



# JOURNAL OF DERMATOLOGY RESEARCH AND THERAPY

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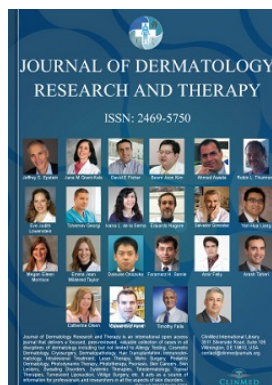
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# Journal of Dermatology Research and Therapy

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## Journal of Dermatology Research and Therapy

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Jeffrey S. Epstein, M.D., FACS, Founder and Director of the Foundation for Hair Restoration, has been in private practice since 1994. He is triple board certified by the American Board of Facial Plastic and Reconstructive Surgery, the American Board of Hair Restoration Surgery, and the American Board of Otolaryngology/Head and Neck Surgery. In addition to his busy clinical practice, where he personally performs all his surgeries in his accredited office facility, he is a Voluntary Clinical Professor at the University of Miami, and Past President of the Florida Society of Facial Plastic and Reconstructive Surgery. He publishes and lectures extensively, [view full biography](#)

#### **Timothy Falla**

Chief Scientific Officer

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Dr. Timothy Falla is the Chief Scientific Officer at Rodan + Fields. For over 25 years Dr. Falla has worked in the discovery and development of prescription drugs, OTC dermatology products and skincare products and has been with Rodan + Fields since 2011. Previously he served as CSO of Helix BioMedix Inc., where he was responsible for introducing innovative technologies into more than 100 dermatological products targeting acne, rosacea, hyperpigmentation, photoaging and inflammation. His work has resulted in more than 30 patents

and patent applications and over 100 peer reviewed publications. Dr. Falla holds a Bachelor of Science in Applied

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### Jane M Grant-Kels

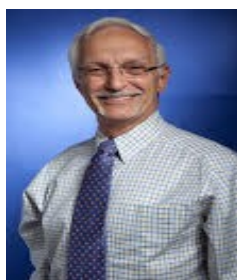
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Dr. Jane M. Grant-Kels is founding chair of the Division and then Department of Dermatology at the University of Connecticut Health Center as well as Professor of Dermatology, Pathology and Pediatrics. She is director of the dermatology residency program which she played a major role in creating in 2007, director of the dermatopathology laboratory and the director of both the Cutaneous Oncology Center and Melanoma Program. She is also Assistant Dean of Clinical Affairs. Dr. Grant-Kels received a BA Degree in 1971 from Smith College and her Medical Degree from Cornell University Medical College in 1974. She trained in pediatrics

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Daniel E. Furst is Professor of Medicine at the University of California (Emeritus), Los Angeles (UCLA), Medical Center, David Geffen School of Medicine, Department of Medicine, Division of Rheumatology. Dr. Furst is also Adjunct Professor at the University of Washington, Seattle Washington and Research Professor at the University of Florence, Florence, Italy. He has part time practices at the Arthritis Associates of Southern California and the Seattle Rheumatology Associates in Seattle Washington. Dr. Furst received his MD from Johns Hopkins University, where he also completed his internship and residency. He completed two fellowships, one in Rheumatology at UCLA Medical Center, and

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David E. Fisher, MD, PhD, a laboratory researcher, clinician and academic, is Chief of the Massachusetts General Hospital Department of Dermatology, Director of the MGH Cutaneous Biology Research Center and Director of the Melanoma Center at MGH. A Professor of Dermatology and of Pediatrics at Harvard Medical School, Fisher came to the MGH from the Dana-Farber Cancer Institute, where he previously directed the Melanoma Program. He obtained undergraduate degrees at Swarthmore College and the Curtis Institute of Music, his MD at Cornell, and PhD at Rockefeller University (labs of Henry Kunkel and Gunter Blobel). He trained clinically in Internal Medicine at [view full biography](#)



**Beom Joon Kim**

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Dr. Beom Joon Kim is a head professor in the Department of Dermatology at Chung-Ang university medical center. He received his medical degree from College of Medicine, Chung-Ang University in Korea. And He was completed Doctorate of Philosophy in 2007 at Dermatology of Chung-Ang University. He has been appointed to be a editorial in many international journals such as Journal of the American Academy of Dermatology and International Journal of Dermatology from 2008 to 2013. Also, He published about 60 SCI leveled papers. In 2007, he received Dr. Paul Janssen Award, Korean Dermatological Association. He was selected as International Health [view full biography](#)



