



Clinico Epidemiological Study Of Contact Dermatitis To Kumkum

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

ABSTRACT

INTRODUCTION: Kumkum is customarily used by Hindus all over the world for religious beliefs. It is traditionally prepared by combining turmeric with alkali. Due to the recent entry of commercial kumkum in the market, the chemicals used, sensitize the individuals to chronic exposure and produce contact dermatitis.

AIMS AND OBJECTIVES: The aim is to study the age and sex incidence of kumkum dermatitis among patients attending OPD, types of clinical presentation, a clinical pattern of distribution, Association with atopy, association between the duration of exposure to kumkum and the onset of clinical manifestation and to confirm allergic contact dermatitis by doing a patch test.

MATERIALS AD METHODS: The study was conducted in the Department of Dermatology & venereology, Government Mohan Kumara Mangalam Medical college, Salem About 50 cases of contact dermatitis with a history of exposure to kumkum attending the Occupational contact dermatitis outpatient department were included in the study. A written consent, detailed clinical history, routine investigations were done. Patch test was performed using allergens in kumkum and the patient used kumkum.

RESULTS: The incidence of kumkum dermatitis was 4.48% among 33.87% of our OPD. The female to male ratio was 2.8:1 The mean age of distribution was 44.32 years. The mean duration of exposure is 17.64 years. Pigmented contact dermatitis was seen in 80% (40 patients), allergic contact dermatitis in 5 patients (10%), and no visible skin changes in 5 patients (10%). The forehead is the common site involved in 19 patients (38%). Forehead & hair parting in 7 patients (14%), glabella in 6 patients (12%), hair parting & glabella in 6 patients (12%), in 5 patients (10%) had no visible clinical changes. hair parting area only in 2 patients (10%).

CONCLUSION: Our patients were treated symptomatically and showed good clinical improvement. Advised to avoid using kumkum and suggested other alternatives. This study is done to emphasize the need for standardization in commercial kumkum manufacturing and to stress the importance of adding these allergens to India's standard series.

KEY WORDS : Kumkum, kumkum dermatitis, Pigmented contact dermatitis

INTRODUCTION

The term 'Eczema' was derived from the Greek word meaning 'to boil'. It is principally an inflammatory disorder of the skin. It is caused by diverse etiological factors. Clinically they present with a variety of symptoms, first and foremost is itching, progressing to oozing and soreness of the skin. They are characterized by erythema, edema, exudation, and crust formation. Various ranges of skin changes include dryness, scaling, fissuring, and lichenification. [1]The histological picture reflects epidermal changes like spongiosis, hyperkeratosis, and acanthosis, accompanied by dermal lymph histiocytic infiltrates. Dermatitis includes all types of inflammation including eczema, but all dermatitis is not eczema. [2] Cosmetics are defined as "articles intended to be rubbed, poured, sprayed on or sprinkled, introduced into or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance. [3] Cosmetics-induced contact dermatitis is in a rising trend in recent years due to the use of numerous cosmetic products available in the markets such as hair dye, sticker bindi, commercial kumkum, make-up kits, etc.[4] Kumkum is customarily used by Hindus, all over the world, especially in India by married women. Men and children also wear kumkum as a part of religious belief. Contact dermatitis to kumkum occurs at typical sites such as the forehead, glabella, hair parting region, neck, and chest. There is gender predilection towards females.[5] Kumkum is traditionally prepared by combining turmeric with alkali. However, in recent days, this conventional method is not in use. It is manufactured commercially by adding certain chemicals with dyes.[6] These chemicals sensitize the individuals to chronic exposure and produce various types of clinical manifestations including asymptomatic pigmented contact dermatitis to acute irritant contact dermatitis with blister formation.[7] The prevalence of cosmetic dermatitis represents only the tip of the iceberg. Also, the patients who experience certain symptoms such as itching, pigmentation, at the contact site either tend to change the brand or stop using the product which favors a decrease in prevalence. Since cosmetics have infiltrated our lifestyle, contact dermatitis can be prevented by limiting their use and bringing about standardization in manufacturing.[8.]

