

Frequency of Dermatitis Medicamentosa in patients of Eczema

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ABSTRACT

Aim: To study the frequency of dermatitis medicamentosa in pts of contact eczema with patch test

Study design: Descriptive case series

Setting: Dermatology Department Unit-I, KEMU/ Mayo Hospital, Lahore from 1-1-2011 to 30-6-2011.

Methodology: A total of 100 patients of eczema of either sex, age 12 or more were selected for this study. Patch test was performed after complete resolution of signs & symptoms and after complete withdrawal of drugs. Patch test was done with European baseline & Medicament series. Readings were taken on 48, 72, 120 hours & on 7th day. Test reactions were assessed according to International Contact Dermatitis Research Group criteria. Data analysis was done according to age, sex and positive patch test reactions.

Result: Contact sensitivity to topical medicaments in patients of eczema was found to be 21%. Medicaments in medicament series showed 17% and in baseline series showed 11% results. Most common allergens (medicament) detected were Neomycin sulfate 10%, Bacitracin 9%, & Framycetin sulfate 9%.

Conclusions: Almost one-fifth patients of eczema showed contact sensitivity to medicaments (21%). Commonest allergens detected were Bacitracin, Framycetin sulfate, Neomycin sulfate, Econazole, Nitrofurazone & Clioquinol. Various other allergens were also found but in less frequency. Most common distribution of eczema according to site seen was hand and foot dermatitis followed by only feet and only leg dermatitis. Patch test should be performed in all patients of eczema who do not respond to topical medicines or have a chronic or recalcitrant history.

Key words: Contact Eczema, Dermatitis Medicamentosa, Neomycin, Bacitracin.

INTRODUCTION

Contact dermatitis is inflammation of the skin induced by chemicals that damage the skin directly (irritant contact dermatitis) or by specific sensitivity to allergens (allergic contact dermatitis)¹. Allergic contact dermatitis is induced by a delayed type hypersensitivity response to exogenous agents¹. Langerhans cells pick up the antigens (haptens) and present them to T-helper lymphocytes, which become sensitized. These helper cells multiply & circulate in blood vessels as memory cells. When these memory cells encounter the antigen again, they sensitize the skin to these antigens². Clinically it is characterized by erythema, edema & vesiculation and oozing. It may also presents as a local skin reaction, eczema, urticaria, hyperpigmentation, hypopigmentation and various other forms^{1,2}. Commonly involved sites are lower legs, anogenital area, burn site, pressure sores, sites of trauma, scalp, face, eyelid, hands & feet³. Allergens are extremely varied & may be non-protein in nature. Around 4,350 allergens have been reported till date to cause allergic contact dermatitis⁴.

supplied in syringes with petrolatum as a vehicle & are put into IQ chambers (1-25 µl of the substance). For water-based allergen, a filter paper strip is kept in the chamber on which a small amount of allergen is placed just before application. Upto ten test chambers are present on one hypoallergenic adhesive paper patch. The completed patch is fixed to the skin usually on the site of upper back⁶. Excessive sweating & bathing should be avoided during this time⁷. Patient education regarding patch test procedure should be done by giving written & verbal instructions.⁸ Reading is taken after 48, 72, 120 hours & finally on the & 7th day⁹. The results are interpreted according to criteria set by International Contact Dermatitis Research Group (ICDRG)¹⁰.

Medicaments are the agents used for treatment of various skin diseases.¹¹ Allergic contact dermatitis due to topically applied medicaments is a common complication with an increased prevalence in older age (70 years)¹². An overall incidence is as high as 40-90%¹³. But it varies from country to country and according to local prescribing habits¹³. Commonly used medicaments are included in standard patch test series or tested separately as medicament series¹³. Medicaments associated with allergic contact dermatitis include topical antibiotics, antiseptics, antivirals, antimycotics, antihistamines, nonsteroidal anti-inflammatory drugs, anesthetics &

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Patch test is a definitive tool for diagnosing the cause of allergic contact dermatitis⁵. Allergens are

corticosteroids. Topical drugs used by the patients are also included in patch testing¹⁴. In a retrospective study of 4000 patients with eczema done in 5 European clinics with a series of medicaments, reported that 14% develop relevant dermatitis medicamentosa¹⁵.

