Indian Journal of Pediatrics (January 2024) 91(1):96
https://doi.org/10.1007/s12098-023-04871-8

SCIENTIFIC LETTER

Congenital Neutropenia with *ELANE* Gene Mutation Complicated with MPO-ANCA Positivity

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Received: 12 August 2023 / Accepted: 12 September 2023 / Published online: 2 October 2023

To the Editor: A 2-y-old boy was admitted to the hospital due to fever lasting over 20 d. He had a history of recurrent gingival suppuration, lymph node enlargement, and purulent disease. Upon admission, the patient exhibited stunted growth (weight = 9 kg, height = 80 cm, BMI = 14) with no family history of similar conditions. Physical examination revealed multiple lymph nodes in the neck and pus in the external auditory canal. A 0.5 cm × 0.5 cm skin defect was observed around the anus without signs of redness or swelling. Further examinations showed neutropenia (0.24×10^9/L), low hemoglobin levels (71 g/L), and increased monocytes and eosinophils. Urine protein levels were 3+. Abnormal immune function was indicated by p-ANCA +~++. Bone marrow cytology revealed a disorder in neutrophil maturation. Gene detection identified a heterozygous mutation c.451T>A (p.C151S) in the *ELANE* gene. The patient's fever initially controlled with appropriate treatment, but a month later, his condition rapidly deteriorated. Renal involvement progressed, leading to proteinuria (2+), glomerular hematuria, renal function impairment (eGFR = 11.74 ml/min/1.73 m^2), hypoproteinemia, edema, and effusion (pleural and celiac effusion). Renal puncture was not completed. This child also experienced multisite bleeding, including nosebleeds, gastrointestinal bleeding, and pulmonary hemorrhage. Based on clinical manifestations and laboratory findings, a possible diagnosis of Congenital Neutropenia (CN) and ANCA-associated Vasculitis (AAV) was considered. Treatment involved meropenem, linezolid, methylprednisolone, continuous renal replacement therapy (CRRT), and recombinant human granulocyte stimulating factor (rhG-CSF) at a dosage of 0.3~0.5 μg/kg. Despite these efforts, the child tragically succumbed to pulmonary hemorrhage.

Congenital neutropenia (CN) is a genetically heterogeneous disease characterized by neutropenia and recurrent infection [1]. The most common pathogenic gene associated with CN is *ELANE*. Mutations in *ELANE* disrupt the interaction between the C-terminal of neutrophil elastase and AP3, leading to misplacement, endoplasmic reticulum stress and unfolded protein reaction, ultimately resulting in neutrophil apoptosis and granulocytopenia [2]. In our case, we present a rare instance of CN with positive ACNA.

Funding This work was supported by the National Key R&D Program of China (no.2021YFC2702004).

Declarations

Conflict of Interest None.

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