

Contact dermatitis in Sri Lanka – from Kandy to Galle

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It is a great honour and privilege, to deliver the Dr. W D H Perera Memorial Oration of the Sri Lanka College of Dermatologists 2011, especially for me because; Dr. W D H Perera has been my mentor, ever since he introduced me to the world of dermatology in 1982.

In 1982, I had the good fortune to get to work as a dermatology medical officer in his unit at Teaching Hospital, Kandy. It was here that I saw my first case of plant contact dermatitis; a lady with chronic lichenified eczema of exposed area. He told me, that this maybe a case of contact dermatitis to Nattasooriya (wild sunflower). Later, he showed me the plants growing at one end of the ward, and also taught me how to do a patch test. This patient then became the first case of the largest series of plant contact dermatitis to be reported in Sri Lanka at that time, in a study done by Dr. W D H Perera and myself. This study was presented by Dr. W D H Perera at the Sri Lanka Medical Association (SLMA) Annual Academic Sessions in 1985.

Naturally this study was what ignited my interest about contact dermatitis, an interest which has, since 1982 to date, from Kandy to Galle, never ceased, but has continued to grow, leading to many studies in contact dermatitis done by myself and my unit. It has been my pleasure and honor to be continuing in the footsteps of this legend and his interest.

Contact dermatitis in Sri Lanka

Contact dermatitis (CD) is an eczematous reaction resulting from the interaction of an external substance with the skin. These reactions are categorized as either irritant or allergic in origin. The former can affect anyone, but the latter only occurs in the predisposed and is a delayed hypersensitivity reaction. This will recur every time the allergen is encountered. Once acquired, contact sensitivity tends to persist. Some new sensitivities are gained and some are lost. The degree of sensitivity may decline unless boosted by repeated exposure, but with a high initial level of sensitivity it often remains demonstrable even several years later.

The pattern of contract dermatitis in a country depends on the life style of its people, climate and the types of industries found. Sri lanka being a tropical country, with its diverse cultural, religious and local traditions and a variety of agricultural and industrial occupations, it comes as no surprise, that a wide range of contact dermatitis is seen in Sri Lanka.

Recent unpublished data from a study conducted in our unit shows that eczema-dermatitis group accounts for 42.0% of the patients seen. This includes 6.5% contact dermatitis of all patients. The clue to the diagnosis of allergic contact dermatitis in most patients is the distribution of eczematous eruption and the lack of any past history of eczema in childhood. Failure of treatment to control eczema adequately with topical steroid until the contact is removed, is good evidence to aetiology.

Most frequently encountered agents outside the industry are plants, rubber, leather, dyes and glues in foot wear dermatitis, dyes medicaments, metals, cosmetics and perfumes and nail varnish. The most common industrial agents are chromates in cement and leather, rubber, leather, dyes and glues in footwear industry, dyes in textile industry and resins in the plastic industry. The diagnostic clue to an industrial dermatitis is eczema on exposed area of the skin which tends to remit at the weekend or during a holiday.

Patch test is the only tool to confirm contact dermatitis. Patch test results of suspected contact dermatitis patients who presented to the Dermatology Unit Teaching Hospital, Karapitiya, Galle, are shown here.

Chromate	-	35%
Rubber mix	-	20%
Nickel	-	12%
Paraben mix	-	6%
Wool alcohol	-	4%

Chromate heads the list followed by rubber chemicals, nickel, paraben mix and wool alcohol.

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Patch test in situ on the back of the chest of a patient



Positive patch test to single allergen



Positive results for multiple allergens

Plant contact dermatitis

Incidence of plant contact dermatitis depends on the amount of regular and prolonged exposure of the population to plants.

About a third of contact dermatitis is due to plants. Contact dermatitis to various parts of plants, in people who come into contact with plants in their day to day life is well known.

In addition to farmers and gardeners, those in the floral industry, house wives with small outdoor gardens and devotees who pick up flowers are also vulnerable.



Tithonia diversifolia

Plant contact dermatitis to *Tithonia diversifolia*, commonly known as wild sunflower is a study done by Dr. WDH Perera and myself during the latter part of 1982 to 1985. Contact dermatitis caused by plants of the compositae family is well known. *Tithonia diversifolia* a member of the compositae family is a common plant in Sri Lanka. We found this plant was responsible for a severe contact dermatitis among several patients who presented to the skin department in Kandy, during a study done over a period of 2 years and 7 months. It produces air borne type of

contact dermatitis. Allergen is said to be found in the pollen and resin canals of leaves and stem.