MATERIAL AND METHODS

The study was conducted in out and inpatient department of dermatology, King Edward Medical College/ Mayo Hospital, Lahore & the study protocol was approved by institutional ethical and research committee. A total number of 100 Patients with either sex and age >12 years diagnosed cases of eczema were included in our study.

Patient with acute dermatitis, applying topical steroid, oral antihistamine & immunosuppressive drugs were excluded from the study. Pregnant female and patient suffering from any co-existing dermatological or systemic diseases were also omitted from our study.

Written informed consent was taken prior to the enrollment and patient identity was kept confidential. Demographic characteristics like age, sex & address were recorded on pre-designed proforma. Patch testing was performed a fortnight after complete resolution of signs and symptoms after complete withdrawal of the drugs. The patch test was done with allergens of Medicaments series & European Baseline series. The patches were applied over the upper back & covered with transpore tape 3M. The patients were advised to refrain from exposing patch test area to excess moisture or sweat and avoid strenuous exercise which could dislodge the patches. Patients exhibiting side effects like erythema, pruritus, burning or angry back syndrome were excluded from the study and treated accordingly. Patches were removed after 48 hours. Sites were marked with a hypoallergenic skin marker. At 48 hours, results were recorded after tape erythema settled. A second reading was done at 72 hours and third reading at 120 hours. A final reading was taken on the 7th day. The results of patch testing were interpreted as according to the International Contact Dermatitis Research Group Criteria¹⁰ to determine the frequency of dermatitis medicamentosa.

The data were entered into SPSS computer version 11 for analysis. Study variables included age, sex and positive patch results. The age being quantitative variable was expressed as Mean±SD. The sex and causative drugs being qualitative variables were expressed as frequency and percentages.

RESULTS

It was a descriptive study. A total of 100 patients, diagnosed as eczema were assessed for dermatitis medicamentosa. There were 37(37%) males and 63(63%) females with a ratio of 1:1.70. Mean age of the patients was 31.29±14.86 years with a range of 12 to 71 years. Mean age of male patients was 31.65±15.67 years and that of female was 31.08±14.49 years. There were 33(33%) cases of age range 12-20 years, 26(26%) between 21-30 years, 20(20%) of 31-40 years, 9(9%) from 41-50 years, 6(6%) with 51-60 years and 6(6%) were aged >60 years. According to distribution of eczema, feet and hands were involved together in 31(31%) patients. Only feet were involved in 21(21%) patients. The eczema was localized to hands only in 16(16%) cases. Feet & legs (combined) were affected in 10 (10%) patients. Eczema on legs only was observed in 8(8%) patients. Feet, legs & arms were involved in 3(3%) patients. Arms with face and feet with hands & arms were seen in 2 patients each. Other distribution sites of eczema were seen in one patient each like face and hand, face and neck, etc.

Out of 100 patients tested, 21% showed contact sensitivity to various medicaments. Contact dermatitis to topical drugs seen in males was 42.85% while in females it was 57.14% (Table 1). Maximum number of positive patients was in age group 21-30 years that was 6%. A total of 14% of patients showed positive results with age range 12-40 years. According to European baseline series (ESS), there were 11(11%) patients who were allergic to medicaments i.e. Neomycin 7(64%), Clioquinol 1(9%), Neomycin+Paraben mix 2(18%) and Neomycin + wool alcohol 1(9%). The commonest allergen seen was neomycin i.e., 7% (Table 2). According to medicament series (MS), 17(17%) patients were found allergic out of which 6(35.3%) were males and 11(64.7%) females. The most common type of allergen was Framycetin Sulfate i.e., 9(32.2%) and Bacitracin that was seen in 9 (32.2%) of the patients. Nitrofurazone was seen in 3(10.7%) patients, while Econazole nitrate, Caine Mix III and Miconazole were seen in 2(6.9%) patients. Caine Mix IV was seen in only 1% patient (Table 3). Moreover, single allergen sensitivity is found in 15 patients, two allergens were noted in 11 patients and three allergens were seen in only 2 patients.

