

A Case Report on Secondary Infection in a -2-Year -Male Old Child Treated with Topical Scabicial Agent

Kabakama`C.Clement, Keerthana Chandrasekar*

JSS College of Pharmacy, Ootacamund, The Nilgiris - 643001, JSS Academy of Higher Education & Research, Mysuru, Karnataka, INDIA.

ABSTRACT

Scabies is one of the common dermatological conditions accounting for a substantial proportion of skin disease in developing countries caused by the microscopic mite *Sarcoptes scabiei var. hominis*. Comes from the latin word "Scabere" which means to scratch commonly known as the seven-year itch. The Human Scabies mite infestation will present to the patients with the following symptoms such as the erythematous vesicles, papules on torso extremities and some with the adjacent linear excoriations. Scabies treatment include administration of scabicial agent, However treatment failures are uncommon but may occur due to improper application, resistance of the topical therapy and reinfestation .A- 2 -Year old Male Child was admitted to pediatric ward at the Government District Headquarters Hospital with complaint of diffuse maculopapular rash according to the signs and symptoms Child was diagnosed with scabies/wheezing associated lower Respiratory Tract infections. The mainstay of scabies treatment is the application of topical Scabicial agent. Permethrin 5% lotion is the treatment of choice which acts as a neurotoxin that causes paralysis and death in ectoparasites and causes disruption of sodium ion influx through cell membrane channels by which membrane repolarization is regulated and delayed repolarization which results in paralysis of nerves in exoskeletal respiratory muscles of parasite leading to death. The lotion should be applied over the entire body including the face and scalp in infants. It should be left on for 8 h up to 12 h and then rinsed. Reapplication one week later is advised. This Case report focuses on the use of permethrin and crotamiton lotions for the treatment of secondary infections due to scabies infestation in Paediatric Population.

Key words: Maculopapular Rash, Scabies, Permethrin 5% lotion, Pediatrics.

INTRODUCTION

Scabies is one of the common dermatological conditions accounting for a substantial proportion of skin disease in developing countries caused by the microscopic mite *Sarcoptes scabiei var hominis*. It is derived from the latin word "Scabere" which means to scratch commonly known as the seven year itch.¹ The infestation occurs from skin to skin contact caused by the tiny and usually not visible parasite the mite *Sarcoptes scabiei* that burrows under the host skin causing intense allergic itching.² The human scabies mite was early discovered in 17th Century in the year 1687 by a Italian

Scientist and Biologist Giacint`o Cestoni and Bonomo.³ Erythematous vesicles and papules are present on torso extremities, some with adjacent linear excoriations. Burrows are a pathognomonic sign and represent the intra-epidermal tunnel created by the moving female mite which present with the signs and symptoms as serpiginous, greyish, thread like elevations in the superficial epidermis and high yield locations of the burrows can be found in webbed spaces of the finger, flexor surfaces of the wrists, elbows axillae, belt line in geriatric patients, scabies demonstrated a propensity for the back, often appearing as

DOI: 10.5530/ijopp.11.4.44

Address for
correspondence:

Dr. Keerthana Chandrasekar,
Resident Department of
Pharmacy Practice, JSS College
of Pharmacy, Ootacamund The
Nilgiris 643001, JSS Academy
of Higher Education & Research,
Mysuru, Karnataka,INDIA.
Phone no: +918870120502
Email Id: Keerthana@jssuni.
edu.in



www.ijopp.org

excoriations in infants and small children, burrows are commonly located on the palms and soles. Microscopic evaluation of skin scrapping to confirm diagnosis is very important for its diagnosis and its adequately treated in order to prevent its spread to other person.⁴ However diagnosis of scabies may be made clinically in patients with pruritic rash and characteristic of linear burrows.

At global level a survey of children have found that the prevalence of the patients is approximately 300 million cases of scabies are reported worldwide every year. Scabies infestation is more commonly seen in boys at a 50% than girls. The point prevalence in the general population of rural communities in India is about 5%. Both sexes are equally involved.⁵ This case report represent the early detection and implementation for the prevention of the secondary infections in scabies for Pediatric Population.

