A Neglected Cause of Pruritus in a Hemodialysis Patient

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An 80-year-old male Chinese patient living in a nursing home presented with generalized intractable itching for one month. The patient had end-stage renal disease (ESRD) as a consequence of hypertensive nephrosclerosis in 2009 and started regular hemodialysis thrice a week at an outpatient hemodialysis facility. The pruritus got worse at night, and was not related to hemodialysis sessions, sun exposure, or regular medications. Initially, uremic pruritus was diagnosed, but the patient did not respond to any antihistamines or topical emollients. He had no atopy, diabetes mellitus, thyroid dysfunction, liver disease or malignancy. The Kt/V was 1.49, white blood cell count was 10,870/µL with 2.9% of eosinophil, hemoglobin level was 9.2 g/dL, and blood chemistry showed pre-dialysis blood urea nitrogen of 64 mg/dL, serum creatinine of 5.9 mg/dL, albumin of 3.0 g/dL, calcium of 8.8 mg/dL, phosphate of 1.2 mg/dL, intact parathyroid hormone of 142.1 pg/mL (reference value: 15-65 pg/mL), ferritin of 503 µg/L, and aluminum of 12 µg/L.

On examination, multiple tiny erythematous variable-sized papules and nodules with scaling were noted on the left cubital fossa (Fig. 1A) and axilla (Fig. 1B). Several thin, thread-like, erythematous burrow lines, 2 to 5 mm in length, were identified at the axillary region (Fig. 1C). No hyperkeratosis or crusting was found.

Questions:
What is the etiology of pruritus in this patient? How will you confirm the diagnosis?

The Diagnosis: Scabies infestation

Scabies infestation was suspected based on the characteristic burrows (Fig. 1C). Diagnosis was confirmed by a potassium hydroxide preparation of the skin scraping, which revealed a gravid female mite (Fig. 2A), fecal pellets and different stages of mite development in a burrow (Fig. 2B), including unhatched eggs, larvae just leaving the egg, nymphs, and empty eggshells left behind by nymphs. After applying benzyl benzoate lotion, these itching erythematous papules mitigated gradually. Follow-up skin scraping one week later did not disclose residual scabietic mites.

Scabies, a parasitic infestation of the skin by Sarcoptes scabiei variety hominis, manifesting as diffuse intense pruritus, usually aggravates at night but spares the face and head (1). The pathognomonic skin lesions of scabies infestation are burrows, which are thread-like, erythematous lines of several millimeters in length with overlying whitish scales (1). Burrows are caused by the movement of scabietic mites and usually present on interdigital spaces of the hand, flexural surface of the wrist and elbow, the axillae, areola, umbilicus, buttock and penile shaft. Other nonspecific skin lesions, such as nodules, vesicles, pustules or excoriations, often develop and may mask the burrows. People with impaired cellular immunity, such as dialysis patients, are prone to scabies infestation. Moreover, failure to recognize the scabies and take adequate precautions and treatment will result in serious endemics in the hospital and dialysis center (1, 2).

Pruritus remains one of the most common disabling and frustrating problems in ESRD patients. Almost
Fig. 1. Multiple erythematous variable-sized papules and nodules with scaling on left forearm (A, arrows) and axilla (B) with pathognomonic burrows (C, arrowheads). Fig. 1C corresponds to the box in Fig. 1B.

50 to 90 percent of dialysis patients are afflicted with itching due to uremia-related (inadequate dialysis, secondary hyperparathyroidism, hyperphosphatemia, increased β2-microglobulin or aluminum levels, and anemia) or uremia-unrelated causes (drug, hepatitis, diabetes, hypothyroidism, malignancy, senility, and dermatological disorders) (3). Till now, there is no definite effective treatment for uremia-related pruritus except renal transplantation. Therefore, every attempt should be made to identify treatable uremia-unrelated causes in ESRD patients with pruritus. The tiny, yet pathognomonic burrows of scabies infestation might be overlooked without careful examination and ignorance of scabies would cause an endemic in dialysis units (2). Recognition of the pathognomonic burrows and examination of skin scraping for scabietic eggs, nymphs, mites and feces could timely diagnose and treat this highly contagious disease.

References