Results

There was a total of 77 plant contact dermatitis patients seen during this study. 16 of them were contact dermatitis to *Tithonia diversifolia*. All of them had strong positive patch test results. 9 of them were males and 7 were females. Their ages were ranging from 19 - 76 and duration of symptoms varied from 1 week - 25 years. Exposed areas like face, neck, upper arm, forearm and hands were mainly affected. There were 4 patients with generalized rash.

Clinical picture was an acute exudative phase with erythema, vesiculation, oozing and subcutaneous oedema followed by a chronic phase with pigmentation and lichenification with repeated exposure.

All the patients were exposed to this plant either in their occupation or day to day environment. None of the patients were aware that the disease was related to exposure to plant.

Plant contact dermatitis in devotees

This is an allergic contact dermatitis of hands due to picking up flowers to offer at places of worship. First patient in this study was a lady who presented to a medical unit with finger tip dermatitis. She was referred to us as a suspected case of vasculitis. As these lesions were mainly at finger tips of thumb and index fingers, possibility of contact dermatitis due to something what she was regularly picking up was considered. Detail history elicited that she was in the regular habit of picking up *Ervatamia divaricata* (Wattusudda) belonging to family Apocyanaceae, for her daily prayers. Patch test was performed using extracts of Wattusudda and it became strongly positive. This was the start of a search for cases in this study and beginning of contact dermatitis studies in Galle.



Ervatamia divaricata
Wathusudda

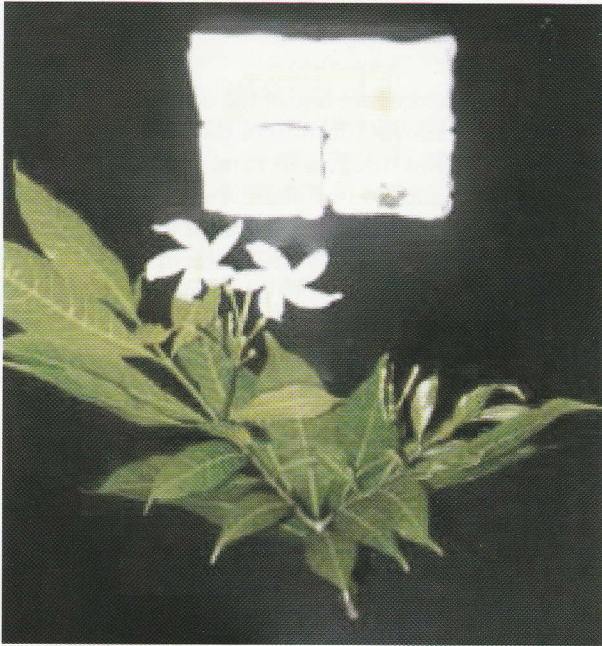


Mirabilis Jalapa
Sepalika

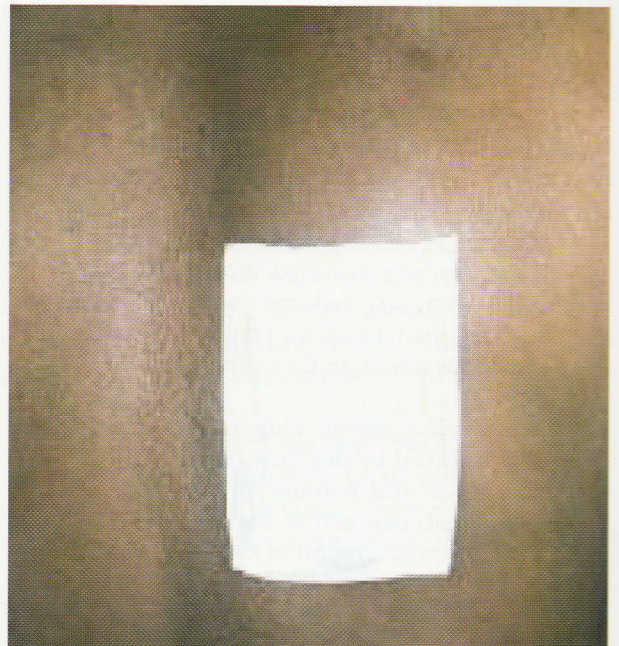


Nyctanthes arbor-tristis
Hendirikka

These 2 slides show how a patch test is done



Extracts from Wathusudda leaves, extracted from flowers, latex and the control are ready to be placed on site of testing.



