Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2017; 5(7A):2491-2495 **ISSN 2347-954X (Print)**
©Scholars Academic and Scientific Publisher
(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2017.v05i07.002

Case Report

A Child with Recurrent Fever, Chest Infection and Skin Problems – A Case of Job Syndrome

Ayaz Ahmed[1], Mushtaq Ahmed[1], Muhammad Saqib Shafique[2], Madiha Ariff[3], Ghulam Murtaza[4]
[1]Intern, department of pediatrics, Civil Hospital Karachi.
[2]Final year student. Dow Medical College Karachi.
[3]Medical Officer, Jinnah Hospital Karachi.
[4]Professor of Paediatrics, Civil Hospital Karachi.

***Corresponding author**
Madiha Ariff
Email: madiha.ariff@live.com

Abstract: Hyper immunoglobulin E Syndrome (Hyper-IgE Syndrome/ HIES) more commonly referred to as Job's Syndrome was first explained in 1966 by Davis SD on the basis of characteristic eosinophilia, eczema and recurring skin and pulmonary infections in two female subjects. We present the case report of a 5 Year old child with recurrent fever, cough and skin problems who presented with fever, cough and swelling of right eyelid. Patient has past history of recurrent swellings on different parts of body along with fever, 3 episodes of chest infection and 1 episode of mastoiditis. Patient also features recurrent episodes of localize itching at different parts of body since the age of 15 months. On examination, Child was febrile, anemic and discrete firm and mobile enlargement of cervical lymph node was noted. There was subcostal and intercostalrecessions, harsh vesicular breathing with coarse crepitations bilaterally. Painful swelling of the right eye was erythematous and tender to touch, blepharitis with multiple stye was noted, and patient had prominent forehead, hypertelorism and broad nose. Labs revealed absolute eosinophil count enormously raised and significant increase in IgE levels has been noticed. Finding consistent with diagnosis of Aspergilloma was found on CT scan chest. Above mentioned clinical and laboratory findings were put in scoring system and diagnosis of job syndrome was made.
Keywords: Case report, Hyper-IgE syndrome, Eosinophillia.

INTRODUCTION:

Hyper immunoglobulin E Syndrome (HIES) more commonly referred to as Job's Syndrome was first explained in 1966 by Davis SD on the basis of characteristic eosinophilia, eczema and recurring skin and pulmonary infections in two female subjects [1]. HIES is a rare occurrence in the western world with incidence of 1 in a million involving males and females in the equal ratio[2].

Job syndrome is a disorder with classical triad of elevated serum level of IgE, recurrent skin and pulmonary infections [3,5,9] Other features of the disease include coarse facies, chronic eczematous dermatitis, eosinophilia, mucocutaneous fungal infection and other skeletal, dental and connective tissue abnormalities[4,6,7]. There are two types of Hyper IgE syndromes : *Type 1 or Autosomal Dominant type* represent most of the cases and is caused, due to mutation in Signal Transducer and Activator of Transcription 3 (STAT 3) resulting in signaling defect of cytokines, including IL-6, IL-22, and Th-17 which play important role in providing immunity against pathogens[5,7]. Apart from classical triad, patients with type 1 syndrome often have multisystem involvement, that involves musculoskeletal, dental , connective tissue, vascular abnormalities as well as B-cells malignancies that is Hodgkin and non-hodgkin lymphomas in particular[3,5,9]. *Type 2 or Autosomal Recessive type* do not have skeletal or dental abnormalities [3] and these patients are usually affected by viral infections (molluscum contagiosum, herpes simplex and varicella zoster virus in particular) [3,5,9]. Patient with this type of hyper IgE may also have neurologic symptoms. Homozygous mutation in Tyk2 has been

noticed in most of the cases but autosomal recessive hyper IgE syndrome is a condition that involves more than one gene [3, 9].

