



Results of Patch-Tests from Santa Casa de Belo Horizonte Dermatology Clinic, Belo Horizonte, Brazil, from 2003 to 2010 *

Resultados de Testes de Contato da Clínica Dermatológica da Santa Casa de Belo Horizonte, Belo Horizonte, Brasil, de 2003 a 2010

Dulcilea Ferraz Rodrigues¹
Jackson Machado Pinto³
Ana Cristina Franco Fulgêncio²

Daniela Rezende Neves²
Marcos Felipe Fonseca Alves²

Abstract: This Dermatology Clinic tests referred patients who have suspected allergic contact dermatitis. The patch-test results (1406 patients) from July 1st, 2003 to June 30th, 2010 will be reported and compared to the data from the Brazilian Contact Dermatitis Study Group (GBEDC). A standardized patch test (30 allergens) was used in all of these patients. Depending on the complaint and suspected allergen another battery was also used (cosmetic battery). The most frequent allergens of Brazilian Standard Patch Test Series and Cosmetic Brazilian Standard Patch Test Series were nickel and tosylamide formaldehyde resin, respectively. Allergic contact dermatitis was the final diagnosis in 58.2%. Studies about allergen frequency may enable the performance of prevention programmes.

Keywords: Dermatitis, allergic contact dermatitis, contact; Patch tests; Skin tests

Resumo: Esta Clínica Dermatológica realiza testes de contato em pacientes encaminhados com suspeita de dermatite alérgica de contato. Os resultados de testes de contato (1406 pacientes), realizados no período de 1/07/2003 a 30/06/2010, serão descritos e comparados aos dados do Grupo Brasileiro de Estudo em Dermatite de Contato. Uma bateria de teste de contato padronizada (30 alérgenos) foi usada em todos esses pacientes. Dependendo da queixa e do alérgeno suspeito, outra bateria (cosméticos) foi testada. Os alérgenos mais frequentes das Baterias Padrão e Cosméticos foram níquel e resina-tonsilamida formaldeído, respectivamente. Dermatite alérgica de contato foi o diagnóstico final em 58.2%. Estudos sobre frequência de alérgenos podem viabilizar programas preventivos.

Palavras-chave: Dermatite alérgica de contato; Dermatite de contato; Testes cutâneos; Testes do emplastro

Patch-testing is the most efficient method to confirm the causative allergen of Allergic Contact Dermatitis.¹

This is a retrospective, observational descriptive study of a case series of evaluated results of patch tests of 1406 patients who had suspected allergic contact dermatitis from July 1st, 2003 to June 30th, 2010. All the results of patch tests performed since the beginning of the activities of this ambulatory were included in this study.

The materials utilized were: Brazilian Standard Patch Test Series, Brazilian Cosmetic Standard Patch Test Series (FDA-Allergenic, Brazil), Finn Chambers on Scanpor tapes. Test procedures and readings were conducted in accordance with international recommendations with readings at 48 and 96 hours.

Descriptive and analytic statistics were performed with Epi Info and the software SPSS 15.0, respectively. The chi-square test was used for comparison of proportions. A significance level of 0.05 was used for all analysis.

Received on 21.12.2011.

Approved by the Advisory Board and accepted for publication on 20.03.2012.

* Study carried out at the Dermatologic Clinic of the Charity Hospital of Belo Horizonte (Santa Casa de Misericórdia de Belo Horizonte) – Belo Horizonte - MG, Brazil.

Conflict of interest: None

Financial funding: None

¹ MD, dermatologist – Preceptor at the Dermatologic Clinic of the Charity Hospital of Belo Horizonte (Santa Casa de Misericórdia de Belo Horizonte) – Belo Horizonte - MG, Brazil

² MD, dermatologist – Private Clinic – Belo Horizonte - MG, Brazil

³ PhD in Medicine – Head of the Dermatologic Clinic of the Charity Hospital of Belo Horizonte (Santa Casa de Misericórdia de Belo Horizonte) and of the Dermatology Discipline, School of Medicine of Minas Gerais (Faculdade de Ciências Médicas de Minas Gerais - FCMMG) – Belo Horizonte - MG, Brazil.

The patch-tests were carried out predominantly in females (69.7%). Mean age: 42 years (StDev16). The most frequent age group: 40-49 (21.6%). Time of evolution before the patch-test performance: one-five years. History of atopy: 34.1%. Among patients showing positive tests and those showing negative tests, 33.4% and 35.4% had history of atopy, respectively. Most common dermatitis sites: hands (44.7%), head (44.5%), forearms (36.3%), followed by trunk, feet and neck. Most of the tested patients had occupations related to house cleaning, student, office work, construction work, were retired or had no occupation, in decreasing order of frequency.