MATERIALS AD METHODS: The study was conducted in the Department of Dermatology & venereology, Government Mohan Kumara Mangalam Medical college, Salem About 50 cases of contact

dermatitis with a history of exposure to kumkum attending the Occupational contact dermatitis outpatient department were included in the study. A written consent, detailed clinical history, routine investigations were done. Patch test was performed using allergens in kumkum and the patient used Kumkum. Inclusion criteria: Patients with symptoms suggestive of irritant/allergic contact dermatitis who give a history of exposure to kumkum. Patients who can understand the value of the patch test, are ready to give consent, and can come for follow-up are included in the study. Exclusion criteria: Patients with irritant/allergic contact dermatitis without a history of exposure to Kumkum, Age less than 18 years, Pregnancy and lactation, Active disease at the site of the patch test, Recent history of the patch test, Patients who are immunocompromised due to disease or drugs, Patients on steroids (T. Prednisolone or equivalent to >15 mg) for any other medical illness. History of topical steroid application on the back for 1 week before patch test, Patients with sunburn on the back within last 2 weeks. A detailed history of the patients including the age, sex, chief complaints, the type of occupation was noted. Their duration of exposure to kumkum and the duration of complaints were noted. Based on the morphology and distribution of the lesion patients were diagnosed as having either pigmented contact dermatitis, allergic contact dermatitis, irritant contact dermatitis, contact urticaria, or a combination of these were documented. Clinical pattern and the site of distribution of the contact dermatitis were recorded. Any history, symptoms, and signs suggestive of atopy were noted a family history of atopy was also inquired about. A thorough history of similar illnesses and any history of drug intake before and after the onset of lesions were noted. Any history of the topical application over the site of contact dermatitis was recorded. All the patients were subjected to blood investigation namely a complete hemogram, liver function test, renal function test, and absolute eosinophil count. Patients with history and clinical features suggestive of contact dermatitis due to kumkum were patch tested with allergens in kumkum and patient used kumkum.

RESULTS

TABLE 1:AGE AND SEX DISTRIBUTION

Age group	Sex		Number	Total (%)
	Male	Female		
21-30	1	4	5	10%
31-40	1	15	16	36%
41-50	5	8	13	26%
51-60	2	9	11	22%
>60	4	1	5	10%

Table :1 Majority of the patients (29 cases) were in the age group of 31 – 50 years. They formed 62% of the total. The age group of 51 – 60 had 11 patientswith 22 percent. 5 patients each about 10 % were in the age group offewer than 30 years and more than 60 years. The youngest patient in thestudy was a 21years old female and the oldest was 71 years old male.

TABLE 2 INCIDENCE OF ATOPY

Atopy	Number	Percentage
Present	20	40%
Absent	30	60%

Table:2 Among 50 cases, 20 patients (40%) had a history of atopy whereas 30patients (60%) had no history of atopy.

TABLE 3- COMPARISON OF ABSOLUTE EOSINOPHIL COUNTVs ATOPY

AEC>440 cells/cu.mm	Atopy		Nonatopy	
	Number	Percentage	Number	Percentage
Present	14	70	16	53.3%
Absent	6	30	14	46.7%
Total	20	100	30	100%

Table :3 Among 30 patients with a history of nonatopic, an Absolute eosinophil count of >440cells/cu.mm was seen in 16 patients (53.3%) and absent in 14 patients constituting 46.7%. Of 20 patients, with a positive history of atopy 14 patients (70%) had elevated absolute eosinophil count, and in 6 patients (30%) there are no such findings.

TABLE 4 - DURATION OF EXPOSURE

Duration	Without Atopy		With Atopy		Total	
	Number	%	Number	%	number	%
0-10	11	36.67%	8	40%	19	38%
11-20	8	26.67%	7	35%	15	30%
21-30	8	26.67%	3	15%	11	22%
31-40	2	6.66%	1	5%	3	6%
41-50	1	3.33%	0	0	1	2%
>50	0	0	1	5%	1	2%

Table:4 In our study, less than 10 years is the most common duration of exposure, followed by 11 to 30 years. The longest duration of exposure was 52 years and 4 years was the shortest duration of exposure. The mean duration of exposure was 17.64 years.