CASE REPORT:

A 5 Year old unvaccinated child with history of high grade continuous fever for 6 days, dry intermittent cough and difficulty in breathing 5 days and gradually increasing and painful swelling in right eye lid for 3 days. Patient has past history of recurrent swellings on different parts of body along with fever which use to subsided after taking antibiotics. During last 12 months he had 3 episodes of chest infection requiring antibiotics and 1 episode of mastoiditis. Patient suffer various episodes of common cold every 2-3 months. Patient also features recurrent episodes of localize itching at different parts of body since the age of 15 months and child develop scaling and crusting which response to local application prescribe by general practitioner. Rash on face, scalp, neck, abdomen and back at 5th day of life were reported which subsided itself.

On examination, child has tachycardia, tachypnea and fever. Child was anemic and discrete firm and mobile enlargement of cervical lymph node was noted. There was subcostal and intercostal recessions, harsh vesicular breathing with coarse crepitations bilaterally, clinical and radiological findings favored the diagnosis of bronchopneumonia (figure 01). Painful swelling of the right eye was erythematous and tender to touch, blepharitis with multiple stye was noted, and patient had prominent forehead, hypertelorism and broad nose. Papulopustular lesions on different areas of the skin also noticed. (Figure 02).

Absolute eosinophil count was enormously raised and significant increase in IgE levels has been noticed along with slight increase in serum IgG and IgA levels as well (see Table 01). Finding consistent with diagnosis of Aspergilloma was found on CT scan chest. (Figure 03).

Above mentioned clinical and laboratory findings were put in scoring system of job syndrome which provide a good tool to score different symptoms of job syndrome according to severity of each signs, symptoms and investigations. (see Table 02 for scoring system with marked positive finding).

In this case report, the important and main findings were markedly elevated IgE level, markedly elevated eosinophil count, skin abscesses (>4), pneumonia on multiple occasions (>3), rashes within few days of birth, eczema, mastoiditis which is a complication of otitis media and characteristic facies.

Applying the diagnostic criteria in this case, scoring will be.

1) Markedly elevated IgE levels (>2000), accordingly its score will be 10.
2) Markedly elevated eosinophil count (>800), accordingly its score will be 6.
3) Greater than 4 skin abscesses are reported, accordingly its score will be 8.
4) Recurrent pneumonia is reported (>3 times), scoring 8.
5) Past history of skin rashes within few days of birth is present, scoring 4.
6) Eczema is moderate, scoring 2.
7) Mastoiditis is reported due to multiple ear infections, its score will be 2.
8) In this case characteristic facies is present, so score will be 5

Adding scores of different findings according to severity in this case, it will be 45, which is sufficient for labeling a case as job syndrome.

Table 01 : Serum Immunoglobulin Levels and Blood Counts

	Patient values	Normal Values
Absolute neutrophil count	2914/mm^3	1500-8000/mm^3
Absolute eosinophil	**1692/microliter**	<350/microliters
IgG	18.7	7.5 – 15.8 gm./L
IgM	1.31	0.41 – 3.06 gm./L
IgA	15.7	0.8 – 4.5 gm./L
IgE	**6530**	0- 230 IU

Table 02: Scoring System for Diagnosing of Job Syndrome (Hyper-IgE syndrome)

	0	1	2	3	4	5	6	7	8	10
Clinical Findings										
Highest IgE (IU/mL)	< 200	200-500			501-1000				1001-2000	>2000
Total # skin abscesses/boils	None		1-2		3-4				>4	
Total # pneumonias	None		1		2		3		>3	
Parenchymal lung abnormalities	None						Bronchiectasis		Pneumatocele	
Other serious infection	None				Present					
Fatal infection	None				Present					
Highest eosinophils/uL	< 700			701-800			>800			
Newborn rash	None				Present					
Eczema (worst stage)	None	Mild	Moderate		Severe					
Sinusitis/otitis (# in worst year)	1-2	3	4-6		>6					
Candidiasis	None	Oral, vaginal	Fingernail		Systemic					
Retained primary teeth	None	1	2		3				>3	
Scoliosis (max. curvature)	< 10		10-14		15-20				>20	
Minimal trauma fractures	None				1-2				>2	
Hyperextensibility	None				Present					
Characteristic face	None		Mild			Present				
Increased interalar distance	< 1 SD	1-2 SD		>2 SD						
High palate	None		Present							
Congenital anomaly	None					Present				
Lymphoma	None				Present					

