Miliaria Crystallina with Hypernatremia in a Newborn

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We encountered a six-day-old exclusive breastfed term male newborn (38^{+3} weeks and 3.32 kg at birth; appropriate for gestation) for hyperthermia and skin rashes in the emergency department. The newborn weighed 2.890 kgs (13% weight loss), and his axillary temperature was 38ºC. On physical examination, he was healthy, and his physical findings were within normal limits. His heart rate was 160/minute, and his breath rate was 52/minute at admission, with a capillary refill time of less than two seconds. In addition to hyperthermia, the infant had striking rashes over the face [Figure 1]. Numerous vesicles containing clear fluids of 1-2 mm size were concentrated over the face without erythema or signs of inflammation. The infant also had acute hypernatremia with dehydration (blood urea 95 mg/dL, creatinine 1.1 mg/dL, serum sodium 156 mg/dL, potassium 5.1 mg/dL and chloride 120 mg/dL) and faltering weight, which were managed conservatively. The lesions disappeared within 24 hours after enteral hydration and appropriate thermal care. No intravenous fluids were administered. He was discharged after two days of hospitalization and correction of electrolyte imbalance (serum sodium of 143 mg/dl) with a weight of 3100 grams and appropriate enteral hydration with breast milk. No clinical features of sepsis were present, and blood cultures obtained for fever were negative. At a follow-up, the infant was growing well.

Figure 1: Illustrates the appearance of numerous 2-4 mm clear fluid vesicles in a sprinkled dew drops pattern characteristic of miliaria crystallina.

Miliaria crystallina is a clinical diagnosis. The presence of clear fluid-filled vesicles without erythema is characteristic of miliaria crystallina.[1] It is reported at all ages, especially in intensive care settings, during febrile phases, excessive warmth, and hypernatremia.[2,3] It is benign and self-limiting and does not represent an underlying serious ailment. The sweat glands are developed at birth in newborns. However, developmental immaturity of eccrine ducts at the level of stratum corneum is postulated for the clinical problem or a role of aberrant sodium homeostasis in the neonatal age group, resulting in clear fluid-filled lesions.[2] The published literature also suggests the condition for an intensive care-associated skin ailment with concomitant hypernatremia or hyperthermia, and community-acquired miliaria crystallina from tropical countries. Miliaria crystallina is confused for congenital herpes simplex, varicella, syphilis, candidiasis, staphylococcal scalded skin syndrome, folliculitis, or pemphigus simplex where the clear fluid vesicles or pus-containing lesions occur with underlying erythema.[4] The outcome of miliaria crystallina is excellent, with care directed at controlling temperature and appropriate enteral hydration. The underlying etiology of lactation insufficiency in the index case was addressed through counselling, and breast milk was expressed to correct dehydration. Less commonly, desquamation of the lesions may be done in some cases. There is no role for skin application for emollients for the condition. No investigations are required to confirm the diagnosis of miliaria crystallina. The workup for septicemia was done for the underlying temperature aberrations in the newborn and not for miliaria. Other subtypes of miliaria include rubra and profunda, which evolve with inflammatory eruptions. The report illustrates benign rashes presenting concomitantly with a life-threatening evolution of hypernatremia, which was managed on conservative grounds. The role of elevated serum sodium levels and concomitant evolution of miliaria crystallina needs to be studied further.

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