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## Tinea a concerned spot: An institutional retrospective study

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### Abstract

**Background and Purpose:** Detection of agents responsible for tinea infection may be effective in the Prevention of fungal infections from environmental and animal sources. With this background in mind, in this study, we aimed to identify the distribution of tinea infections in patients from outward patient department of R.B.T.S. Govt., Homoeopathic, Medical College and Hospital, Muzaffarpur, Bihar, between 19<sup>th</sup> Nov. 2018 and 18<sup>th</sup> Nov. 2019.

**Materials and Methods:** In total, 136 patients suspected of skin diseases among them 54 were tinea infected, from the archives of the outward patient department, R.B.T.S. Government Homoeopathic Medical College & Hospital, Muzaffarpur, Bihar.

**Results:** A total of 138 skin related cases during the period of one years were retrieved, of which 54(39.13%) were found to be Tinea Infection. Most prevalent lesion among them was Tinea Corporis i.e., 19(35.18%) followed by Tinea Cruris i.e., 17(31.48%), Tinea Pedis 11(20.37) while the least common was Tinea Capitis i.e., 7(12.96%) cases. They were mostly distributed among 21-40(33.33%) years of age followed by 61-80(12.96%) was the least common. They showed male predominance in all categorized lesions.

**Conclusion:** Because of the new trends of high cosmetics practice, psychological effects and high morbidity in terms of loss of working days and treatment dermatophytic infection is a public health problem. Therefore, to obtain a true representation of the overall disease pattern of the country more such types of studies should be conducted.

**Keywords:** Dermatophytes, fungal infection, predominance

### Introduction

Tinea infections are caused by dermatophytes and are classified by the concerned spot. The on top of the intact widespread infections in prepubertal children are tinea corporis and tinea capitis, whereas adolescents and adults are supplementary liable to develop tinea cruris, tinea pedis, and tinea unguium (onychomycosis). The clinical diagnosis can be untrustworthy for the reason that tinea infections have countless mimics, which can obvious indistinguishable lesions. For illustration, tinea corporis can be baffled with eczema, tinea capitis can be baffled with alopecia areata, and onychomycosis can be baffled with dystrophic toenails from incessant low-level trauma. Physicians must confirm alleged onychomycosis and tinea capitis with a potassium hydroxide preparation or culture. Tinea corporis, tinea cruris, and tinea pedis commonly retort to inexpensive topical agents such as terbinafine cream or butenafine cream, but oral antifungal agents may be indicated for far-reaching disease, abortive topical treatment, immunocompromised patients, or severe moccasin-type tinea pedis. Oral terbinafine is first-line therapy for tinea capitis and onychomycosis because of its tolerability, high cure rate, and low cost. Conversely, kerion should be treated with griseofulvin unless Trichophyton has been renowned as the pathogen. Failure to treat kerion swiftly can lead to scarring and permanent hair loss<sup>[1]</sup>.

Dermatophyte refers to the fungal organisms that cause tinea. Tinea is usually followed by a Latin term that designates the involved site, such as tinea corporis and tinea pedis (Table 1).

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**Table 1:** Fungal Infections of the Skin

<p><b>Dermatophytes</b></p> <p>Tinea corporis (ringworm), includes tinea gladiatorum and tinea faciei</p> <p>Tinea capitis (ringworm of the scalp)</p> <p>Tinea cruris (jock itch)</p> <p>Tinea pedis (athlete's foot)</p> <p>Tinea unguium (onychomycosis)</p> <p>Tinea manuum (commonly presents with "one-hand, two-feet" involvement)</p> <p>Tinea barbae (beard infection in male adolescents and adults)</p> <p>Tinea incognito (altered appearance of dermatophyte infection caused by topical steroids)</p> <p>Candida (yeast) and mold, which may cause onychomycosis or coexist in a dystrophic nail</p> <p>Pityriasis versicolor (formerly tinea versicolor) caused by <i>Malassezia</i> species</p> <p>Uncommon fungal skin infections that involve other organs (e.g., blastomycosis, sporotrichosis)</p>
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Tinea infections can be difficult to diagnose and treat. In one survey, tinea was the skin condition most likely to be misdiagnosed by primary care physicians [2].

