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Dermatological disease for nephrologists

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A significant fraction of patients with renal disorder shows concomitant skin problems. Some rheumatologic or inflammatory renal disease can manifest cutaneous manifestation in their early disease course (ex. allergic purpura in IgA nephropathy), the most commonly referral cases into dermatological department are skin problems in chronic renal failure or end stage renal disease (ESRD).
The dermatological disorders caused by ESRD can be broadly categorized as nonspecific and specific disorders.
Nonspecific changes include pruritus, xerosis, pigmentation disorders, and half-and-half nails (Lindsay's nails). Specific changes include acquired perforating disorders, bullous dermatoses of hemodialysis, calcifying disorders, and nephrogenic systemic fibrosis.
Pruritus is one of the most common complaints associated with ESRD. Pruritus is present in anywhere from 40% to 90% of patients with ESRD. The etiology is thought to be multifactorial, including xerosis, peripheral neuropathy, mast cell hyperplasia, and increased serum histamine, vitamin A, parathyroid hormone, and inflammatory factors. The skin may appear normal or demonstrate secondary changes such as lichenification, excoriation, and hyperpigmentation. The patients with chronic renal disease show xerosis. Mechanism of dryness is unknown but atrophy of sweat and sebaceous glands may lead to dehydration of the stratum corneum as well as reduced sebum and sweat.
Various skin color changes are observed in patients with ESDR. Anemia of chronic disease and erythropoietin deficiency cause pallor, and retained carotene is related with yellowing of skin. Increased MSH is causative for hyperpigmentation. Half-and-half nails are seen frequently in patients on dialysis and resolve with renal transplantation. They are characterized by a dull-white color proximally and a nonblanching red, pink, or brown color distally.
Acquired perforating disorders are a spectrum of disorders associated with ESRD and diabetes that involve transepidermal elimination of collagen or elastic fibers. Clinically, patients develop hyperkeratotic papules or nodules with a central crust filled plug on the trunk and extensor surfaces.
Bullous dermatosis of dialysis or pseudoporphyria may occur in up to one-fifth of patients on hemodialysis. This condition is often clinically indistinguishable from porphyria cutanea tarda, where inadequate clearance of plasma-bound porphyrins by the kidneys or hemodialysis lead to porphyrin deposition in the skin.
Metastatic calcification in ESRD results from dysfunction of calcium and phosphate homeostasis. Calcification of vessels is common in ESRD and is seldom symptomatic. Occasionally, however, deposition of calcium phosphate in the media of cutaneous vessels results in downstream ischemia and infarct known as calciphylaxis. Nephrogenic systemic fibrosis is a disorder most commonly caused by gadolinium-based contrast agents in those with renal disease.
Skin manifestations in ESRD can be difficult to control and multiple comorbidities hinder optimal use of medical treatment. In this talk we will study common skin conditions and their management for patients with chronic renal disorders.