Neonate presenting with multiple cold abscesses: A rare case of Job's syndrome

Chaitra G. B., Gangadhar Mirji, Bhuvaneshwari C. Yelamali, Ashok V. Badakali
Department of Pediatrics, S. N. Medical College & HSK Hospital, Bagalkot, Karnataka, India

Abstract

Hyper-immunoglobulin E syndrome (Job's syndrome) is a rare primary immunodeficiency disorder with variable presentation, characterized by recurrent infections, facial dysmorphism, eczema, scoliosis, joint hyper-extensibility, pathologic fractures, very high IgE (>2000 IU/mL), severe eosinophilia and variable impaired T cell function. We present a case of Hyper-immunoglobulin E syndrome in neonate who had staphylococcal cold skin abscesses, peripheral eosinophilia and high immunoglobulin E levels.

Key words: Hyper-immunoglobulin E syndrome, recurrent infections, neonate.

Introduction

Hyper IgE syndrome is a complex primary immunodeficiency, characterized by atopic dermatitis- like skin lesion associated with extremely high serum IgE levels and susceptibility to infections with extracellular bacteria and fungi.[1,2]

The hyper-IgE syndrome (HIES) was first described in 1966 by Davis, Wedgwood and Schaller. The authors perceived the similarity of severe dermatitis associated with "cold abscesses" with the disease attributed to the prophet Job and hence designated it "Job's Syndrome".[3] Generally the onset of HIES occurs in children and elderly individuals. HIES may have variable presentation like atopic eczema, staphylococcal dermatitis, cellulitis and folliculitis / cold dermal abscesses which lack cardinal signs of inflammation, recurrent pneumonia and pulmonary abscesses, osteopenia and recurrent bone fracture. The diagnosis of standard HIES is based on clinical suspicion and molecular diagnosis of STAT3 gene mutation.

Case report

We present a 28 days old female baby born through LSCS at 36 weeks of gestation to a 28 year old mother without history of eczema or HIES in the family. The neonate was admitted in NICU for 3 days in view of low birth weight. The antenatal ultrasonography was normal. At 25 days of life baby was taken to local doctor in view of swelling over the neck which appeared 5 days before. Then, was further referred to our hospital.

At admission, the baby had swelling over left cervical area which was measuring 3x3cm followed by which child had multiple cold abscess (>10) over left and right lateral chest area, anterior left knee, hip and back. Joint hyperextensibility was present. Anthropometric parameters-weight:2.8kg, height:52cm, head circumference:35cm. There were no eczematous rash, dysmorphic face, scoliosis, fractures, and craniosynostosis on examination and history. Complete hemogram showed anemia (haemoglobin 9gm/dl), leukocytosis (total WBC count-31,000).The patient had higher total serum IgE level (>3000 IU/mL, normal range: 0-8 IU/mL), high peripheral eosinophilia (15%) and normal serum IgA, IgG, IgG subclasses, IgM, C3 and C4 levels. Renal function tests were normal(serum creatinine -0.8).The patient's other biochemical parameters were normal. The neonate underwent incision and drainage which later grew Staphylococcus aureus resistant to penicillin.

Staphylococcal cold skin abscesses were treated with vancomycin after drainage. HIES was diagnosed by clinically and laboratory tests. The patient's chest X-ray was found to be normal. The baby was discharged after two week from the hospital without any complications.

Address for Correspondence:
Dr. Chaitra G. B.
Department of Pediatrics, S.N. Medical college, Bagalkot, Karnataka, India
Email: chaitrajeevan129@gmail.com

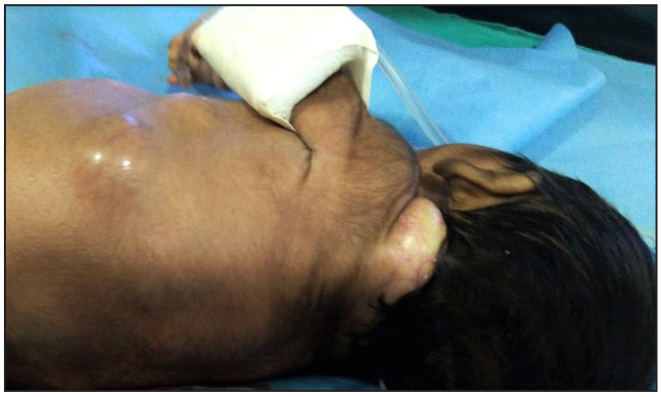
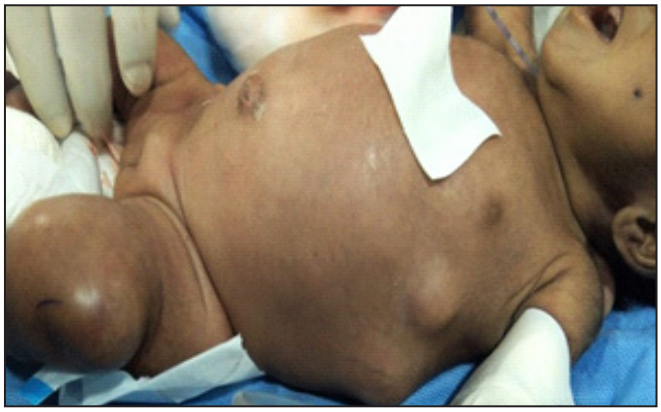


Figure1. Staphylococcal cold skin abscesses on lateral left chest area and back.