#### **Tinea Corporis, Tinea Cruris, Tinea Pedis & Tinea Capitis**

Tinea corporis (ringworm) typically presents as a red, annular, scaly, pruritic patch with central clearing and an active border (Figure 1).



**Fig 1:** Showing red annular lesion

Lesions may be single or multiple and the size generally ranges from 1 to 5 cm, but larger lesions and confluence of lesions can also occur. Tinea corporis may be mistaken for

many other skin disorders, especially eczema, psoriasis, and seborrheic dermatitis (Table 2) [3].

**Table 2:** Different Diagnosis of Tinea Infections

<i>Differential diagnosis</i>	<i>Distinguishing features</i>
<i>Tinea corporis</i> (annular lesions with well-defined, scaly, often reddish margins; commonly pruritic)	
Annular psoriasis	Gray or silver scale; nail pitting; 70% of affected children have family history of psoriasis <sup>2</sup>
Atopic dermatitis	Personal or family history of atopy; less likely to have active border with central clearing; lesions may be lichenified
Erythema multiforme	Target lesions; acute onset; no scale; may have oral lesions
Fixed drug eruption	Dusky; erythematous; usually single, nonscaly lesion; most often triggered by sulfa, acetaminophen, ibuprofen, or antibiotic use
Granuloma annulare	No scale, vesicles, or pustules; nonpruritic; smooth; commonly on dorsum of hands or feet
Lupus erythematosus (subacute cutaneous)	Sun-exposed areas; multiple annular lesions; female-to-male ratio 3:1 <sup>3</sup>
Nummular eczema	More confluent scale; less likely to have central clearing
Pityriasis rosea herald patch	Typically an adolescent with a single lesion on neck, trunk, or proximal extremity; pruritus of herald patch is less common; progression to generalized rash in one to three weeks
Seborrheic dermatitis	Greasy scale on erythematous base with typical distribution involving nasolabial folds, hairline, eyebrows, postauricular folds, chest; annular lesions less common
<i>Tinea cruris</i> (usually occurs in male adolescents and young men; spares scrotum and penis)	
Candidal intertrigo	Involves scrotum; satellite lesions; uniformly red without central clearing
Erythrasma	Red-brown; no active border; coral red fluorescence with a Wood lamp examination
Inverse psoriasis	Red and sharply demarcated; may have other signs of psoriasis such as nail pitting
Seborrheic dermatitis	Greasy scale on erythematous base with typical distribution involving nasolabial folds, hairline, eyebrows, postauricular folds, chest; annular lesions less common
<i>Tinea pedis</i> (rare in prepubertal children; erythema, scale, fissures, maceration; itching between toes extending to sole, borders, and occasionally dorsum of foot; may be accompanied by tinea manuum ["one-hand, two-feet" involvement] or onychomycosis)	
Contact dermatitis	Distribution may match footwear; usually spares interdigital skin
Dyshidrotic eczema	"Tapioca pudding" vesicles on lateral aspects of digits; often involves hands
Foot eczema	May have atopic history; usually spares interdigital skin
Juvenile plantar dermatosis	Shiny taut skin involving great toe, ball of foot, and heel; usually spares interdigital skin
Psoriasis	Involvement of other sites; gray or silver scale; nail pitting; 70% of affected children have family history of psoriasis <sup>2</sup>
<i>Tinea capitis</i> (one or more patches of alopecia, scale, erythema, pustules, tenderness, pruritus, with cervical and suboccipital lymphadenopathy; most common in children of African heritage)	
Alopecia areata	Discrete patches of hair loss with no epidermal changes (i.e., no scale); total loss of hair or fine miniature hair growth; exclamation point hairs; no crusting; no inflammation; possible nail pitting
Atopic dermatitis	Personal history or family history of atopy; less often annular; lymphadenopathy uncommon; alopecia less common
Bacterial scalp abscess	Alopecia less likely; hair pluck is painful
Psoriasis	Gray or silver scale; nail pitting; 70% of affected children have family history of psoriasis <sup>2</sup> ; involvement of other sites
Seborrheic dermatitis	Alopecia uncommon; lymphadenopathy uncommon; greasy scale; typical distribution involving nasolabial folds, hairline, eyebrows, postauricular folds, chest
Trichotillomania	No scale; commonly involves eyelashes and eyebrows; hairs of varying lengths
<i>Onychomycosis</i> (discolored [white, yellow, brown], thickened nail with subungual keratinous debris and possible nail detachment; often starting with great toe but can involve any nail)	
Other nail dystrophies, most commonly associated with repeated low-grade trauma, psoriasis, or lichen planus	Appearance can be indistinguishable from onychomycosis; may have other manifestations of alternate diagnosis