TABLE: 5 COMPARISON OF SYMPTOMS IN KUMKUMDERMATITIS

Symptoms	Frequency	Percentage
Itching only	6	12%
Pigmentation only	8	16%
Pigmentation+itching	31	62%
Pigmentation+itching+scaling	5	10%
Total	50	100%

Table:5 Pigmentation with itching is the most predominant symptom in our study, occurring in 31/50 patients (62%), pigmentation only is the second most common symptom occurring in 8 patients (16%), 6 patients presented with only itching (12%), pigmentation with itching and scaling is seen in 5patients (10%).

TABLE:6 CLINICAL PRESENTATION OF KUMKUMDERMATITIS

Clinical presentation	Frequency	Percentage
Allergic contact dermatitis	5	10%
Pigmented contact Dermatitis	40	80%
Irritant contact dermatitis	-	-
Contact urticaria	-	-
No visible changes	5	10%

Table :6 Among 50 patients, 40 patients (80%) had pigmented contact dermatitis mostly pigmentation. This was followed by allergic contact dermatitis in 5 patients (10%) and no visible skin changes in 5 patients (10%).

TABLE 7 CLINICAL PATTERN OF KUMKUM DERMATITIS

Clinical pattern	Number	Percentage
No change	5	10%
Forehead only	19	38%
Glabella only	6	12%
Neck only	1	2%
Hair parting only	2	4%
Forehead+glabella	1	2%
Forehead+hairparting	7	14%
Hair parting+glabella	6	12%
Forehead+neck	1	2%
Forehead+chest	1	2%
Glabella+neck	1	2%

Table:7 Among 50 patients, 19 patients (38%) presented with only forehead involvement. Forehead & hair parting involvement in 7 patients (14%), glabella only in 6 patients (12%), hair parting & glabella in 6 patients (12%), 5 patients (10%) had no visible skin lesions but came with complaints of itching. Involvement of hair parting area was only noted in 2 patients (4%).

TABLE 8 – PATCH TEST RESULT

Patch test	Number	Percentage
Positive	28	56%
Negative	22	44%
Total	50	100%

Table:8 Out of 50 patients who were subjected to patch testing, 28 patients showed patch test positivity (56%) and 22 patients were negative for patch test (44%). Among the topics, 45% had a positive patch test whereas, among the nonatopic, 63.3% had a positive patch test. Thus atopy did not significantly influence the propensity for developing contact dermatitis. Thus even patients with a history of nonatopic also should be investigated for eosinophil and absolute eosinophil count. As per grading the patch test reading, among 28 patients who showed positive patch test reaction, grade 1+ (erythema ad papules-non vesicular) was seen in a total of 27 patients (93.1%). This includes 9 atopics (90%) and 18 non-atopic (94.7%). Grade 2+ (erythema, papules, and vesicles-vesicular) was seen in a total of 2 patients (6.9%). This includes 1 patient with atopic history (10%) and 1 patient (5.3%) without atopic history.

TABLE: 9 PATCH TEST POSITIVITY FOR INDIVIDUAL ALLERGEN

Allergen	Number	Percentage
PPD	7	25%
Parabens mix	5	17%
Gallate mix	4	14%
TBH	4	14%
Benzotriazole	5	17%
Thimerosal	8	28%
Kumkum	1	3%

Table:9 In our study, the most common allergen that causes contact dermatitis was found to be thimerosal which is positive in 8 patients (28%) followed by PPD positive in 7 patients (25%), **Parabens mix and benzotriazole** positive in 5 patients (17%), Gallate mix and ter-butyl hydroquinone in 4 patients each (14%) and kumkum positivity in 1 patient (3%).