**Ahmad Awada**

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Professor Ahmad Awada studied Medicine at the Universite Libre de Bruxelles (ULB), Belgium. He did a specialisation in Internal Medicine and Medical Oncology at Jules Bordet Institute (under the supervision of Professor Jean Klastersky), in Brussels, until 1992 ('La plus grande distinction'). During his specialisation, he also followed trainings in the clinical development of new therapies and new anticancer drugs, mainly in breast cancer under the supervision of Professor Martine Piccart. To deepen his training, he stayed in the Netherlands (New Drug Development Office, Free University, Amsterdam) and in San Antonio, USA (Institute for Drug Development, under the direction of [view full biography](#))

**Robin L. Thurmond**



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Robin L. Thurmond, Ph.D. is the Early Development Portfolio Leader for Rheumatology and Psoriasis with the Clinical Research group at Janssen Research & Development in La Jolla, CA. Prior to that he was a Research Fellow with the Immunology Drug Discovery group at the same site. Dr. Thurmond's research involves investigation of novel mechanisms of action targeting new anti-inflammatory medicines for diseases such as asthma, atopic dermatitis and rheumatoid arthritis. Dr. Thurmond is a recognized expert in histamine receptors and their role in inflammation with over 90 scientific articles, reviews and book chapters as well as the editor of a

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**Eve Judith Lowenstein**

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Dr. Eve Lowenstein grew up in Israel and Long Island. She graduated with highest honors from Queens College, having majored in Chemistry and literature, religion and philosophy of the Western Tradition. She completed the New York University School of Medicine's Medical Scientist Training Program, where she earned a MS (1992), a PhD (1994) in Cellular and Molecular Biology and her MD (1995). As a graduate student, Dr. Lowenstein made a significant discovery of the gene Grb-2, important in cell signaling and cancer growth. Dr. Lowenstein was Chief of Dermatology at Brookdale University Hospital for over 7 years. She is

[view full biography](#)



**Tchernev Georgi**

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Professor Georgi Tchernev graduated his medical education in 2001 at the American University 'Benjamin Franklin' in West Berlin. Then applied and was approved for a PhD student in the Department of Dermatology, Venereology and Allergology under the leadership of Prof. Dr. Constantin Orfanos and Prof. Dr. Christoph Geilen. During this time he worked in parallel and as an assistant doctor/resident at the University Hospital Benjamin Franklin, Departments of Dermatology, Venereology and Allergology. From 2004 to early 2006, he is resident in the Departments of Dermatology, Venereology, Allergology and Immunology Municipal Hospital Dessau, Academic Teaching Hospital of the University 'Martin Luther'

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### **Ivana L. de la Serna**

Associate Professor

Department of Biochemistry and Cancer Biology

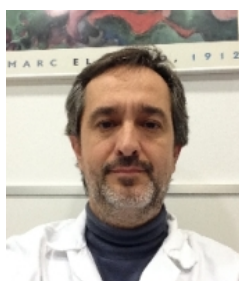
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Dr. Ivana L. de la Serna is an Associate Professor at the University of Toledo College Of Medicine and Life Sciences, Department of Biochemistry and Cancer Biology. Her research interests: In eukaryotes, DNA is packaged into chromatin, the basic unit of which is the nucleosome. SWI or SNF enzymes are multiprotein complexes that alter chromatin structure in an ATP dependent manner and are involved in the regulation of gene expression. Components of the SWI or SNF complex are essential for mouse development and play important roles in several human cancers. To better understand the mechanisms by which SWI or SNF [view full biography](#)



### **Eduardo Nagore**

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Eduardo Nagore, is an Associate professor at the Universidad Catolica of Valencia, Spain. Dermatologist since 1997, received his Ph.D. (in Medical Sciences) from the Universitat de Valencia in 2007. His clinical practice takes place at the Instituto Valenciano de Oncologia, an oncology center where has developed most of his professional career. His research interest and area of expertise is skin cancer, particularly melanoma. His research work has resulted in 160 peer-reviewed papers.



### **Salvador Gonzalez Rodriguez**

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Salvador Gonzalez, accredited Full Professor by the Quality and Accreditation Evaluation Spanish Agency, serves as Associate Professor of Medicine Department at Alcala University in Madrid, Spain and Visiting Faculty Member in the Dermatology Service at the Memorial Sloan-Kettering Cancer Center in New York, USA, and. Before, he also



joined the faculty of the Dermatology Department at Harvard Medical School, Boston for over 10 years. Dr Gonzalez research interests focused on skin cancer chemoprevention, photoprotection and optical diagnoses. His scientific contribution has a hirsch factor of 29, a total number of citations of 2,421 and an accumulated total impact [view full biography](#)



### Yan-Hua Liang

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Yanhua Liang, M.D., Ph.D., Associate Professor in the Department of Dermatology, Nanfang Hospital at Southern Medical University, China, received his Ph.D in Dermatology in 2007. He had his 2-year postdoctoral training at The Jackson Laboratory U.S.A before joining the faculty of Yale University School of Medicine in 2010. He has identified CYLD1 gene as the disease gene of multiple familial trichoepithelioma, and XBP1 as genetic risk factor for vitiligo in Chinese Hans. He has done in-depth research to understand the biological function of SHARPIN. Except for molecular basical studies, he has also developed new biological materials and techniques for transdermal