**Patient with score of less than 20 points is unlikely to have hyper IgE syndrome. Patient with score in between 20-40 has a lot of uncertainty, whether to label him a candidate of hyper IgE syndrome or not. But a score of 40 or above certainly means that the patient is suffering from hyper IgE syndrome. In our case our patient has a score of 45. This reference table has been taken from Hyper-IgE syndromes [10]

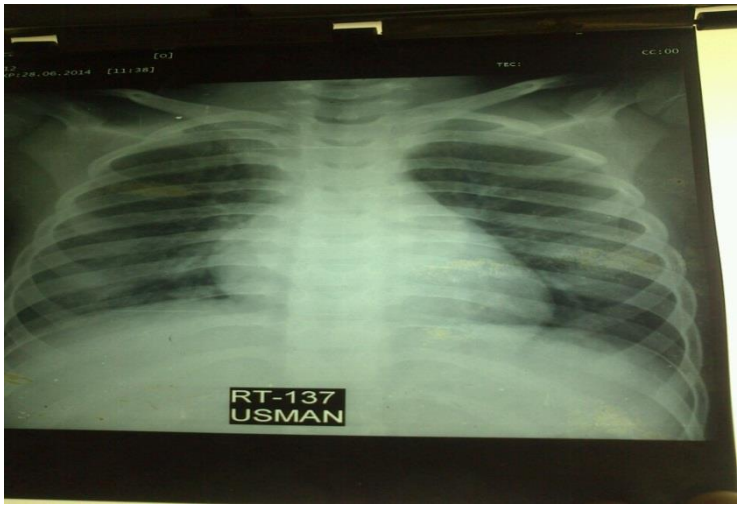

Fig-1: Chest X-ray cropped showing bilateral infiltrations suggestive of Bronchopneumonia.