A potassium hydroxide (KOH) preparation is often helpful when the diagnosis is uncertain based on history and visual inspection. Worsening after empiric treatment with a topical steroid should raise the suspicion of a dermatophytes infection. Conversely, if a non-fungal lesion is treated with an antifungal cream, the lesion will likely not improve or will worsen. Cultures are usually not necessary to diagnose

tinea corporis. Skin biopsy with periodic acid–Schiff (PAS) stain may rarely be indicated for atypical or persistent lesions<sup>[4]</sup>.

Tinea cruris (jock itch) most commonly affects adolescent and young adult males, and involves the portion of the upper thigh opposite the scrotum (Figure 2).





**Fig 2:** Showing jock itch on upper thigh.

The scrotum itself is usually spared in tinea cruris, but involved in candidiasis. A Wood lamp examination may be helpful to distinguish tinea from erythrasma because the causative organism of erythrasma (*Corynebacterium minutissimum*) exhibits a coral red fluorescence. However, results of the Wood lamp examination can be falsely negative if the patient has bathed recently. Tinea pedis (athlete's foot) typically involves the skin between the toes, but can spread to the sole, sides, and dorsum of the involved foot (Figure 3).(5)



**Fig 3:** Figure showing wood lamp

The acute form presents with erythema and maceration between the toes, sometimes accompanied by painful vesicles. The more common chronic form is characterized by scaling, peeling, and erythema between the toes; however, it can spread to other areas of the foot. Involvement of the plantar and lateral aspects of the foot with erythema and hyperkeratosis is referred to as the "moccasin pattern" of tinea pedis [6].

Tinea corporis, tinea cruris, and tinea pedis can often be diagnosed based on appearance, but a KOH preparation or culture should be performed when the appearance is atypical [3].

Ringworm of the scalp is not really a worm, but a fungal infection. It gets the name ringworm because the fungus makes circular marks on the skin, often with flat centres and raised borders. Also called Tinea capitis, this infection affects your scalp and hair shafts, causing small patches of itchy, scaly skin. Ringworm is a highly contagious infection that's usually spread through person-to-person contact or by sharing combs, towels, hats, or pillows. Ringworm is most common in children, but can infect a person of any age.

Fungi called dermatophytes cause ringworm of the scalp. Fungi are organisms that thrive on dead tissue, such as fingernails, hair, and the outer layers of your skin. Dermatophytes prefer warmth and moisture, so they thrive on sweaty skin. Overcrowding and poor hygiene increase the spread of ringworm [7].

Ringworm spreads easily, especially among children. You can get ringworm from touching the skin of an infected person. If you use combs, bedding, or other objects that have been used by an infected person, you're also at risk.(8) House pets, such as cats and dogs, can spread ringworm, too. Farm animals like goats, cows, horses, and pigs can also be carriers. However, these animals might not show any signs of infection. The most common symptom of ringworm is itchy patches on the scalp. Sections of hair may break off near the scalp, leaving scaly, red areas or bald spots. You may see black dots where the hair has broken off. Left untreated, these areas can gradually grow and spread [9].

Other symptoms include: brittle hair, painful scalp, swollen lymph nodes & low-grade fever. In more severe cases, you may develop crusty swellings called kerion that drain pus. These can lead to permanent bald spots and scarring. Figure.4 [10]



**Fig 4:** Showing the bald spots

### Homeopathic Medicines for Ringworm Infection

Homeopathy offer tremendous treatment of ringworm infection. The usual medicines help in providing relief from the acute symptoms of itching and burning of ringworm lesions and also eradicating the disease in its entirety. The results are gained through appropriately selected homeopathic remedies. With these medicines, there is no probability of restraint of ringworm infection and it is cured in a for the most part gentle and in proficient way. Homeopathy for ringworm provides a complete cure for ringworm infection. The remedies for ringworm, which are prepared of natural substances and are safe with enormously no side effects, not only help in providing relief from Ringworm symptoms but also work to eradicate the infection from the body. Sepia, Tellurium, Sulphur, Psorinum, Arsenic Album are the remedies which were used for the betterment for the tinea infections simulatenously.