CASE DESCRIPTION

A-2-year old male child was admitted to Pediatric ward at the Government District Headquarters Hospital on July 2018, with complaints of cough, wheezing and and diffuse maculopapular rash which is represented in Figure 1. His mother revealed the past medication history of Injection Amoxicilin 250mg (30mg/kg/day), Injection Ceftriaxone 300mg (50mg/kg/day), Injection Gentamycin 50mg (2.5mg/kg/day), Tablet Zinc P.O 20mg (100µg/kg/day). Syrup Paracetamol P.O 4ml (10mg/kg/day), According to his social history findings the patient mother had the history of asthma. On clinical examination child vital signs were unremarkable and he weighed 8kg. The laboratory investigations which was found abnormal was elevated serum levels of white blood cells count (Table 1).

According to the signs and symptoms of the child was diagnosed with Scabies with wheezing Associated Lower Respiratory Tract Infections (ICD₁₀ Code. No.A00-B86) On the First day he was administered with Injection Cefotaxime I.V 350mg(50mg/kg/day) q8Hr, Injection Ranitidine I.V 7.5mg (2mg/kg/day)q12Hr, Salbutamol Nebulizer(5mg/2ml) q8Hr, Cough Syrup P.O1ml TDS and Syrup. Paracetamol P.O 5ml (10mg/kg/day) and on the second day he continued with the same medications, Intervention was made on the Third day since the patient had not been prescribed with the topical scabicial agent and he was having complaint of itchiness. 5% Permethrin was added up onto his prescription. The patient was discharged with the following medication Syrup Cotrimoxazole P.O 4ml twice daily, Cough Syrup P.O 1ml twice daily and continuation therapy of 5% Permethrin

Table 1: Clinical Laboratory Test.

Test Parameter	Observed Value	Reference Range
Hemoglobin	10.7g/dL	12 -16g/dL
White blood cells	16.6x10 ³ cells/mm ³	3.2-9.8x10 ³ cells/mm ³
Hematocrit	38.6%	33-43%
Mean cell volume	77.2fL	76-100fL
Mean cell hemoglobin	25.6pg/cell	27-33pg/cell
Mean cell hemoglobin concentration	33.2g/dL	33-37g/dL
Fasting Blood sugar	78mg/dL	<100mg/dL
Blood urea	42mg/dL	20-40mg/dL
Serum creatinine	0.9mg/dL	0.6-1.2mg/dL
Blood urea nitrogen	10mg/dL	8-18mg/dL
Aspartate aminotransferase	46U/L	0-35U/L
Alanine aminotransferase	34U/L	0-35U/L
Alkaline phosphates	207U/L	30-120U/L
Bilirubin Total	-	-
Bilirubin Direct	-	-
Bilirubin Indirect	-	-

Hemoglobin (Hb); Hematocrit (Hct); Mean cell volume (MCV); Mean cell hemoglobin (MCH); Mean cell hemoglobin concentration (MCHC); Blood urea (BU); Blood urea nitrogen (BUN); Serum creatinine (Sr.cr); Aspartate aminotransferase (SGOT); Alanine aminotransferase (SGPT); Alkaline phosphates (ALP):



Figure 1: Erythematous diffuse maculopapular rash seen on flexor arm and wrist.

lotion. The recommendation from Dermatologist to be reviewed after two weeks from the improvement of rash, The review was made and the patient had severe itchiness, Crotamiton lotion as the combination therapy was added up to mask the itchiness which was due to Permethrin. Eventually the patient prognosis was better.

DISCUSSION

The main stay treatment for the secondary infections caused by scabies is a topical therapy agent.⁶ The secondary infections lesions results from the scratching and the characteristics findings include excoriations, widespread eczematous dermatitis, post inflammatory hyperpigmentation, erythroderma, prurigo nodules and Frank pyoderma.⁷ Topical therapy treatment can get rid of the mite and eliminate symptoms such as the itchiness and treat an infection that has developed. Scabies lesions are often secondarily infected with streptococcus pyogenes and staphylococcus aureus these organism have the potential to cause local soft tissue infection and post streptococcal glomerulonephritis which in turn is a risk factor for development of the end stage renal failure.⁸ The role of the transmission of scabies from person to person is controversial different literature recommends that hot laundering of clothes and bedsheet to prevent infection, Despite of that the most successful treatment approach in endemic infestation is a mass drug administration treatment of the all community members regardless of the infection.⁹

According to the International Alliance for the control of scabies suggest that at the global level scabies is classified as a neglected tropical disease because of its substantial effects on the health and wellbeing of the poorest population.¹⁰

Permethrin is highly effective and generally well tolerated and appeared to be the most effective for scabies treatment. Permethrin acts on the nervous cell membrane of the mite which disrupt the sodium channel current regulates the polarization of the membrane and causes the paralysis and death of the functional neurons.¹¹ On the other hand, Crothamiton is available in the formulation as the cream or lotion and used as the topical scabicide therapy although it is postulated that the mechanism of action is still remain unknown.