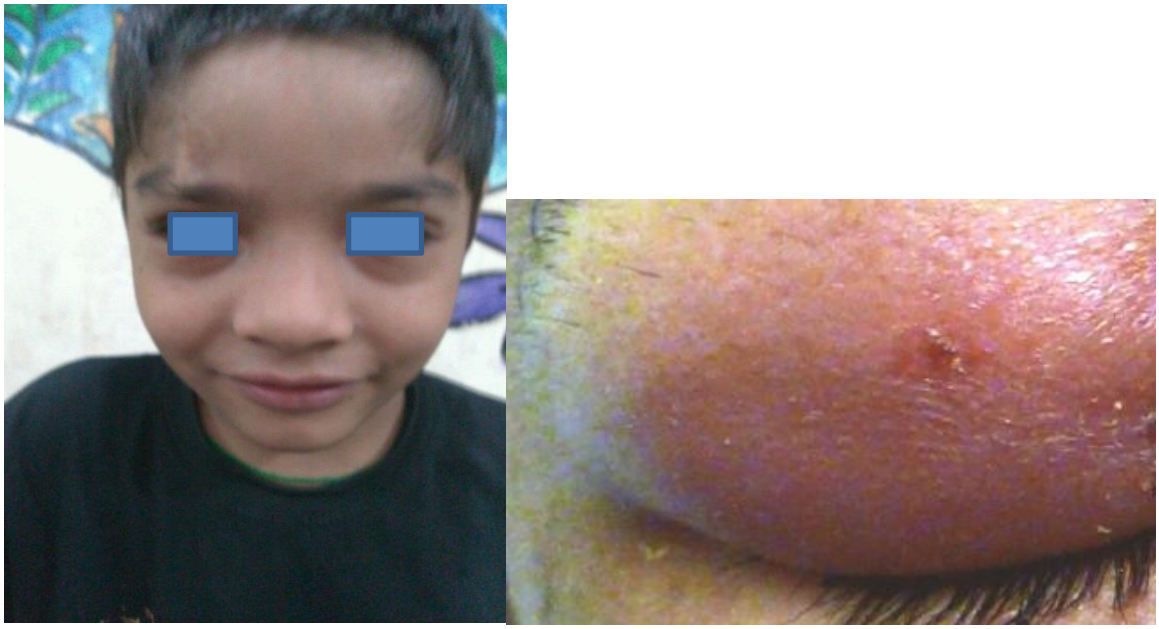

Fig-2: A) Facial features showing prominent forehead, broad nose and hypertelorism. B) blepharitis of right eyelid

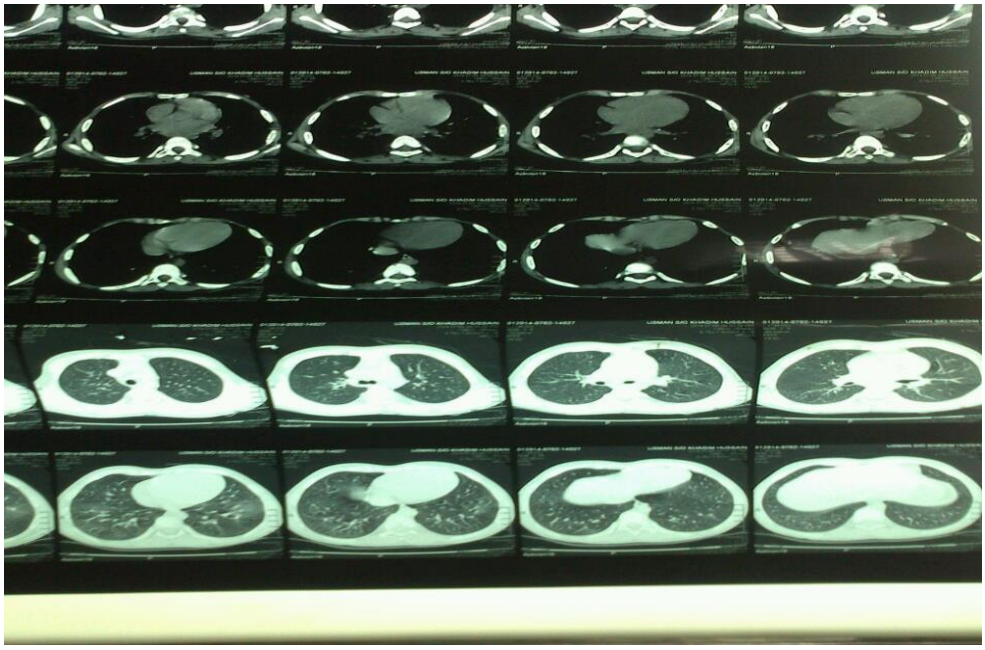

Fig-3: CT scan Cropped and labeled showing finding suggestive of Aspergilloma

DISCUSSION:

Job syndrome or hyper IgE syndrome is a primary immunodeficiency disorder affecting multiple organ system. Patients usually have elevated serum IgE and eosinophils levels and repetitive respiratory tract and skin infections. Coarse facies, mucocutaneous fungal infection and other skeletal, dental and connective tissue abnormalities are among the others symptoms.

In one study a 7 month old male child, admitted to the hospital with the history of fever and vesicular eruption on face and mouth. The boy had three previous hospitalization due to pneumonia and

atopic dermatitis. Clinically prominent forehead and hypertelorism can easily be appreciated. The laboratory investigations of this 7 year old boy represent elevated serum IgE levels and elevated absolute eosinophil count. Boy also develop severe eczematous lesion some days after birth[7].This case is giving a clinical picture that is somewhat very similar to our case, but in our case we can also appreciate right upper eyelid inflammation which is very marked.