Table1: Frequency of patients showing positive sensitivity with topical medicament (n=100)

Gender	n	%age
Male	9	42.86
Female	12	57.14

Table 2: Frequency of positive allergy with European baseline series (n=100)

Allergic	Male	Female	Total
Clioquinol	1(100%)	0	1%
Neomycin sulfate	3 (42.9%)	4(57.1%)	7%
Neomycin & Paraben mix	1 (50%)	1(50%)	2%
Neomycin & wool alcohol	0	1(100%)	1%
Non allergic	32(35.96%)	57(64.04%)	89%

Table 8: Frequency of sensitivity to allergens of medicament series (n=100)

Allergens	n	n=100	Allergen
Bacitracin	9	9%	32.2%
Framycetin Sulfate	9	9%	32.2%
Nitrofurazone	3	3%	10.7%
Caine Mix III	2	2%	7.1%
Miconazole	2	2%	7.1%
Econazole Nitrate	2	2%	7.1%
Caine Mix IV	1	1%	3.6%

DISCUSSION

Allergic contact dermatitis is a delayed type of hypersensitivity reaction. The prevalence and incidence of contact allergy varies in different population groups according to the exposure to allergens. The overall prevalence of contact allergy is around 26-40% in adults. Allergic contact dermatitis to topical medicaments is not uncommon in patients of eczema. Hypersensitivity to a drug depends upon its allergic potential & frequency of its usage. Topical drugs are sometimes used without any consideration owing to the popular belief that they have few adverse effects. Thus, the incidence of sensitivity to various drugs is likely to differ in different parts of the world¹⁶.

In our study, contact eczema was commonly seen in females than males with a ratio of 1.7:1. Incidence & prevalence according to gender varies in different studies. A study conducted by Goh¹⁶ et al calculated female to male ratio as 1:0.02. Another study conducted by Lim¹⁷ et al in Singapore calculated a ratio of 1.1:1. Lazzarini¹⁸ et al found a ratio of 1.3:1. The reason for greater preponderance of females is due to the greater number of female population all over the world as they are more conscious about their disease due to cultural & social norms and have more exposure to different over-the-counter medicines. The mean age of male and female patients was almost the same in our study, which is comparable to the study conducted by Goh CL¹⁶. In our study, 14% patients showed positive results with aged <40 years which was comparable with study conducted by Green CM¹² showing 14.8% of same age group. However, it also showed an increased incidence with advancing age.

In our study, the overall sensitivity to medicaments was 21% that varies in different studies according to their exposure to topical drugs. Goh¹⁶ et al concluded a 22.5% sensitivity that is

comparable to our study. Similarly another study by Green CM¹² determined 20.6% medicament sensitivity. Bajaj⁵ in 2007 found 10% contact dermatitis to topical drugs that was seen as the second most common cause in foot dermatitis. It differs from our findings as they used Indian Standard Series in the general population. Another study conducted in Singapore by Goh¹⁹ showed 18% of patients having medicament sensitivity to one or more allergens. Similarly, Bandmann¹⁵ found 14% relevant medicament dermatitis that was one fifth of contact eczema.

The most common allergen (Medicament) found in our patients with Medicament series was Bacitracin & Framycetin sulphate whereas in European Standard Series was Neomycin sulphate which varies in different studies. Zug KA²⁰ found Bacitracin sensitivity around 9.2% & Neomycin 10% that is comparable to our study.