The Brazilian Standard Series was tested alone in 614 (43.7%) patients and along with the Brazilian Cosmetic Standard Series in 792 (56.3%) patients.

Among the 1406 patients, 908 (64.58%) had at least one positive test. Considering the Brazilian Standard Series, 883 (62.8%) patients had at least one positive test. Considering the Cosmetic Series (792 patients), 121 patients (15.3%) had at least one positive test.

The 12 most frequent allergens of the Brazilian Standard Series were nickel sulfate, thimerosal, potassium dichromate, p-phenylenediamine, cobalt chloride, fragrance mix, neomycin, Myroxylon pereirae, formaldehyde, ethylenediamine, PPD mix, carba mix and the least frequent allergens were lanolin and parater-tiary butylphenol (Table1). The most frequent allergen of the Cosmetic Screening was tosylamide formaldehyde resin (10.4%) (Table 2).

89.8% of the positive patch-test results were considered relevant. Allergic contact dermatitis was

TABLE 1: Frequencies of Positive Reactions to Brazilian Standard Screening (n= 1406)

Substances/concentration/vehicle	Frequency	Percentage
Nickel sulfate 5.0% pet*	442	31.4
Thimerosal 0.05% pet	207	14.7
Potassium dichromate 0.5% pet	114	8.1
para-Phenylenediamine 1.0 pet	99	7.0
Cobalt chloride 1.0% pet	97	6.9
Fragrance mix 7.0% pet	94	6.7
Neomycin 20.0% pet	88	6.3
Myroxylon pereirae 25.0% pet	72	5.1
Formaldehyde 1.0 aq**	72	5.1
Ethylenediamine 1.0 pet	67	4.8
PPD mix 0.4% pet	60	4.3
Carba mix 3.0 pet	40	2.8
Thiuram mix 1.0% pet	37	2.6
Colophony 20.0% pet	30	2.1
Hydroquinone 1.0% pet	25	1.8
Paraben mix 15.0% pet	22	1.6
Kathon CG 0.5% pet	20	1.4
Nitrofurazone 1.0% pet	19	1.4
Quaternium-15 0.5% pet	19	1.4
Promethazine 1.0% pet	17	1.2
Benzocaine 5.0% pet	16	1.1
Quinoline mix 6.0% pet	14	1.0
Mercapto mix 2.0% pet	14	1.0
Epoxy resin 1.0% pet	12	0.9
Turpentine 10.0% pet	11	0.8
Irgasan 1.0% pet	11	0.8
Propylene glycol 10.0% pet	10	0.7
Antraquinone 2.0% pet	07	0.5
p-tert-Butylphenol 1.0% pet	06	0.4
Lanolin 30.0% pet	06	0.4

*pet=petrolatum; **aq=Aqueous

Mix composition: PPD mix (N-isopropyl, N-phenyl, paraphenylenediamine, N-N-diphenyl-, paraphenylenediamine); Kathon CG (methylchloroisothiazolinone, methylisothiazolinone); Thiuram mix (tetramethylthiuram disulfite, tetramethylthiuram monosulfite); Fragrance mix (eugenol, isoeugenol, geraniol, cinnamic alcohol, alpha aldehyde amyl cinnamic, absolute oak moss, hydroxycitronellal; mercapto mix (N-Cyclohexyl 2 benzothiazolesulfenamide, morpholinylmercaptobenzothiazole, dibenzothiazyl disulfide, mercaptobenzothiazole); Quinoline mix (clioquinol, clorquinaldol); Paraben mix (butyl, ethyl, propyl, benzyl, methyl parabens); Carba mix (diphenylguanidine, zinc dimethylcarbamate, zinc diethylcarbamate).

TABLE 2: Frequencies of Positive Reactions to Brazilian Cosmetic Screening (n= 792)

Substances/concentration/vehicle	Frequency	Percentage
Tosylamide formaldehyde resin 10.0 pet*	82	10.4
Germal 115 (Imidazolidinylurea) 2.0% pet	8	1.0
Bronopol (2-Bromo-2-nitropropane-1.3-diol) 0.5% pet	6	0.8
Triethanolamine 2.5% pet	6	0.8
Amerchol L-101 100.0%	3	0.4
Sorbic acid 2.0% pet	3	0.4
Chloroacetamide 0.2% pet	3	0.4
Chlorhexidene 0.5% aq**	2	0.3
BHT (Butylhydroxytoluene) 2.0% pet	2	0.3
Ammonium thioglycolate 2.5% pet	0	0

*pet=petrolatum / **aq=aqueous

the final diagnosis in 814 (58.2%) patients, irritant contact dermatitis in 224 and others dermatoses in 361 patients.