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### Megan Eileen Morrison

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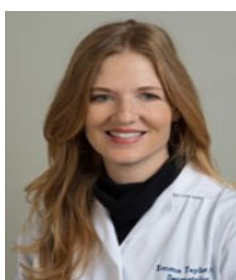
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Megan Morrison is an Assistant Clinical Professor of Dermatology at Michigan State University. Dr. Morrison specializes in Mohs Micrographic Surgery and has been invited to lecture at multiple National and State conferences. Dr. Morrison completed her Residency in Dermatology and Fellowship in Mohs Surgery at St. Joseph Mercy Hospital. Dr. Morrison has published many manuscripts, is a guest editor for multiple journals and has coauthored a book on Occupational Dermatology. Dr. Morrison is presently a member of the American Osteopathic College of Dermatology, the American Academy of Dermatology and the American Society of Mohs Surgeons. Dr. Morrison's research focuses on [view full biography](#)



### Emma Jean Milderred Taylor

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Emma Taylor, M.D. is an Assistant Clinical Professor of Dermatology and Dermatopathology at UCLA. She has been involved in research investigating the beneficial properties of natural products, such as resveratrol in grapes for acne, which resulted in an international patent application. She has published in high impact journals such as Nature, Journal of the American Academy of Dermatology, and Dermatology and Therapy. She has been featured in Science World Report, WebMD, Dermatology Times, Glamour, Huffington Post, Women's Health magazine, Men's Health Magazine, Fox News, and more for her expertise in dermatology. She is currently involved in research relating [view full biography](#)

**Daisuke Onozuka**

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Daisuke Onozuka is an Assistant Professor of the Department of Health Care Administration and Management at the Kyushu University Graduate School of Medical Sciences. Dr. Onozuka received his Ph.D. (in Medical Sciences) from the Kyushu University Graduate School of Medical Sciences, Japan. He was previously in the Department of Public Health and Medical Affairs at Fukuoka Prefectural Government, and Fukuoka Institute of Health and Environmental Sciences. His area of expertise pertain to infectious disease epidemiology and Yusho disease. My research interests cover most of environmental epidemiology. Current substantive research topics of interest, on which my work in collaboration with both [view full biography](#)

**Faramarz H. Samie**

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FaramarzSamie, MD, PhD is the director of Mohs Surgery and Cutaneous Oncology at Dartmouth-Hitchcock Medical Center and an Assistant Professor of Surgery (Dermatology) at the Geisel School of Medicine at Dartmouth College. He has published in multiple journals and also serves on editorial boards related to his field. Dr. Samie received a BS in Bioengineering from Syracuse University and his MD and PhD from SUNY Upstate Medical University. He completed his internship in internal medicine at SUNY Upstate Medical University and residency in dermatology at the University of Rochester. He then completed a fellowship in Mohs surgery and cutaneous oncology at [view full biography](#)

**Amir Feily**

Dermatologist and researcher



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Amir Feily is dermatologist and researcher in Skin and Stem Cell research Center of Tehran University of Medical Sciences, Tehran and Department of Dermatology of Jahrom University of Medical Sciences, Jahrom, Iran. He is the member of International Society of Dermatology, European Academy of Dermatology, Editorial Board of Dermatology Report, Journal of Pigmentary disorder, Aperito Journal of Dermatology and Associated editor of Asian Journal of Dermatology. He is also the reviewer of many dermatologic journals such as British journal of Dermatology, International Journal of Dermatology, JEADV and etc. He has More than 70 high quality papers in Dermatology [view full biography](#)



**Arash Taheri**

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Dr. Taheri is a house staff in Department of Internal Medicine at Wake Forest School of Medicine. He completed his medical school, internship, and dermatology residency at Tehran University of Medical Science. He joined the Center for Dermatology Research at Wake Forest University as a researcher at 2012. Dr. Taheri serves on the editorial board of Journal of Dermatological Treatment and journal of Experimental Dermatology and Clinical Research. His chief clinical and research interests are psoriasis, eczema, autoimmune diseases and the dermatologic manifestations of systemic diseases, wound healing and scar prevention, as well as electrosurgery. He is a researcher and expert in the [view full biography](#)



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Dr. Catherine Olsen is a Senior Research Officer from the Cancer Control Group of the QIMR Berghofer Medical Research Institute and an Honorary Senior Research Fellow with the University of Queensland. Her primary area of research is melanoma and cancers of the skin, focusing on the environmental and genetic factors that cause these cancers.