#### 1. Sepia: for ringworm in isolated spots

Sepia is the top natural remedy for Ringworm infection appearing in isolated spots. Although the Ringworm lesion for using Sepia can be noticed on any part of the body, the common location is the bends of the knee and elbow. Sepia gives wonderful results in the treatment of Ringworm

eruptions appearing in bends of elbows or knees. The eruptions are accompanied by itching and scratching, though scratching does not provide any relief. Apart from these symptoms, increased sweating with or without a bad smell may be noticed in persons requiring Sepia. Another peculiar symptom for using Sepia is the recurrence of Ringworm infection in every spring season. Sepia can help in eradicating the tendency to have a Ringworm infection every time the spring season approaches. High sensitivity towards cold air may be found with these symptoms. The mental symptoms of utmost importance while recommending Sepia are irritability and indifferent behavior towards family, friends, and life.

## 2. Tellurium: for ringworm infection with lesions on large part of body

Tellurium is the best natural medicine when Ringworm eruptions cover a large part of the body. Here, the Ringworm lesions join one another and eventually cover a large area of skin. The body is densely covered with intersecting ring lesions. The Ringworm eruptions with clear margins are easily detectable on an increased surface of the skin for using Tellurium. To select remedy Tellurium for treatment of Ringworm infection, the eruptions may appear on the whole body, on the face, or on limbs. The eruptions are marked by excessive itching and stinging sensation. The itching remains present throughout day and night. Cold air seems to worsen the itching. An offensive smell from the area covered with Ringworm eruptions is frequently noticed.

## 3. Sulphur: for intense itching and burning

Sulphur is a very beneficial natural medicine for a large variety of skin diseases. In treating Ringworm lesions also, Sulphur is quite successful. The main complaint described by Ringworm patients that helps in selecting Sulphur is intense itching and burning in eruptions. The person goes on scratching the lesions but it does not seem to provide any relief.

Only the intense burning sensation follows scratching. The itching is heightened at night in most patients who can benefit from Sulphur. It is also of great help in all cases of Ringworm appearing on limbs, scalp, trunk, and face when accompanied by intense itching and burning. Sulphur helps to soothen the itching and burning, followed by the disappearance of eruptions. Sulphur is a deep acting natural remedy that can help in root extraction of Ringworm lesions if used for some time. Sulphur should always be the first Homeopathic choice in those cases of Ringworm that have been suppressed with local medications of varying kinds.

## 4. Psorinum: homeopathic treatment for ringworm on scalp and bends of joints

Psorinum is an excellent skin remedy used for the treatment of Ringworm. Psorinum is mainly used for Ringworm infection of scalp and bends of joints. The eruptions are excessively itching. In most cases, the itching is enhanced in bed due to warmth. Hair loss is the key noticeable feature for using natural remedy Psorinum for Ringworm of the scalp (Tinea Capitis). In a few cases, the hair appears dry, rough and lustreless. Another key symptom is profuse sweating with bad odour throughout the body. This symptom must always be considered. High sensitivity to cold air is another prominent symptom to be noted for using Psorinum. The persons needing Psorinum cannot tolerate cold air even in summer weather.

## 5. Arsenic Album: for scalp ringworm

Arsenic Album is a very beneficial natural remedy for Ringworm of scalp. The scalp shows bald spots with intolerable itching. The scalp is rough and dry. Along with itching, there is an intense burning sensation. The symptoms of itching and burning are most markedly disturbing at night. Arsenic Album helps in all spheres to reduce itching, burning and also helps in regrowth of hair on bald spots. Apart from these local symptoms, a few general symptoms are also to be taken into account in selecting Arsenic Album for Tinea Capitis. The first is acute anxiety. The second is extreme restlessness.

The next is fastidiousness with a desire for clean surroundings and objects to be placed at a proper place. Thirst for a small quantity of water at very short intervals is another important symptom which is significant for selecting Arsenic Album.

