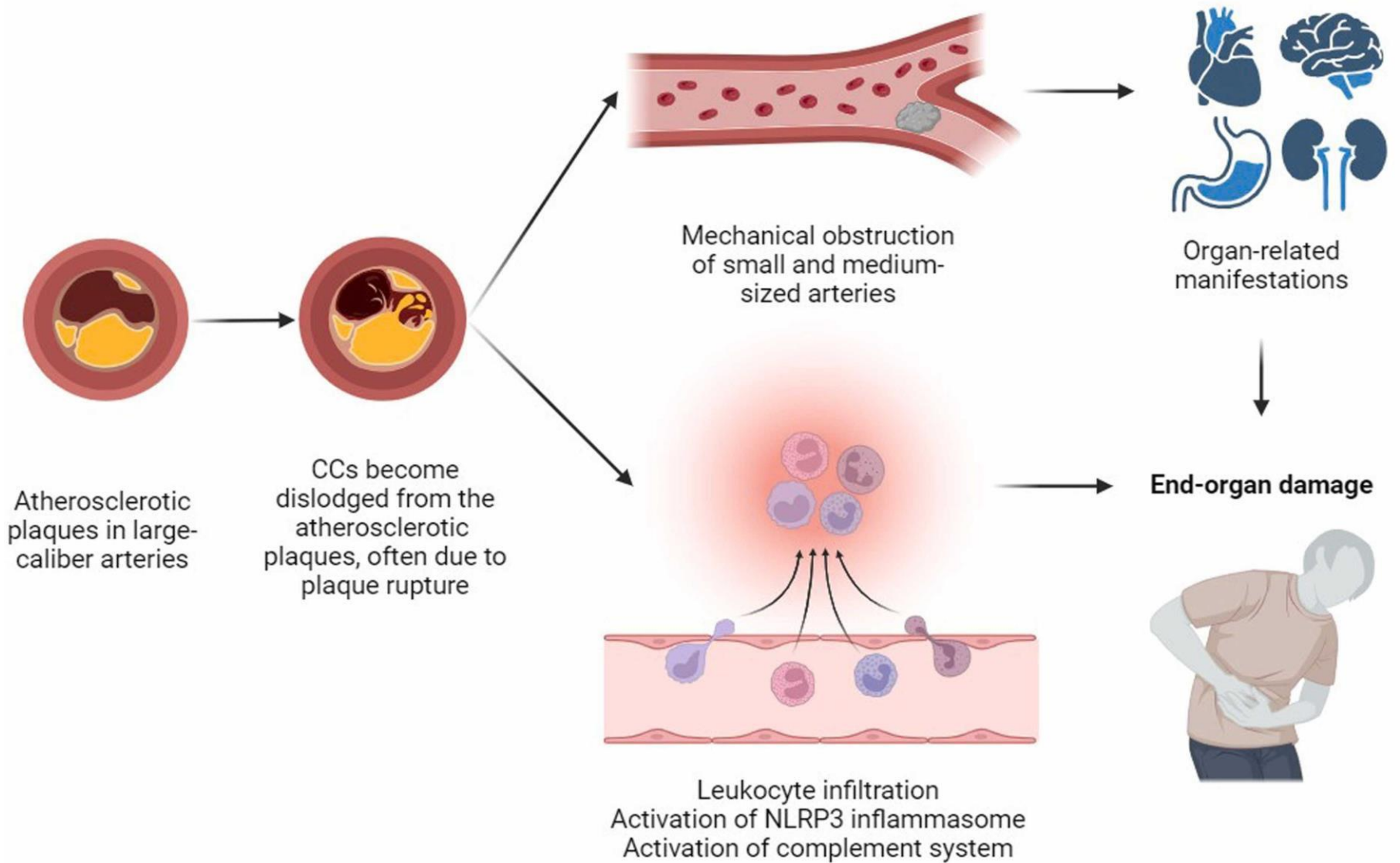
CCE precipitating factors

- Endovascular procedures (e.g. angiography)
- Anticoagulation
- Polytrauma

RISK FACTORS AND PATTERNS OF INJURY

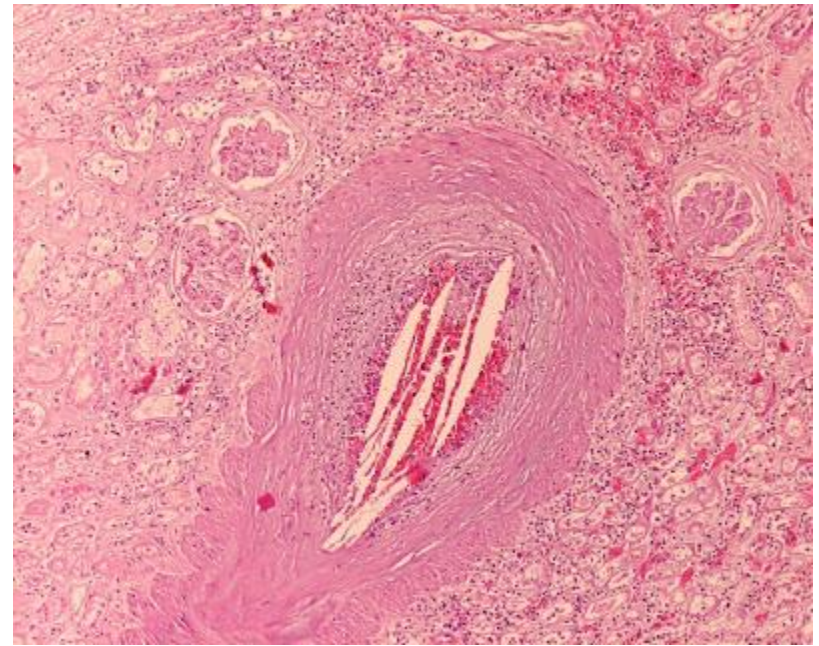


PATHOGENESIS

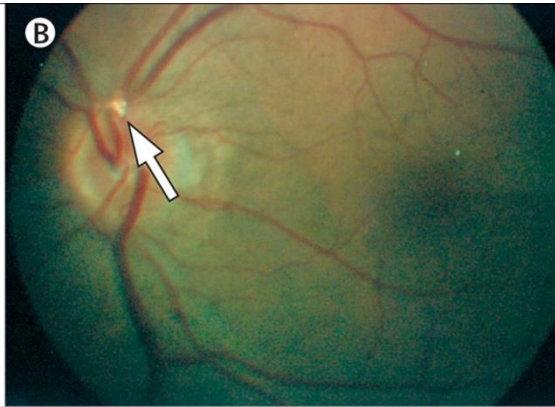




BLUE TOES



BICONVEX ,NEEDLE SHAPED CHOLESTEROL
CLEFTS IN RENAL ARTERIES



HOLLENHORST PLAQUES

**CLINICAL AND BIOPSY
INDICATORS**

RENAL INVOLVEMENT

- **Acute kidney injury** - acute onset, arising within 1 week of a clear causal event, affects 20–30% of patients.
- **Sub acute kidney injury**- most common form in which progressive kidney dysfunction occurs **3-8 weeks** after the inciting event in staggered steps, separated by periods of stable kidney function resembling a **staircase pattern**.
- **Chronic stable renal failure** -May mimic ischemic nephropathy and often coexists with it.
- Dialysis is needed in **28–61%** of patients with acute or subacute disease, with **20–30% partly recovering kidney** function after a variable period of dialytic support.

LAB TESTS

- Anemia, leukocytosis, thrombocytopenia, and raised concentrations of inflammatory markers (ESR or C-reactive protein).
- Results of urinalysis are typically benign, with few cells and a minimum amount of proteinuria, occasionally microscopic hematuria.
- Proteinuria and urinary sediment abnormalities are more likely to occur in patients who have glomerular capillary embolization than the more typical arterial involvement.
- Eosinophilia, eosinophiluria, and hypocomplementemia.

TREATMENT

- No definitive treatment has been established.
- Therapeutic measures are mostly preventive and supportive.
- Restriction of exposure to precipitating factors .
- Withdrawal of anticoagulant therapy and avoidance of any additional radiological or aortic surgery procedure.
- Steroid use is still controversial, although it could have a role in patients with multi-system involvement, recurrent and progressive disease, and systemic inflammation.

TREATMENT

- **Statin therapy** was independently associated with decreased risk of ESRD.
- During endovascular procedures, use of proper and cautious techniques, including a so-called **no touch technique** avoiding direct trauma of the catheter tip.
- **Renal replacement therapy** when indicated.
- The most important predictors of endstage renal disease needing permanent dialysis therapy **were pre-existing chronic renal insufficiency and longstanding hypertension.**