This shows how the allergens are placed on the back of the chest of a patient.



This is a strongly positive patch test

In this study I have reported 3 different flowers causing contact dermatitis, which has not been reported before.

Results

There were 22 patients who had contact dermatitis to these flowers. 14 were females and 8 were males. Ages ranging from 22 - 83, out of them, 21 were Buddhist devotees and one was a Hindu devotee, who had contact with *Ervatamia divaricata* while making garlands. Out of 21 who had contact with *Ervatamia divaricata* 20 had positive patch test for *Ervatamia divaricata*, while other had positive patch test to *Nyctanthes arbor-tristis* which she had been picking up along with Wathusudda. Person who had contact with Sepalika had positive results for it.

The initial reading of the test is done 48 hours after application to the patient. Final reading is done after 96 hours.

This study was awarded Wilson Peiris Award at the SLMA Annual Academic Session (SLMA AAS) in 2001. This is the 1st ever case report of plant contact dermatitis in devotees, to these flowers.

Walida antidyserterica - Idda in Sinhala, is another flower often picked by devotees, which looks similar to Wathusudda and belongs to the same family. Though I did not come across this flower in my study, Dr. W D H Perera had reported such cases long before my study.

Another patient who came with recurrent hand dermatitis denied any contact with plants. I, along with my team, went on a home visit to the patient's house and collected plant products from his garden for patch testing. Patch test was positive for the flower *Das-Cosmos vitinnas* of compositae family

We had a few patients, who had contact dermatitis to other flowers belonging to the family compositae. There were few ladies, working in the floral industry, who were allergic to orchids. Plants of Begonia family are popular home plants which occasionally produce contact dermatitis.

It is not only flowers, but also fruits can cause plant contact dermatitis. *Carica papaya* (caricaceae) – This is a giant herbaceous plant rather than a tree. Unripe fruits, leaves and stem can cause dermatitis on contact. *Mangifera indica* – Mango; family Anacardiaceae – unripe fruit and stems can cause a chemically induced cauterizing type of reaction with vesicles and ulceration. This reaction is seen in both pickers and consumers.

Anacardium occidentale – cashew, belongs to the same family as mango. This also produces chemically induced dermatitis on contact with unripe fruit and the cashew nut shell. Allergic contact dermatitis is also known to be produced with the shell oil which is produced commercially.

Semicarpus coriacea (badulla) is from same family as mango and cashew. This is a medium sized tree with shiny bark and large thick long leaves. Contact with any part of the tree produces an acute vesicating allergic dermatitis with linear markings. Even the dried leaves and branches are known to produce the dermatitis. The allergic nature of the plant is well known to the rural population and they are known to avoid contact.

Home remedies are one of the main and popular methods of treatment for most of the minor ailments, especially for skin diseases in rural Sri Lanka. Those include the application of plant and plant products. A common example is the use of lime and fenugreek shampoo, for dandruff. The pharmacopeias of ayurvedic medicine which is widely practiced in the country is based on plant and plant products. These forms of therapy have been significant contributory factor to contact dermatitis in Sri Lanka.

One lady who had applied Aththora – Candle Stick (*Cassia alata*) crushed leaves to remove pityriasis versicolor on her face, developed severe dermatitis after exposure to sun. Some patients, who had herbal baths for mild eczema developed severe, wide spread eczema. Another patient developed severe hand dermatitis after preparing herbal medicine.

A toddy tapper presenting to our unit, had developed contact dermatitis to a knife cover made up of dried arecanut leaves. He 1st developed the rash in lower abdomen, where the knife cover was in contact with his body and he changed its position to the back. Only when he developed the rash in the lower back, he realized that, the rash may be due to knife cover and came to me. The knife cover is made up of the thick portion of the arecanut leaf.

Berloque type dermatitis (This is a study conducted in our unit and presented at SLMA AAS 2003)

In addition to contact dermatitis to above plants, phototoxic reactions with pigmentation of the Berloque type may occur on contact with plant extract and fruit juice. This is mostly due to lemon and limes of Rutacea family.

Berloque dermatitis is a phototoxic reaction that occurs following application of perfumed cosmetics containing oil of bergamot to the skin and subsequent exposure to sunlight. Interaction between 5-methoxypsoralen in oil of bergamot and ultraviolet light, results in post inflammatory pigmentation. Configuration of the lesion is usually distinctive. Deep-brown pigmentation follows the pattern formed by the trickle of the droplets of perfume over the skin, from their points of application. The initial inflammation is often mild or sub clinical, therefore most patients, present at the stage of hyper pigmentation. The pigmentation fades after weeks or months.