**Mohamed Hassan**

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Dr. Mohamed Hassan is the leader of the Molecular Tumor Therapy group at 'Institut National de la Sante et de la Recherche Medicale' (INSERM), and Dental Faculty, University of Strasbourg, Strasbourg, France, and Cancer Institute, University of Mississippi Medical Center, Jackson, Mississippi, USA. He was the Group leader of the Molecular Tumor Therapy up to Dec. 2011 at the University Hospital of Duesseldorf, Germany. Currently, He is Group leader of. Dr. Hassan earned his Bachelor of Science in chemistry and Zoology from the University of Zagazig, and earnd BSc, MSc, in Biomedical Science from the University of duesseldorf. Dr. Hassan [view full biography](#)

**Haichang Li**

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Haichang LI, DVM, PhD is an assistant professor in the department of surgery, The Ohio State University Wexner Medical Center. His research focuses on skin wound healing, scarring, and epidermal stem cell. He obtained his Ph.D. degree from Gifu University, Japan. Dr. Li also holds a veterinary medicine (D.V.M) degree from China. Following his Ph.D. studies in developmental biology and genetics, He finished his postdoc training in neuroscience at the Riken-Brain Science Institute of Japan, and Rutgers University-Robert Wood Johnson Medical School of USA. In addition, Dr. Li is also a registered patent agent of US patent and Trademark Office [view full biography](#)

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# Timothy Falla

Timothy Falla  
Chief Scientific Officer  
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San Francisco,  
California, USA

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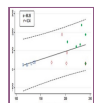
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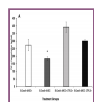
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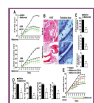
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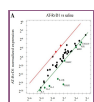
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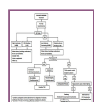
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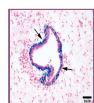




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### Archive

Open Access DOI:10.23937/2469-5750/1510090 (<http://doi.org/10.23937/2469-5750/1510090>)

### Epidemiological, Clinical and Therapeutic Profile of Genodermatoses in Mali (articles/ijdr/journal-of-dermatology-research-and-therapy-ijdr-6-090.php?jid= ijdr)

Karabinta Y, Gassama M, Diakit  B, Guindo B, Keita A, Thiam H, Savan  M, Sylla O, Dicko A, Kanout  A and Faye O

Article Type: Original Article | First Published: October 06, 2020

Long considered as orphan diseases because of their poorly estimated frequency. Genodermatoses are more and more encountered in the world. They have been reported in all ethnic groups, including African blacks. In Mali, ethnic diversity and the frequency of consanguineous marriage justify the interest of this study. To determine the prevalence of genodermatoses in Mali, to describe their clinical and therapeutic aspects. It was a descriptive cross-sectional study of all cases of genodermatoses d...

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## Effect of Sublingual Isolated Transfer Factors in a Case of Therapy Resistant Periungual Warts (articles/ijdr/journal-of-dermatology-research-and-therapy-ijdr-6-089.php?jid= ijdr)

Marcella Nascimento e Silva, MSc, MD and Karla Gonçalves, Pharm.B

Article Type: Case Report | First Published: August 08, 2020

Periungual warts (PW), also known as verruca vulgaris, are caused by the human papilloma virus and appear as skin lesions located around the nailfold but can also affect the nail plate. Unfortunately, some of the therapies mentioned are destructive by nature and can also damage the nail matrix, hyponychium or underlying bone. Here we describe a patient resistant to a range of standard treatments. His clinical condition dramatically improved after use of isolated transfer factors (TF)....

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## New Approachment of Creeping Eruption Management (articles/ijdr/journal-of-dermatology-research-and-therapy-ijdr-6-088.php?jid= ijdr)

Sukmawati Tansil Tan and Yohanes Firmansyah

Article Type: Case Report | First Published: July 23, 2020

Cutaneous larva migrans (CLM) is a zoonotic infestation caused by penetration and migration of filariform larvae into the epidermal layer of skin derived from dogs and cats, namely *Ancylostoma braziliense* and *Ancylostoma caninum*. Infective filariform larvae penetrate the surface of the skin, and migrate beneath the epidermis by leaving prominent linear or serpiginous lesions called 'creeping eruption'. One case was reported of CLM with the main complaint of being very itchy and serpiginosa lesio...

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## CASE REPORT

# New Approachment of Creeping Eruption Management

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## Abstract

Cutaneous larva migrans (CLM) is a zoonotic infestation caused by penetration and migration of filariform larvae into the epidermal layer of skin derived from dogs and cats, namely *Ancylostoma braziliense* and *Ancylostoma caninum*. Infective filariform larvae penetrate the surface of the skin, and migrate beneath the epidermis by leaving prominent linear or serpiginous lesions called 'creeping eruption'. One case was reported of CLM with the main complaint of being very itchy and serpiginous lesion with hyperemic papules. Treatment with pyrantel pamoate and mebendazole is not effective in this case. Patients were given alternative therapies using 5% permethrin cream for 3 days. On the sixth day after 5% permethrin therapy, the lesion underwent total resolution.