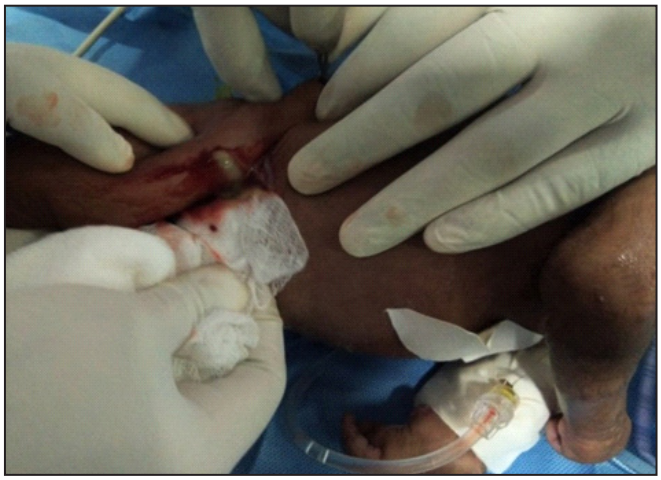


Figure 2 and 3. Staphylococcal cold skin abscesses on anterior left knee area, lateral chest wall and drainage of thigh abscess

Discussion

HIES is a multi-system disorder with a wide range of clinical phenotypes and signs, including skeletal, connective tissue, and vascular abnormalities.[4] Most of patients with HIES suffer from recurrent staphylococcal infections of skin and lungs.[2] Generally recurrent pyogenic pneumonias start in early childhood, and the most common infecting organisms are *Staphylococcal aureus, Haemophilus influenzae* and *Streptococcus pneumoniae*, also mucocutaneous candidiasis is common in HIES.[2] Musculoskeletal abnormalities of HIES are scoliosis, osteopenia, minimal trauma fractures, hyperextensibility and degenerative joint disease.[5]

Our case had multiple cold skin abscesses in the various regions of body, hyperextensibility of joints but had no other stigmata of HIES at this age.

The two most consistent laboratory abnormalities in HIES are eosinophilia and elevated serum IgE. Over time, the serum IgE may decline in adults or may increase in newborn.[4] Demirci at al[6] found that IgE level of a two-month-old patient with HIES was 75.3 IU/ml (Range: 15-32 IU/ml), But in the same patients' they found IgE level 13,000 IU/ml after eight months. The patients with HIES have normal serum IgM, IgG, and IgA levels.[4] Our case had higher total serum IgE level >3000 IU/ mL (Normal range: 0-8 IU/mL) and high peripheral eosinophilia (15%). Differential diagnosis were Immunodeficiency disorders like Chronic granulamatous disease(CGD), Deep mycosis, Tuberculosis. CGD was ruled out as nitro blue tetrazolium (NBT) test and Dihydrorhodamine test were normal. Immunodeficiency panel were normal.

The diagnosis of HIES is usually made based on characteristic cold abscess, facial appearance and clinical features associated with high serum IgE level and eosinophilia.[4] Our patient had some of the characteristic features and laboratory findings. However definitive diagnosis is made on genetic basis such as STAT3 which was not done in our case.[2]

Management of HIES currently revolve around prevention and treatment of infections. There is no cure for HIES at present. Therapy includes drainage of cutaneous abscesses followed by intravenous antibiotic therapy directed against mostly staphylococcal aureus. Prophylactic antibiotics and specific treatment is based on organ involvement. Immunoglobulin replacement therapy and some other treatments such as IFN-g, IFN-a, histamine-2 antagonists, and cyclosporine have been tried, which seem to be useful in the management of patients with HIES.[7,8] Prophylactic antibiotic or antifungal prophylaxis should be recommended in the patients with HIES with recurrent sinopulmonary, cutaneous infections, mucocutaneous candidiasis and invasive fungal infections.[8]

Conclusion: HIES may present with very few clinical manifestations in newborn baby. Hence, recognition

of leading signs like cold abscess of the disease will provide early diagnosis, intervention and better outcome.

References

1. *Minegishi Y. Hyper-IgE syndrome. Curr Opin Immunol.2009; 21: 487-92.*
2. *Minegishi Y, Karasuyama H. Defects in Jak-STAT mediated cytokine signals cause hyper-IgE syndrome: lessons from a primary immunodeficiency. Int Immunol.2009; 21: 105-12.*
3. *Davis SD, Schaller J, Wedgwood RJ. Job's Syndrome. Recurrent, "cold", staphylococcal abscesses. Lancet 1966; 1: 1013-5.*
4. *Olaiwan A, Chandesris MO, Fraitag S, et al. Cutaneous findings in sporadic and familial autosomal dominant hyper-IgE syndrome: a retrospective, single-center study of 21 patients diagnosed using molecular analysis. J Am Acad Dermatol 2011; 65:1167-1172*
5. *Woellner C, Gertz EM, Schδffer AA, et al. Mutations in STAT3 and diagnostic guidelines for hyper-IgE syndrome. J Allergy Clin Immunol 2010; 125: 424-432.*
6. *Demirel N, Bas AY, Zenciroglu A. Can necrotizing fasciitis be the first symptom of Hyperimmunoglobulin E syndrome? Indian J Pediatr 2008; 75:1090.*
7. *Schimke LF, Sawalle-Belohradsky J, Roesler J, et al. Diagnostic approach to the hyper-IgE syndromes: immunologic and clinical key findings to differentiate hyper-IgE syndromes from atopic dermatitis. J Allergy Clin Immunol 2010; 126:611- 617.*
8. *Yeganeh M, Gambineri E, Abolmaali K, et al. Other well-defined immunodeficiencies. Primary immunodeficiency diseases: definition, diagnosis and management. In: Rezaei N, Aghamohammadi A, Notarangelo LD, editors. Berlin: Springer; 2008; 251-290.*

Date received: November 15th 2019
Date accepted: May 26th 2020

Conflict of interest: Nil
Source of funding: Nil