Berloque Type Dermatitis (BTD) is a type of phyto-photo dermatitis, which occurs following contact with juice, fruits or crushed leaves of citrus family plants and subsequent exposure to sunlight. Similar to Berloque dermatitis here there is an interaction between 5-methoxypsoralen present in citrus plant extracts and UVA.

In a study conducted in our unit and presented at SLMA AAS there were a total of 21,020 patients seen. Out of which 101 (0.48%) had Berloque Type Dermatitis (BTD). Site wise analysis of these showed all except one patient had hand involvement. The exception was a child who had peri-orbital lesions due to spurt of orange peel by another child during play. Some children had contact by carrying the fruits held on to the abdomen after picking up. Most of the ladies had contact while preparing fruit juice. They had linear pigmentation in the finger webs over exposed area. Some had marked bizarre pigmentation and linear pigmentation due to juice dripping down. There were young ladies, who, ended up with severe cosmetic problems, due to application of lime to the face alone or with sandalwood to remove acne and other spots.

There were few who had pigmentation similar to Berloque type dermatitis around mouth due to clove in tooth paste.

The plant *Lawsonia inermis* (marathondi) is usually seen in houses of Moors community. Paste made out of leaves is used for decorating mainly dorsa of hands and feet during festive seasons. They keep the paste on and expose it to sun for about 30 minutes. Once paste is removed you can see the colorful design. But one man ended up with severe dermatitis after preparing the paste.

Hand dermatitis - another study conducted in our unit and presented at Galle Medical Association Annual Academic Session 2003. Two thirds of contact

dermatitis involves the hand. Contact dermatitis typically involves the distal third of the back of the fingers. The thicker palm is less affected. Housewives dermatitis and most occupational dermatitis remain confined to the hands. Vesicular eruptions may mimic pompholyx and may result from nickel, chromate, balsam and plant allergens. We had a few patients who presented in a similar way for cement.

Unusual allergens may be traced by relating the shape and site of the eczematous patches to items handled. There were two jewelers, one kept his hands steady on the table, while doing fine work, in a position, in which only small area in wrist touched the table surface. Whereas other patient steadied his hands by placing the whole medial border of each palm on the surface. They both developed contact dermatitis to varnish, but the site involved differed due to the positioning of their hands while working.

One patient had developed contact dermatitis to the rubber cover of the steering wheel. He had to cover the steering wheel with a few layers of cotton in order to recover completely. Allergic contact dermatitis of the finger tips is seen with onions, garlic, leeks, and ginger in chefs and housewives.

Out of 12,378 patients seen during this study 1470 had contact dermatitis to all causes and 240 had hand dermatitis of contact origin. Most of our patients with contact dermatitis of hands had occupation related dermatitis. Those include cement workers (masons), farmers, gardeners, chefs, jewelers (nickel), health workers, milkers, tea pluckers, photographers and printers.

Non occupational hand dermatitis was seen in housewives, devotees and those who engaged in gardening as a hobby. Patch test results of these patients showed chromate to be the commonest allergen followed by nickel, rubber, wool alcohols etc from European standard series. Plant products in devotees and wood dust in carpenters were also common. Patch testing in some of them showed positive results for multiple allergens.

Severe hand dermatitis due to cement was common among our patients, gardeners, housewives and chefs also had severe hand dermatitis. Hand dermatitis of a tea plucker mainly affects the finger tips similar to devotees. Wood cutter who uses battery powder to mark the log developed contact dermatitis to battery powder mainly affecting palmer aspect of the hands. Milker's dermatitis affects both palmer and dorsal aspects of the hands.

Contact dermatitis to footwear (This study was awarded H. K. T. Fernando Award at the 2002 SLMA Annual Academic Sessions)

Out of 20,970 patients in this study there were 803, who had contact dermatitis to footwear. Contact dermatitis to rubber though commonly seen in industry is also seen in domestic surroundings. EVA is a type of synthetic footwear containing Ethynyl Vynyl Acitate (EVA), which is a filling agent. Local manufacturers used the name EVA for these footwear.