## Materials & Method

A retrospective cross-sectional study was conducted on tinea infected patients and the data was retrieved from the archives of the outward patient department, R.B.T.S. Government Homoeopathic Medical College & Hospital, Muzaffarpur, Bihar. Data was analysed according to lesion (Tinea- corporis, cruris, pedis & capitis), age & gender in the year of November 2018 to October 2019.

## Results

A total of 138 skin related cases during the period of one years were retrieved, of which 54(39.13%) were found to be Tinea Infection. Most prevalent lesion among them was Tinea Corporis i.e., 19(35.18%) followed by Tinea Cruris i.e., 17(31.48%), Tinea Pedis 11(20.37) while the least common was Tinea Capitis i.e., 7(12.96%) cases. (Table3, Figure-5)

**Table 3:** Showing the lesion wise distribution

Tinea	54(100%)
Tinea corporis	19(35.18)
Tinea cruris	17(31.48)
Tinea pedis	11(20.37)
Tinea capitis	7(12.96)

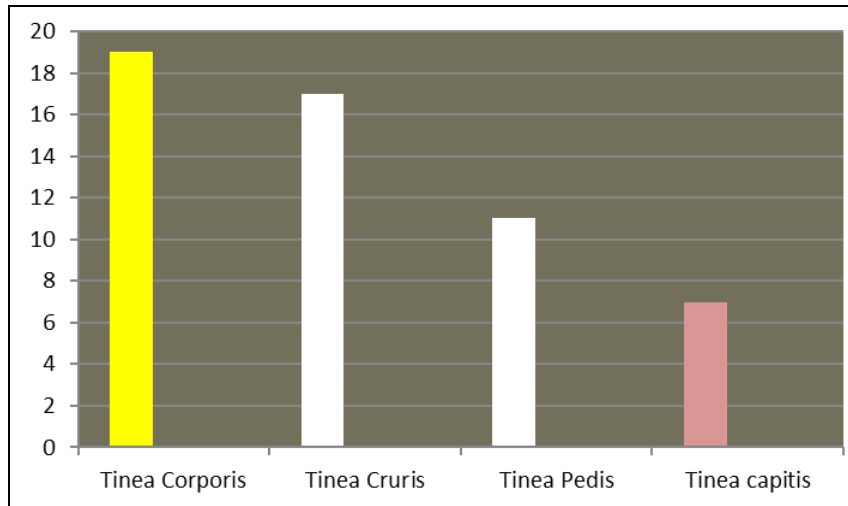


Fig 5: Bar graph representation of the lesion according to their distribution.

They were mostly distributed among 21-40(33.33%) years of age followed by 61-80(12.96%) was the least common. (Table 4, Figure: 6)

Table 4: Showing age wise distribution of lesion

Tinea Infection	Age Group (In Years)			
	0-20 (%)	21-40 (%)	41-60 (%)	61-80 (%)
Tinea Corporis	4(21.05)	7(36.84)	5(26.32)	3(15.79)
Tinea Cruris	3(17.65)	6(35.29)	6(35.29)	2(11.76)
Tinea Pedis	1(9.09)	4(36.36)	4(36.36)	2(18.18)
Tinea Capitis	5(71.43)	1(14.29)	1(14.29)	0(0.00)
Total	13(24.07)	18(33.33)	16(29.63)	7(12.96)

