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A Case Of DOCK8 Deficiency Treated With Dupilumab

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Background

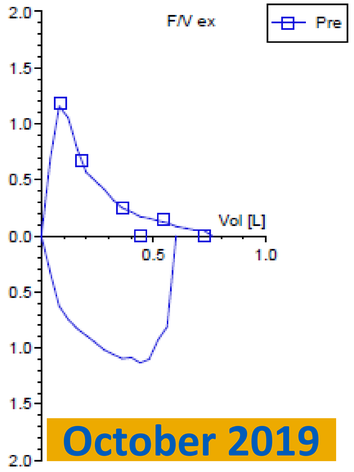
- Dedicator of cytokinesis 8 gene (DOCK8) deficiency is an autosomal recessive form of hyper-IgE syndrome, characterized by elevated IgE levels, eczematous dermatitis, and predisposition to recurrent skin and lung infections.
- Therapeutic interventions include antimicrobial prophylaxis, immunoglobulin replacement, and hematopoietic stem cell transplantation.

Case Presentation

- A 12-year-old male presented to Immunology clinic for DOCK8 deficiency. He initially presented in the first year of life with mucocutaneous candidiasis and was tested for DOCK8 deficiency based on known positive family history.
- Past medical history: severe eczematous dermatitis, asthma, interstitial lung disease, food allergies, and poor growth
- Infectious history: cutaneous HSV and MRSA infections, mucocutaneous candidiasis, HSV keratitis, and MRSA bacteremia
- Family history: Parents are first cousins. Two older siblings also with DOCK8 deficiency, both deceased
- Physical exam: diffuse severe eczematous, lichenified papules and plaques with full body distribution, intermittent coarse breath sounds

Laboratory Evaluation

Diagnostic Test	Patient Result
WBC (cells/mcL)	27,970
AEC (cells/mcL)	10,350
CD4+ absolute (cells/mcL)	1863
CD8+ absolute (cells/mcL)	3208
CD19+ absolute (cells/mcL)	3312
IgE (kU/L)	14,730
Genetic sequencing of DOCK8 gene	Homozygous for novel 2 bp deletion resulting in frame shift mutation in exon 14 at codon 510



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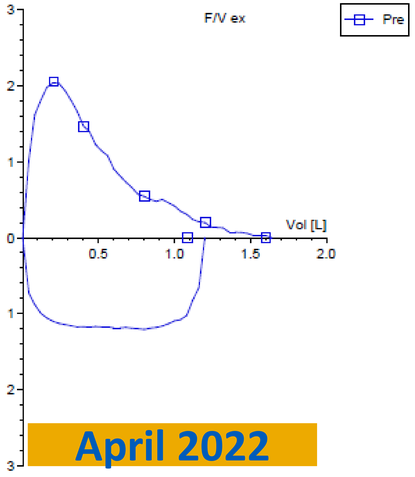

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Management

- He was started on weekly subcutaneous immunoglobulin replacement, as well as prophylactic trimethoprim-sulfamethoxazole and valacyclovir.
- Family declined bone marrow transplantation.
- For his eczematous dermatitis, his medication regimen included desonide 0.05% ointment, triamcinolone 0.1% ointment, and fluocinonide 0.05% ointment.
- Due to the severity of his dermatitis, dupilumab injections were initiated, with an initial dose of 600 mg followed by 300 mg every 4 weeks.
- Within a year, he reported significant improvement in cutaneous and respiratory symptoms, with decrease in pruritus and increase in lung function from FEV1 of 32% to 63%.

Discussion

- In patients with DOCK8 deficiency, hematopoietic stem cell transplantation is curative.
- For patients who are unable or unwilling to undergo or awaiting transplant, dupilumab is a treatment option for improvement of both cutaneous and respiratory manifestations.

References

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