Patch tests results of patients presenting to our unit, suspected to have contact dermatitis to foot wear were analyzed. Because of limited resources patch test was performed only in 50 patients. Out of 50, 20 patients had positive results for rubber constituent. 7 had positive results for chromate and 2 for formaldehyde found in leather. Two (02) were positive for IPPD which is an antidegradant in natural and chloroprene rubber. Three (03) positives were seen with epoxy resin in adhesives. Sixteen (16) patients had negative results as expected. This has been the observation by some other authors too probably because lot of our patients' shoe materials are not represented in available patch test kits. Due to frequent use of two strapped rubber slippers contact dermatitis mainly affecting dorsa of feet along the strap markings with involvement of 1st toe web space and the 1st two toes are a common feature among our patients. When the allergen is more in the sole of the foot wear, dermatitis will be seen in soles of the feet.

Shoe dermatitis is often secondarily infected and may produce id reaction or auto sensitization. Id reaction was observed in about quarter of our patients. Leucoderma was seen as late sequale and is usually due to phenol used in rubber. Secondary generalization was also seen in some patients.

Contact dermatitis to leather products involving wrist due to watch straps, wallets by keeping in pockets, and belts are common. CD due to leather hand bags mainly affect the mid arm in the medial aspect. Contact to elastic and dyes in underwears, producing dermatitis, either in waist or upper chest region, are common among ladies. CD to dyes especially hair dyes is increasingly seen as its use is increasing. It commonly involves the face forehead and the neck. It may produce generalized reaction occasionally.

Contact dermatitis to medicaments (Dermatitis medicamentosa) is not an uncommon problem in Sri Lanka. Involvement of peri orbital region is a common site, is due to eye drops and ointments. Similarly dermatitis around ear is common with eardrops.

Topical application of antibiotic creams such as neomycin alone or in combination with topical steroid is well known to produce dermatitis. Several other leg ulcer dressings and medicaments also produce contact dermatitis among long term users.

Metals causing contact dermatitis is a common problem predominantly affecting females. Nickel and cobalt are constituents of jewelry when it is not solid gold or silver. Diagnosis is suspected by the site involved. Common sites are earlobes with earrings. Wrist with bracelets or watch straps, waist with zips, Jean studs, buckles and safety pins, neck due to necklaces and cheeks with metal spectacle frames are well known to produce contact dermatitis.



Dermatitis due to commode seat. This is more commonly seen in young children with atopic dermatitis

Contact dermatitis to rubber gloves is seen mainly among medical professionals and cleaners. Contact dermatitis to French chalk dust used in gloves was a more common problem than that due to gloves. Cosmetics, perfumes and nail varnish producing contact dermatitis is not a serious problem in Sri Lanka as in western countries. Few whom we see with contact dermatitis to cosmetic and perfumes are affected mainly in the neck, face and wrists. Change in trends of usage of these products may increase dermatitis in future.

Among industrial dermatitis contact dermatitis due to cement is common, due to inadequate protection while at work. This is exclusively seen in males and forearm, hands and feet are frequently affected sites due to direct contact. Airborne type of dermatitis on exposed parts of the body including face is also seen due to cement dust.

Even those who come into contact with dried plants and trees like saw mill workers and carpenters often present with air borne type of contact dermatitis. Workers in textile industry are frequently exposed to cloth dyes and some present with an acute eczematous reaction which responds well to topical steroid but recur immediately after next exposure.

Resins in the plastic industry, causing contact dermatitis among workers are infrequently seen and may be mistaken for some other hand dermatitis.

Reasons for worsening of contact dermatitis are repeated exposure to same allergens, hot and humid conditions in Sri Lanka, working in moist environment like farmers and gardeners, non compliance to treatment, and unawareness about the cause of dermatitis. Especially in cases of footwear dermatitis, change of the footwear to different configuration with same materials and presence of same allergens in other types of footwear are other reasons.

Management

Most important management strategy of contact dermatitis is to avoid or remove contact. Thereafter dermatitis is treated with appropriate topical steroids. Cases of severe contact dermatitis, often require systemic steroids. It is very important to confirm the diagnosis with patch test. We must educate the vulnerable people regarding the common allergens and factors which exacerbate/worsen dermatitis and advise to avoid or minimize the contact.

Contact dermatitis is a common problem in Sri Lanka. Contact dermatitis to footwear is the leading

cause, followed by plants and cement etc. Fragrance, lipstick, cream base and shaving cream are rare causes of contact dermatitis.

'Even within a country the incidence could vary according to the industrial development of the area, pattern of employment, and above all the interest the dermatologists in the area take of contact dermatitis.'

Dr. W D H Perera

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