Patch testing with medicament series showed 17% contact sensitivity with most common allergen being Bacitracin, Framycetin, Nitrofurazone and topical anesthetic or antifungals were the next to follow. Bacitracin sensitivity was mostly found in leg eczema or foot dermatitis. A study by Gupta SC²¹ et al found bacitracin sensitivity at 8.5% which is comparable to our study. In same study, Framycetin showed 16.7% result in contrast to ours. Framycetin sensitivity is less common nowadays as it mostly occurs due to cross sensitization with neomycin due to their similar structure. Saap²² et al showed 24% of bacitracin sensitivity that is in contrast to ours as they included only patients of leg eczema whereas we conducted our study in patients with various sites of eczema. Another study by Hossain MM² documented 4% bacitracin as a well-known allergen for dermatitis medicamentosa. Gupta²¹ et al found Nitrofurazone sensitivity at 36.2%. Bajaj et al⁵ documented 6% Nitrofurazone allergy which is in contrast to our study as Nitrofurazone usage has declined over the years but it still contributes to patch test positivity due to over-the-counter use of bandages or ointments. Another retrospective study showed 8% Nitrofurazone sensitivity¹⁸, while Goh CL¹⁹ showed only 1% sensitivity. In the same study, 1.3% allergy with Caine mix III was seen which is comparable to our study. Allen²³ et al found 1.6% of benzocaine sensitivity which is one of the content of Caine mix III almost same figure as in our study (2%). Same results were found by Bandmann HJ¹⁵. In addition to above, contact sensitivity to antifungals was also seen in our study with Miconazole and Econazole that was 2% respectively each.

According to European baseline series, we found 10% Neomycin sensitivity, Clioquinol 2%, Paraben mix 2% and Wool Alcohol 1%. Neomycin

has been found as the most common sensitizer in most of the studies conducted. Bajaj AK⁵ found a Neomycin 7%, which was almost same as our results. Zug KA²⁰ found 10% of neomycin sensitivity in contact dermatitis clinic in 2006. Lim JT found 6.9% of neomycin sensitivity. The study done at Mayo Hospital by Nadeem²⁴ et al showed a 14% of Neomycin sensitivity in general population. Goh CL¹⁶ found 4.3% of Clioquinol and 2.7% of wool alcohol sensitivities that was on a little higher side as compared to ours. Morris²⁵ found 0.3% sensitivity to Clioquinol.

Most of the patients in our study were suffering from hand and feet dermatitis (31%) whereas only feet and only leg dermatitis was second most common 21% and 18% respectively. Most cases of medicament sensitivity were found in leg & feet and few in hand & feet variety.

Results of our study showed that medicament dermatitis is a frequent cause for precipitating eczema particularly on the leg, feet or hand and most patients are unaware of their sensitivities to topical medicines. Topical medicines are frequently being used in dermatology practice that causes hypersensitivities, so it is important to evaluate them. Possibility of dermatitis medicamentosa should be suspected in acute and chronic eczema patients not responding to treatment. Patch test is a valuable tool for diagnosing these sensitivities and may help in improving the patient's physical and mental well being. Assessing the sensitivities & educating the patients to avoid these drugs can reduce risk of contact dermatitis to medicaments.

CONCLUSION

Patch test should be done in all patients of eczema who are not responding to treatment or have a recalcitrant chronic course or a history of application of multiple topical drugs in order to evaluate the causative allergen (medicament). Various topical medicaments are used in dermatological practice in cases of eczema or non-eczematous disorders regularly and many patients develop sensitivity to them and remain unaware of this allergy that makes their condition resistant and non-responding. This study concluded that topical medicament is one of the important and neglected causes of contact eczema which can be detected by patch testing. 21% of patients showed positive sensitivity to medicaments. Females are more affected than males. Commonest allergen was found to be Neomycin sulfate, Bacitracin and Framycetin sulfate. However, multi-center studies including large number of patients are needed to attain more knowledge and to elucidate further

problems regarding dermatitis medicamentosa in our society.

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