## Keywords

Cutaneous larva migrans, Permethrin, Mebendazole

cats [3]. Clinically, cutaneous larval migrans (CLM) are characterized by tortuous erythematous pruritic lesions or serpiginosa with slightly raised or prominent pathways. This disease was first introduced by Lee, a British doctor, in 1874. The term "cutaneous migratory larvae" was coined by Crocker in 1893, and in 1929 the etiology of this disease was known as *Ancylostoma* larvae, so the terminology cutaneous larva migrans (CLM) known as Hookworm-related cutaneous larva migrans (HrCLM) [4].

During these years, the terms HrCLM and creeping eruption are considered to have the same meaning, whereas HrCLM itself describes a disease syndrome while creeping eruption is a clinical picture as a linear reddish lesion (serpiginosa), prominent and migrate in irregular patterns [3].

Cutaneous larva migrans (CLM) are actually self-limited which often heal themselves in 2 to 8 weeks, however, pruritus or itching can be very severe in the course of the disease. The recommended treatment options according to the literature are a single oral dose of albendazole 400 mg in adults, or 400 mg for 3 to 5 days (or 10-15 mg/kg, with a maximum dose of 800 mg daily for pediatric cases) to increase its effectiveness, or a single dose of ivermectin 12 mg for adults (or 150 µg/kg in pediatric cases), or topical application of thiabendazole 10%, three times a day for at least 15 days [1].

Another therapy that is commonly used in Indonesia is pyrantel pamoate at a dose of 10 mg/kg BB which is available in tablet or syrup form. Pirantel pamoate is a common therapy used to eradicate most types of worms. Pirantel pamoate and its derivatives work by causing depolarization and increasing the frequency of

## Introduction

### Background

Cutaneous larva migrans (CLM) is one of the most common skin disorders in the tropics. Cutaneous larval migrans (CLM) is a typical clinical skin infection caused by active penetration of nematode larvae and epidermal migration of it, usually *Ancylostoma braziliense*. The most frequent location is in the lower extremities, especially in the legs. Although this disease can heal itself, further treatment is often needed in many cases [1,2].

The etiology of cutaneous larva migrans (CLM) is a zoonotic infestation caused by penetration and migration of filariform larvae (commonly a type of hookworm) into the epidermal layer of the skin through contact with the feces of infected animals, usually dogs and

impulses in the worm muscles that cause the worms to die. Side effects of pyrantel pamoate are rarely reported and are only mild symptoms such as headaches and nausea [5].

The last few decades have been reported several types of larvae and worms that began to be resistant to anti-helmentic group's benzimidazole (BZ), especially sheep in 1983. In line with the development of treatment and use of antimicrobials that are not controlled, there are also resistance to other drug groups such as levamisole (Lev) and macrolitic lactones (Ivermectin). The Bogor Institute of Agriculture also reports that at present there have been multiple resistance of worms to the anti-helmentic drugs benzimidazole, levamisole and macrolitic lactones. Although there are no data that report the magnitude of resistance occurring in Indonesia, a report in Australia says that 80% of sheep farms have been declared resistant to benzimidazole and levamisole [6].

Until this journal was written, there were no real data regarding the reported incidence of treatment resistance in cases of cutaneous larva migrans (CLM). This literature report aims to report the possibility of starting cases of anthelmintic resistance case in humans.

## Case Report

A boy aged 1.5 years with complaints of itching and redness on the right and left buttocks since 10 days ago (Figure 1). The rash first appeared as a red pimple which the mother thought was an insect bite. After a few days, the red nodule extends to form a long curve, winding, protruding, and elongated. The skin disorder makes the child difficult to sleep and looks constantly scratching the buttocks. History of habits found children like to play with cats around the house and like to sit on the ground.

On physical examination found compos mentis awareness with good general condition. On the surface of the right and left buttocks of the skin there is a picture of the winding lesions (serpiginous papules) with hyper-

emic lesions around the skin (Figure 1). The results of history and physical examination can confirm the conclusion as a cutaneous larvae migrans. Patients were given 125 mg pyrantel pamoate therapy and concoction cream in the form of a 10 gram mometasone cream mixture with 500 mg mebendazole (Figure 1). The patient did not re-control the doctor and returned 1 month later with complaints of more extensive lesions and felt more itching, especially in the last few days (Figure 2). Considering that the child is 1.5-years-old, with thin and smooth skin, and lesions in the area around the anus, it is not possible to do therapy such as Chloretyl spray which has been carried out in CLM cases, so it is considered topical permethrin cream 5% which has been used as a scabicide can be done, with the hope that it can also for larvacid in CLM. Before we give therapy, we have explained to the patient's mother all the above considerations and the patient's mother agreed with the note always communicate with us. Topical permethrin is applied only to the lesion 2 times daily. Finally, we decided to give permethrin cream 5% which is applied twice a day to areas with skin disorders. The patient came back



**Figure 2:** Serpiginosa lesions, 1 month later with patients not re-control for treatment and serpiginosa lesions getting worse.