DISCUSSION

Among the patients in our study who were exposed to kumkum, the meanduration of exposure is 17.64 years. In our study, the shortest duration was 4 years and 52 years was the longest duration of exposure seen in 67-year-old females.[9] This clearly shows that prolonged periods of contact with kumkum are needed for the development of kumkum-induced dermatitis. Though many patients presented late their

onset of symptoms was much earlier. In our study, 40 % had a history of atopy and in 30 % of patients, there is no history of atopy. Suman and Reddy in their study on hand eczema reported a history of atopy in 36% of their patients.[10] Du P et al in their study on occupational contact dermatitis in construction workers in India reported atopy in 37.5%. Also, the percentage of irritant and allergic contact dermatitis was similar in the study group. In our study elevated absolute eosinophil count (

440cells/cu.mm) was seen in 70% of topics and 53.3% of nonatopic.[11] Geier J, et al in their study on nickel allergy in atopic and contact dermatitis reported 60% of the patient with increased eosinophil count. In our study, the most common presentation was pigmented contact dermatitis consisting of 40 patients (80%) followed by allergic contact dermatitis in 5 patients (10%). Another 5 patients (10%) presented without any visible changes.[12] According to an Indian study by Tan *et al*, the commonest type of cosmetic dermatosis was allergic contact dermatitis seen in 29 out of 49 cases (59.2%), followed by irritant contact dermatitis in 15 cases, hyperpigmentation and hypopigmentation in eight and six cases respectively. [13] In our study also pigmented contact dermatitis is the commonest of all other various clinical presentations followed by allergic contact dermatitis. Other types of presentation such as irritant contact dermatitis and contact urticaria were not encountered in our study. Dermatitis localized to the forehead was the most common clinical pattern in our study accounting for about 19 patients (38%) followed by forehead & hair parting involvement in 7 patients (14%), glabella only in 6 patients (12%), hair parting & glabella in 6 patients (12%), 5 patients (10%) had no visible clinical presentation but comes with a history of kumkum dermatitis. Involvement of hair parting area was only noted in 2 patients (10%). [14] Our study shows the forehead as the most common site followed by forehead and hair parting area in females as this is a site where they frequently keep kumkum. In males, forehead is the most common site followed by the chest. [15] Of about 5 patients (10%) who presented without any visible changes, 3 of them showed a positive patch test reaction. These may be the earliest presentation and this throws light on the importance of patch testing in allergic contact dermatitis to diagnose the subclinical cases. [16] Among 50 patients, 28 patients (56%) showed

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positive patch test allergic reaction followed by 22 patients (44%) showing negative patch test reaction. [17] In 28 patients (56%) who showed patch test positivity thimerosal was positive in 8 patients (28%) followed by PPD positive in 7 patients (25%), Parabens mix and benzotriazole positive in 5 patients (17%), Gallate mix and ter-butyl hydroquinone in 4 patients each (14%) and kumkum positivity in 1 patient (3%) [18] This may be related to previous sensitization of thimerosal as a preservative in vaccines, eye drops, and drugs. The second most common is PPD since many patients are sensitized to PPD in hair dye. But, in our study, no patient gives a history of allergy to hair dye. [19,20]

CONCLUSION

The incidence of kumkum dermatitis was 4.48% among 33.87% of patients attending our OPD with a history of contact dermatitis. This indicates a rising trend in the incidence of kumkum-induced dermatitis. This may be due to a shopping list of commercial kumkum available in the market and no standard manufacturing guidelines were followed in both large scale and small scale industries. Pigmented contact dermatitis (PCD) is seen in 1/5th of the patients. Studies show PCD is more common in dark complexion individuals. Since the majority of our population is a wheatish complexion this could be the reason for the increased incidence of pigmentation. Comparing the site, the forehead is the common site followed by the hair parting area. When patch test results are compared, they came positive in 63.3% of non-atopic and 45% of atopic individuals. Thus, the history of nonatopic does not influence the results of patch test reaction. Interpretation of patch test results indicates grade 1+ reaction (erythema and papules-non vesicular) is the commonest. Grade 2+ (erythema, papules, and vesicles-vesicular) is the second commonest.

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