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Acquired Acrodermatitis Enteropathica Secondary to Nutritional Deficiency from Alcoholism

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Acquired Acrodermatitis Enteropathica Secondary to Nutritional Deficiency from Alcoholism

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History

- 30-year-old white male with history of alcoholism complicated by cirrhosis
- Admitted with loss of consciousness
- Course complicated by pancreatitis, urosepsis, spontaneous bacterial peritonitis, and hepatic encephalopathy
- Dermatology was consulted for > 1 year history of pruritic rash on the arms and legs with concern for scabies

Examination

- Thin, malnourished-appearing male, intubated with 2+ pitting edema to mid-thighs
- Scalp, lateral neck, right abdomen, bilateral dorsal hands **(Figure 1)** extending onto the dorsal forearms, dorsal feet, bilateral inner thighs and entirety of scrotum with well-demarcated pink plaques with cracked riverbed appearing scale
- No involvement of the axillae, interdigital finger or toe web spaces, mons pubis, or umbilicus

Differential Diagnosis

- Acrodermatitis enteropathica
- Contact dermatitis
- Nummular dermatitis
- Atopic dermatitis
- Psoriasis

Laboratory

- Zinc - 35 mcg/dL [normal: 70-150 mcg/dL]
- Alkaline phosphatase - 735 IU/L [normal: 44-147 IU/L]
- HIV 4th generation Ag/Ab - nonreactive

Diagnosis

- Due to low zinc level and classic clinical presentation, patient was diagnosed with acrodermatitis enteropathica

Clinical Photos

Figure 1

Presentation with sharply demarcated pink plaques on the right dorsal hand with cracked riverbed scale.

Figure 2

After 3 weeks of oral zinc supplementation, right dorsal hand with light pink eczematous patches.

Course and Therapy

- Oral zinc replacement start at 1.5 mg/kg/day for three weeks with improvement of zinc level from 35 mcg/dL to within normal limits at 80 mcg/dL
- After 3 weeks, there were mild residual pink patches with scale remained with approximately 95% improvement **(Figure 2)**

Discussion

- **Acrodermatitis enteropathica**
  - **Hereditary**
    - AR mutation in *SLC39A4* with decreased intestinal absorption of zinc due deficiency in zinc transport protein
    - Presents in neonates when weaning from breast milk to formula or in cases of low maternal breast milk zinc concentrations
  - **Acquired**
    - Nutritional deficiency and/or increased excretion
    - Risk factors include limited resources, alcoholism, anorexia nervosa, vegan diets, diets high in mineral-binding phytates, intestinal malabsorption, liver disease, renal disease, Crohn's disease, cystic fibrosis, sickle cell disease, among others
- **Clinical presentation**
  - Sharply demarcated erythematous patches and plaque with erosions and scale-crust; symmetric; acral, perioral and genital
  - Severe deficiency may be accompanied by immunosuppression, depression, infections, diarrhea, alopecia, and hypogonadism
- **Diagnosis**
  - **Serum zinc** < 60 mcg/dL [normal: 70-150 mcg/dL]
  - **Serum alkaline phosphatase** may serve as a marker as it is a zinc dependent enzyme
    - Elevated in our patient due to pancreatitis
- **Treatment**
  - Oral zinc replacement at 1-2 mg/kg/day of elemental zinc
- **Prognosis**
  - Extracutaneous manifestations improve within 24 hours of supplementation
  - Cutaneous improvement within weeks to months

References

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2. Noguera-Morel, L, et al. "Nutritional Diseases." Dermatology, by Bolognia, JL et al., 4th ed., Elsevier, 2018, pp. 793–809.