**Figure 1:** Serpiginosa lesions when patients first come to the clinic.



**Figure 3:** Lesions that start to heal after 3 days of treatment with permethrin cream 5%.



for re-examination 3 days later with complaints that the symptoms had disappeared and only the remnants of the lesions had dried up (Figure 3). The patient is scheduled for final control 3 days later with the lesion having total resolution with the symptoms disappearing and leaving a blackish spot known as hyperpigmentation postinflammatory (Figure 4). The patient returned to control 1 week after the last treatment and confirmed that the infection was completely resolved (Figure 5).

## Discussion

Cutaneous larva migrans (CLM), also known as creeping eruption, is a pruritic serpiginous hyperemic lesion caused by migratory larvae of hookworm through the epidermis. The most common parasites found are *Ancylostoma braziliense* (common in dogs and cats) and *Ancylostoma caninum* (common in dogs). Other larvae that cause CLM are *Uncinaria stenocephala* (dog hookworm), *Bunostomum phlebotomum* (cattle hookworm),

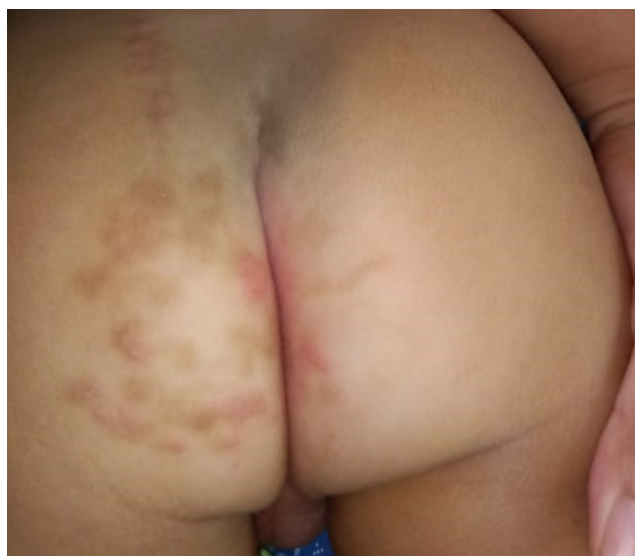
and *Ancylostoma ceylonicum* (dog and cat hookworm). *Ancylostoma caninum* and *Uncinaria stenocephala* have been found in fox [1,4].

The life cycle of cutaneous larva migrans (CLM) is an adult hookworm infesting the intestines of certain host animals. Parasitic eggs are excreted with excrement and contaminate the soil or sand around the sewage. In the optimal environmental conditions, embryonated eggs hatch in the surface layer of the soil within two days into rhabditiform larvae. Rhabditiform larvae live by eating bacteria that are in the soil and/or feces. These rhabditiform larvae mature and shed their skin twice in 5 to 10 days to become infective filariform larvae. Filariform larvae can survive for several weeks to several months in optimal conditions. *Ancylostoma braziliense* larvae, the most common causative larvae with an average size of about 6.5 mm and have a diameter of 0.5 mm [1,4].

Humans are accidental hosts as infection sites. Infection in humans begins when the filariform larvae come in direct contact and penetrate the stratum corneum. Larvae usually live in shallow layers of sand/soil, within a few inches where eggs are stored. Beach or open field is a common reservoir for filariform larvae. Infection in humans usually occurs when humans walk barefoot or with open-type shoes or lying without clothes on sand/soil, especially sandy beaches that have been contaminated by infected dog and cat feces. Larvae can also be found in sand, and loose soil on construction sites, gardens, fields, or under houses. Simultaneous infestation or combination between hookworm species is common [1,4].