Another study in 1983, highlighted a very interesting case of 20 year old boy, who had suffered episodes of severe infection from the very first week of his life, staphylococcal infection in specific. The patient had been admitted to the hospital 35 times for surgical treatment of staphylococcal abscesses. At the age of 6 he undergone thoracotomy due to staphylococcal bullous pneumonia and after 2 year treated for meningoencephalitis by different antibiotics. In between hospitalization patient suffered many abscesses, eye and ear infection, in addition patients also suffered candidal onychomycosis. Like other cases of hyper IgE syndrome patient has elevated serum IgE level and elevated absolute eosinophil count[8]. This case discussing hyper IgE syndrome in adults represents very unique clinical picture where staphylococcal infections and abscesses predominated the clinical picture of the patient. Though this case had very different presentation as compared to our case, yet we have ear infections, eye infection and laboratory findings in common.

CONCLUSION:

The discussion on the above cases reflect the point that in most of the patients with hyper IgE syndrome, patient may present like a usual case of pneumonia but the other sign and symptoms like atopic dermatitis, abscesses and coarse facies may directs you to make a definitive diagnosis and there are cases where other features apart from pneumonia can dominate the clinical picture.

REFERENCE:

1. Davis SD, Schaller J, Wedgwood RJ: Job's Syndrome. Recurrent, "cold", staphylococcal abscesses. *Lancet.*1966, 1(7445):1013-1015.
2. Minegishi Y, Saito M, Morio T, Watanabe K, Agematsu K, Tsuchiya S, Takada H, Hara T, Kawamura N, Ariga T, Kaneko H. Human tyrosine kinase 2 deficiency reveals its requisite roles in multiple cytokine signals involved in innate and acquired immunity. Immunity. 2006 Nov 30;25(5):745-55.
3. Minegishi Y, Karasuyama H. Defects in Jak–STAT-mediated cytokine signals cause hyper-IgE syndrome: lessons from a primary immunodeficiency. International immunology. 2009 Feb 1;21(2):105-12.
4. Dreskin SC, Goldsmith PK, Gallin JI. Immunoglobulins in the hyperimmunoglobulin E and recurrent infection (Job's) syndrome. Deficiency of anti-Staphylococcus aureus immunoglobulin A. Journal of Clinical Investigation. 1985 Jan;75(1):26.
5. Freeman A.F, Holland S.M. Clinical Manifestations, Etiology, and Pathogenesis of the Hyper IgE Syndromes, Pediatr Res. 2009 May ; 65(5 Pt 2): 32R–37R. doi:10.1203/PDR.0b013e31819dc8c5.
6. Estrada-Reyes E, Hernández-Román MP, Gamboa-Marrufo JD, Valencia-Herrera A, Nava-Ocampo AA. Hypereosinophilia, hyper-IgE syndrome, and atopic dermatitis in a toddler with food hypersensitivity. Journal Of Investigational Allergology And Clinical Immunology. 2008 Jan 1;18(2):131.
7. Jończyk-Potoczna K, Szczawińska-Popłonyk A, Warzywoda M, Bręborowicz A, Pawlak B. Hyper Ig E syndrome (Job syndrome, HIES)–radiological images of pulmonary complications on the basis of three cases. Polish journal of radiology. 2012 Apr;77(2):69.
8. L'Huillier JP, Thoreux PH, Delaval P, Desrues B, Le Gall E, Kernec J, Delambre JF. The hyperimmunoglobulinaemia E and recurrent infections syndrome in an adult. Thorax. 1990 Sep 1;45(9):707-8.
9. Freeman A.F, Holland S.M. The Hyper IgE Syndromes, Immunol Allergy Clin North Am. 2008 May ; 28(2): 277–viii. doi:10.1016/j.iac.2008.01.005.
10. Grimbacher B, Holland SM, Puck JM. Hyper-IgE syndromes. Immunol Rev.2005: 203:244-50.