**Neonatal Onset Multisystem Inflammatory Disease Presenting as an Urticarial Rash in a Newborn**

*Introduction*

Neonatal Onset Multisystem Inflammatory Disease (NOMID) is a rare periodic fever syndrome associated with significant morbidity that increases with diagnosis and treatment delays. NOMID is the most severe and rare form of Cryopyrin Associated Periodic Syndromes (CAPS), with an estimate of around 100 cases described in the literature[i]. The pathophysiology of NOMID is related to gain-of-function mutations in *NLRP3* gene[ii] leading to activation of the cryopyrin inflammasome, resulting in an inappropriately increased innate immune response and multisystem dysfunction secondary to chronic inflammation[iii]. Clinically, this may lead to sensorineural hearing loss, vision loss, intellectual disability and seizures secondary to sterile meningitis and increased intracranial pressure, arthropathy and renal failure.[iv]

*Case Presentation*

We describe a case of a 6-day-old male presenting for an evaluation of a waxing and waning urticarial rash, which started at 9 hours of life, with no fever. Feeding well and gaining weight appropriately. He had an otherwise negative review of systems, and he passed the newborn hearing screen.

On exam the patient was found to have blanching, raised, small erythematous papules on the lower extremities and abdomen. At first, the pediatric team suspected erythema toxicum or an allergic reaction, but further literature search of possible etiologies for neonatal urticaria raised concerns for neonatal lupus or other autoinflammatory diseases. Rheumatology was consulted, advising obtaining laboratory tests that were significant for thrombocytosis of 560,000 with an otherwise unremarkable CBC, high normal ESR of 15mm/hr and elevated CRP of 7.4 mg/L. Complete metabolic panel was normal. ANA, SSA and SSB were negative. Genetic testing for Cryopyrin Associated Periodic Syndromes was positive for heterozygous D303G mutation in the *NLRP3* gene. The patient was diagnosed with NOMID. Treatment with daily subcutaneous Anakinra (IL-1 receptor antagonist) was initiated at 11-weeks of age with resolution of the rash within hours after the first injection. Inflammatory markers subsequently normalized, and ocular exam showed no signs of intraocular inflammation. Serial hearing tests remained normal and lumbar puncture done at 4 months of age showed a normal opening pressure, no CSF pleocytosis, and normal CSF cytokine profile, indicative of adequate disease control. Patient also demonstrated an increase in weight percentiles from the 30$^{th}$ to the 90$^{th}$ percentile, likely secondary to controlling the inflammatory process. His development is appropriate, and he remains otherwise asymptomatic.

*Discussion*

This case illustrates the importance of prompt and accurate diagnosis of NOMID and early initiation of IL-1 targeted therapy in decreasing disease morbidity. This case is unique in that diagnosis was made early, allowing rapid initiation of therapy that may prevent significant multisystem dysfunction including sensorineural hearing loss, uveitis and vision loss, progressive chronic meningitis and increased intracranial pressure leading to developmental delay, intellectual disability, and seizures, degenerative arthropathy with joint contractures, and AA amyloidosis leading to renal failure. This underscores the essential role that the primary pediatrician plays in identifying atypical rashes that may be indicative of multisystemic and autoinflammatory diseases, including NOMID.

**References**


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