The pathophysiology of larval penetration is through proteases and hyaluronidases released by filariform larvae so that filariform larvae can penetrate skin cracks, hair follicles, sweat glands and even intact skin by digesting keratin in the epidermal layer. After penetrating the skin, filariform larvae release their cuticles. Until then, the larvae had no functioning mouth parts. After the cuticle is released, the larvae start migrating for about 7 days. During the process of larval penetration, collagenase deficiency occurs and the larvae are unable to invade the dermis but also cannot reach the blood vessel or lymphatic vessels to reach the intestine and complete their life cycle, as in the right animal host (dog or cat). The process of collagenase deficiency causes the larvae to remain confined to the epidermis. The larvae crawl aimlessly in the epidermis in the serpiginous route at speeds of 2 mm to 2 cm per day. The speed of migration varies depending on larval species, but generally does not exceed 1 cm a day. Larvae usually die in subcutaneous tissue within 2 to 8 weeks without being able to complete their life cycle in the human body. In other words, humans are a dead-end host for larvae. Migration to internal organs is very rarely reported but can occur in rare cases [1,4].

Stinging or tingling can be experienced within 30



**Figure 4:** Total resolution by leaving hyperpigmentation post inflammatory lesions after the use of a permethrin cream 5% for 6 days.



**Figure 5:** The infection was totally resolved.

minutes after the larvae penetrate to the skin followed by the appearance of reddish-brown itchy papules or nonspecific eruptions within a few hours at the site of penetration. The incubation period is around 5 to 15 days, with a range of a few minutes to 165 days. In rare cases, CLM can present with bilateral lesions, in severe cases, a patient can have hundreds of lesions. Shih, et al. reported a patient with CLM who had an eruption lesion similar to popular urticaria after a trip to Thailand. Therefore it is important to know the patient's history of exposure to contaminated sand or soil. Cutaneous larvae migrans (CLM) usually appear with a single dermatological symptom, but in rare cases can be associated with Löffler's syndrome which is characterized by pulmonary infiltrates and peripheral eosinophilia [1,4].

According to the literature, CLM's first-line therapy is ivermectin (150-200 µg/kg body weight) single dose or albendazole (400-800 mg/day) single dose orally for three days with cure rates ranging from 94 to 100 percent. Other safe and effective alternative treatments are topical tiabendazole and topical albendazole topically applied twice a day for 10 days (this drug is not available in all countries). Another method of treatment is invasive methods such as cryotherapy/frozen surgery using liquid nitrogen and ethyl chloride which are no longer recommended [1].

Case reports in the last 2 years, find several alternative options in the treatment of CLM. Case report from Andreas, et al. who used krin ivermetin 1% once a day in male patients aged 20 years with the outcome of symptoms had disappeared within 3 days and only appeared post-inflammatory hyperpigmentation on 14<sup>th</sup> day [7]. The second case report from Fischer, et al. also uses ivermectin 1% cream twice a day in women aged 34 years with total remission results after 2 weeks of use [8]. The third case report is from Francesca, et al. who gave ivermectin 1% cream twice daily for 3 days with a total resolution of seriginous lesions and skin lesions that healed completely on the fifth day [9].

Beyond the success of new treatments with ivermectin cream. Contradictory results come from the case report Veraldi, et al. who treated 14 patients (12 adult patients and 2 pediatric patients) with ivermectin 1% cream twice a day for 2 weeks using occlusion tape. The results of this study concluded that ivermectin 1% cream was not effective in the treatment of CLM and found only 1 case of children who experienced total remission [10].

From the case report above and compare it with tracking case reports that there is a possibility of finding CLM cases that will be difficult to cure with general treatment or in this case treatment with ivermectin, albendazole and their derivatives. This difficult thing may be caused by various factors is the possibility of the mechanism of drug resistance in infectious larvae. This hypothesis was proposed because there have been

gun to appear cases of anti-helmentic resistance of the benzimidazole (BZ) group and other drug classes such as levamisole (Lev) and macrolitic lactones (Ivermectin) since 1983 [3].

In this case report also found ineffective treatment with general regimens namely pyrantel pamoate and mebendazole. Considering that the child is 1.5-years-old, with thin and smooth skin, and lesions in the area around the anus, it is not possible to do therapy such as Chloretyl spray which has been carried out in CLM cases in Indonesia for decades. Another alternative choice in the treatment of CLM according to the literature is oral and topical ivermectin which is very difficult to obtain, especially in Indonesia. Therefore we need another alternative treatment that is better to overcome this. One alternative is to use is permethrin.

Permethrin is a pyrethroid derivative or synthetic used by topical scabicides and pediculicides, ovicidal, with a cure rate of 97-99% for head lice, better tolerated than lindane, available in topical form. Pyrethroids are members of a major class of neurotoxic insecticides. Pyrethroid is a synthetic analog of the natural insecticide ester of chrysanthemum acid (pyrethrin I) and pyretric acid (pyrethrin II), which was originally found in Chrysanthemum cinerifolius flowers. The alcohol portion of pyrethrin has three natural variations giving rise to pyrethrin I and II series, jasmolin I and II, and cinerin I and II [11,12].