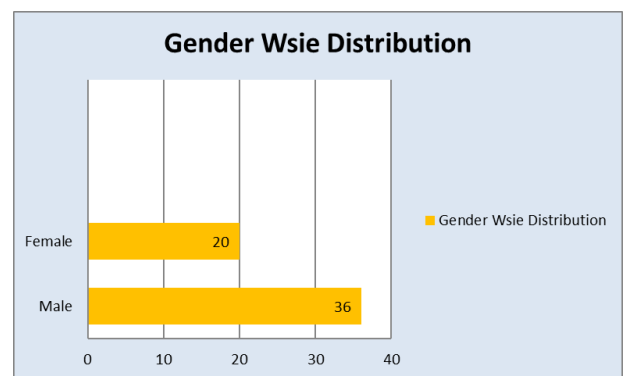


Fig 7: Bar graph showing age distribution of the lesion

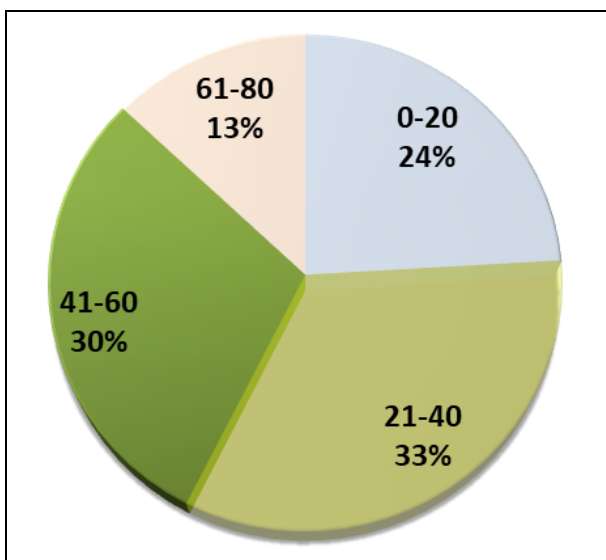


Fig 6: Pie Chart showing age distribution of the lesion

They showed male predominance in all categorized lesions. (Table 5, Figure:7)

Table 5: Showing gender wise distribution of lesion

Tinea Infection	Male (%)	Female (%)
Tinea corporis	12(63.16)	7(36.84)
Tinea cruris	11(64.71)	6(35.29)
Tinea pedis	7(63.64)	4(36.36)
Tinea capitis	4(57.14)	3(42.86)
Total No. of Cases	34(62.96)	20(37.04)

**Discussion**

Ringworm, also known as dermatophytosis, dermatophyte infection, or tinea, is a fungal infection of the skin. “Ringworm” is a misnomer, since a fungus, not a worm, causes the infection. The lesion caused by this infection resembles a worm in the shape of a ring — hence the name [11].

Ringworm is usually specifically used to describe tinea corporis (ringworm of the body), although it can sometimes be used to describe tinea infection in other locations, such as tinea cruris (ringworm of the groin). Ringworm infection can affect both humans and animals. The infection initially appears as red patches on affected areas of the skin and later may spread to other parts of the body. It may affect the scalp, feet, nails, groin, beard, or other areas [12].

In our study tinea infection affects 39.13% patients among different groups of skin diseases from which tinea corporis was the most commonly encountered lesions, followed by tinea cruris, tinea pedis & tinea capitis simultaneously. Parallel study done by Teklebirhan G. *et al.*, [13] in which tinea capitis was the second most commonly encountered skin infection.

The predominant clinical manifestations of dermatophytosis vary considerably in different studies reported in literature. In a study conducted in India, tinea corporis (35.4%) was the predominant clinical condition followed by tinea cruris (16.8%) and tinea capitis (16.7%) [14].

Similar study conducted in Iran between March 2005 and March 2007 by Rassai *et al.* [15] revealed that tinea cruris and tinea corporis were the most common clinical manifestation. A 7- year (1997–2003) survey of

dermatophytoses in Crete, Greece, conducted by Maraki *et al.* [16] revealed that tinea unguium was the predominant clinical manifestation. A study carried out by Devliotou-Panagiotidou *et al.* [17] between 1981 and 1990 in Greece depicted that tinea pedis was the most frequent clinical manifestation. Adefemi *et al.* [18]

In recent study showed that the male predominance, simultaneously earlier studies also indicated a higher prevalence of dermatophytes in females compared to males [14].

Between 21-40 [33.33%] years of age group individuals are most commonly affected by tinea infection in present study, parallel study done Ngwogu AC *et al.* in Eastern Nigeria, the highest prevalence [39%] of infection was observed among males aged 10-12 years, while the lowest prevalence was observed among aged 16-18 years [19].

### Conclusion

Because of the new trends of high cosmetics practice, psychological effects and high morbidity in terms of loss of working days and treatment dermatophytic infection is a public health problem. Therefore, to obtain a true representation of the overall disease pattern of the country more such types of studies should be conducted

### Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

### Highlights

- Kerion
- Dermatophytes infection
- Pruritic patch
- Baffled
- Wood lamp examination

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