Secondary infection occurs mainly at the initial level if scabies is left untreated and caused mainly due to staphylococcus aureus and streptococcus bacteria, However bacterial secondary infection can result in malodorous skin lesions, the plaques have a yellow-to-brown, thick, verrucous aspects,¹² Our patient was administered with 5% permethrin lotion as the topical in combination with the crothamiton to mask the pruritus effect of permethrin during the application and management of the secondary infection was administered with Suspension Co-trimoxazole P.O 4ml (18mg/kg) for Five days.

According to Cochrane review study which evaluated a

randomized trial of scabies treatment concluded that topical permethrin was the most effective agent when treatment failure was used as the outcome measure.¹³ Patients should be reviewed again at the end of one month to ensure that is cured from scabies. This is the length of time taken for lesions to heal and in case where there is inadequate treatment for residual eggs and mites to reach maturity causing symptoms to reappear. Patients can be retreated if necessary in case of the treatment failure.

CONCLUSION

In general scabies infestation is at high risk occurrence with the pediatric population and older patients, This case study emphasize on prevention of scabies by avoiding direct skin-to-skin contact with an infected person or with items such as clothing or bedding used by an infected person. Towards the counselling point the Caregiver representative was counselled that all family members must be treated at the same time to avoid the ping pong effect and was advised that scabicide agent should be applied at bedtime all over the body from head to toes and should be washed off next morning.

ACKNOWLEDGEMENT

Authors greatly appreciate the assistance and Support given by the Health Care Staff of Government Headquarters Hospital.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

ABBREVIATIONS

NO: Number; **I.V:** Intravenous; **P.O:** By Mouth; **ICD₁₀:** International classification of disease, Tenth Edition.

REFERENCES

1. Rashmi S, Amrinder J. K. Three Common Dermatological Disorders in Children (Scabies, Pediculosis and Dermatophytoses). Indian Pediatrics Journal. 2001;38(9):995-1008.
2. Chosidow O. Clinical practices Scabies. N Engl J Med. 2006;354(16):1718-27.
3. Hogan DJ, Schachner L, Tanglertsampam C. Diagnosis and treatment of childhood scabies and pediculosis. Pediatr Clin North Am. 1991;38(4):941-57.
4. Victor L, Mark M. Detection of scabies: A systematic review of diagnostic methods. Can J Infect Dis Med Microbiol. 2011;22(4):143-6.
5. Burkhart CG. Scabies: An epidemiologic reassessment. Ann Int Med. 1983;98(4):498-503.
6. Droogan J. Treatment and prevention of head lice and scabies. Nurs Times. 1999;95(29):44-5.

7. Hay RJ. Scabies and pyoderma--diagnosis and treatment. *Dermatol Ther.* 2009;22(6):466-74.
8. Hoy WE, White AV, Dowling A, *et al.* Post-streptococcal glomerulonephritis is a strong risk factor for chronic kidney disease in later life. *Kidney Int.* 2012;81(10):1026-32.
9. Haar K, Romani L, Filimone R, *et al.* Scabies community prevalence and mass drug administration in two Fijian villages. *Int J Dermatol.* 2014;53(6):739-45.
10. Engelman D, Kiang K, Chosidow O, McCarthy J, Fuller C, Lammie P, *et al.* Toward the global control of human scabies: introducing the International Alliance for the Control of Scabies. *PLoS Neglected Tropical Diseases.* 2013;7(8):21-67.
11. Usha V, Gopalakrishnan NTV. A comparative study of oral ivermectin and topical permethrin cream in the treatment of scabies. *J Am Acad Dermatol.* 2000;42(2 Pt 1):236-40.
12. Johnston GA. Treatment of bullous impetigo and the staphylococcal scalded skin syndrome in infants. *Expert Rev Anti Infect Ther.* 2004;2:439-46.
13. Strong M, Johnstone P. Interventions for treating scabies. *Cochrane Database Syst Rev.* 2007;(3):CD000320.