Pyrethrin and pyrethroids can affect the peripheral and central nervous system of insects. Pyrethrin and pyrethroid initially stimulate nerve cells to produce repetitive release and eventually cause paralysis. The effect of pyrethroids affecting only a few sodium channels needs to be influenced by pyrethroids to produce repeated release. Modifications made by pyretoridids cause sodium channels to continue to open and deactivate so that excessive sodium reabsorption occurs and causes excessive excitation of nerve cells with the end result of damage to peripheral and central nerve damage to the target (insects or worms) [12].

The above phase is the initial damage caused by pyrethrin and pyrethroids on insects or worms which are actually only disabling (sublethal). The amplitude of the sodium current continues without decreasing until the hyperexcitability level exceeds the cell's capacity to maintain sodium pump activity. Higher lipophilicity provides a better level of paralysis because pyrethroids can penetrate to the target faster [12].

Pyrethroids type I (eg., Permethrin) are generally good paralytic agents because of their ability to induce repeated axon firing, loss of consciousness, coordination and hyperactivity in the target body (insects or worms) followed by more serious paralysis [12].

Type II compounds, characterized by deltamethrin, have a cyano group in the a-benzylic position (carbon-a



of 3-phenoxybenzyl alcohol) and cause a pronounced seizure phase that results in better killing because the depolarization of axons and nerve terminals cannot be restored. The different physiological effects are explained by the fact that the duration of sodium current modified by Type I compounds only lasts tens or hundreds of milliseconds, while the duration of Type II compounds lasts for a few seconds or longer. But type II compounds are not uncommon and are not suitable for treatment in humans [12].

This case report is a stepping stone to uncovering a new paradigm of the possibility that topical permethrin can be used as an alternative treatment for cutaneous larvae migrans (CLM) that cannot be cured with regular treatment.

## Conclusion

Cutaneous larva migrans (CLM) is a zoonotic infestation caused by penetration and migration of filariform larvae into the epidermal layer of skin derived from dogs and cats, namely *Ancylostoma braziliense* and *Ancylostoma caninum*. One case was reported of CLM in a 1.5-year-old child, based on clinical symptoms of itching with serpiginosa papule erythema. Treatment with pyrantel pamoate syrup 125 mg single dose and topical mebendazole for 3 weeks is not effective in this case. Patients were given alternative therapies using permethrin 5% cream twice a day which was applied only to the lesion area. On the third day after therapy the lesions improved and the patient's parents felt very satisfied, the lesions experienced spontaneous resolution after 3 days of application, and all lesions completely disappeared after the 10 days with Hiperpigmentation post-Inflammation.

## References

1. Prickett KA, Ferringer TC (2015) What's eating you? Cutaneous larva migrans. *Cutis* 95: 126-128.
2. Berlin JM, Goldberg SJ, McDonough RD, Leeman DR (2010) Serpiginous eruption on the leg. *J Am Acad Dermatol* 63: 921-922.
3. Nareswari S (2015) Cutaneous larva migrans yang disebabkan cacing tambang hookworm-related cutaneous larva migrans. *J Kedokt Unila* 5: 129-133.
4. Leung AKC, Barankin B, Hon K LE (2017) Cutaneous larva migrans. *Recent Pat Inflamm Allergy Drug Discov* 11: 243-251.
5. Setiabudy R, Nafrialdi, Elysabeth (2017) *Farmakologi dan terapi edisi 6. (6<sup>th</sup> edn)*, Jakarta, Departemen Farmakologi dan Terapeutik FKUI.
6. Haryutiningtyas D (2008) Perkembangan metode deteksi resistensi cacing nematoda gastrointestinal pada ternak. *Wartazoa* 18: 25-33.
7. Gerbig AW, Kempf W (2020) Topical treatment of cutaneous larva migrans with ivermectin 1%. *Int J Dermatol* 59: e21-e22.
8. Fischer S, Nenoff P (2016) Cutaneous larva migrans: Successful topical treatment with ivermectin - A case report. *J Dtsch Dermatol Ges* 14: 622-623.
9. Magri F, Chello C, Pranteda G, Pranteda G (2019) Complete resolution of cutaneous larva migrans with topical ivermectin: A case report. *Dermatol Ther* 32: e12845.
10. Veraldi S, Angileri L, Parducci BA, Nazzaro G (2017) Treatment of hookworm-related cutaneous larva migrans with topical ivermectin. *J Dermatolog Treat* 28: 263.
11. Speare R, Canyon DV, Heukelbach J, Shaalan ES, Permethrin (2017) *Kucers the Use of Antibiotics: A Clinical Review of Antibacterial, Antifungal, Antiparasitic, and Antiviral Drugs*, Seventh Edition.
12. Davies TGE, Field LM, Usherwood PNR, Williamson MS (2007) DDT, pyrethrins, pyrethroids and insect sodium channels. *IUBMB Life* 59: 151-162.