Comparing to GBEDC data, 1995-1996, there is similarity about the age group, predominance in females (69.7% versus 62.5% in GBEDC study) and the rate of "at least one positive test": 62.8% versus 62.0% in the GBEDC study.²

Regarding the 12 most frequent allergens of both studies, nine allergens are common. Six substances ranked differently: quaternium 15 (11.2%) was placed in the third position in the GBEDC study but just in the 18th in our study (1.4%); quinoline mix and thiuram mix are also among the 12 most frequent allergens of the GBEDC study but not in this study; Myroxylon pereirae, ethylenediamine and PPD mix are among the 12 most frequent allergens of this study but not in the GBEDC study.²

Nickel was the most frequent allergen in both studies. The nickel rates were: 31.4% (442 patients) in this study and 25.1% in the other. Thimerosal was the second most frequent allergen in both studies: 14.7% (207) in our study and 16.3% in the GBEDC study. Potassium dichromate that was the third most frequent allergen in this study and the seventh in the other, but with the same rate (8.1%).² The rate differences between these studies in regard to quaternium 15 and thimerosal may be related to their smaller concentration in this study as compared to the GBEDC study: quaternium15, 0.5% in this study versus 1.0% in the GBEDC study and thimerosal, 0.05% in this study versus 0.1% in the GBEDC study. Although the Brazilian Standard screenings of these studies were composed of the same substances, the concentration of these two allergens were different.²

About the Cosmetic Series, the most frequent

allergen was tosylamide formaldehyde resin (10.4%). Duarte et al reported the rate of 12.7% to this allergen in an adolescent group of patients.³

Artus et al reported data from 133 patients: mean age 42 years; 69.2% female. The most frequent allergens: nickel, thimerosal, p-phenylenediamine, neomycin, cobalt chloride, PPD mix, potassium dichromate.⁴

Comparing with the NACDG (North American Contact Dermatitis Group) data we may observe that nine of the 12 most frequent allergens of this study are among the 12 most frequent allergens in this American study. Quaternium 15 was placed in the fourth position in the NACDG study but was tested at 2.0%, unlike the 0.5% in our study.⁵ Belsito recommended the removal of thimerosal from NACDG Screening because of its usual irrelevance.⁶

Comparing to the European data, concerning the 12 most frequent allergens of both ours and European studies, eight allergens are common.⁷ Thimerosal was not tested in either the American or European studies.^{5,7}

There were no significant differences in patch tests results in atopics and non atopics in this study ($p>0.05$). The hands are the most common dermatitis site in both this and GBEDC studies.²

Limitations of this study: during this study period there was a change in the position of the substances in the Standard Series (enabling bias) after the studies reported by Duarte et al, allowing for significant advance in the battery.^{8,9} Selected patient population. Differences in concentration and number make comparison difficult.^{2,5,7} Advantages: the same dermatologist did all the readings and interpretations; same manufacturer of the test material; same substances concentration. □

REFERENCES

1. Duarte I, Lazzarini R, Buense R, Pires MC. Dermite de contato. An Bras Dermatol. 2000;75:529-48.
2. Grupo Brasileiro de Estudo em Dermite de Contato (GBEDC) do Departamento Especializado de Alergia em Dermatologia da Sociedade Brasileira de Dermatologia. Estudo multicêntrico para elaboração de uma bateria-padrão brasileira de teste de contato. An Bras Dermatol. 2000;75:147-56.
3. Duarte I, Lazzarini R, Kobata CM. Contact dermatitis in adolescents. Am J Contact Dermat. 2003;14:200-2.
4. Artus G, Bonamigo RR, Cappelletti T. Dermite de contato alérgica: prevalência dos agentes sensibilizantes em amostra de Porto Alegre, Brasil. Revista da AMRIGS, Porto Alegre. 2011;55:155-9.
5. Zug KA, Warshaw EM, Fowler JF Jr, Maibach HI, Belsito DL, Pratt MD, et al. Patch-Test Results of the North American Contact Dermatitis Group 2005-2006. Dermatitis. 2009;20:149-60.
6. Belsito DV. Thimerosal: contact (non)allergen of the year. Am J Contact Dermat. 2002;13:1-2
7. Uter W, Hegewald J, Aberer W, Ayala F, Bircher AJ, Brasch J, et al. The European standard series in 9 European countries, 2002/2003 -- first results of the European Surveillance System on Contact Allergies. Contact Dermatitis. 2005;53:136-145.
8. Duarte I, Lazzarini R, Bedrikow R. Excited skin syndrome: study of 39 patients. Am J Contact Dermat. 2002;13:59-65.
9. Duarte I, Lazzarini R, Buense R. Interference of the position of substances in an epicutaneous patch test battery with the occurrence of false-positive results. Am J Contact Dermat. 2002;13:125-32.

MAILING ADDRESS / ENDEREÇO PARA CORRESPONDÊNCIA:

Dulcilea Ferraz Rodrigues
Av. Bernardo Monteiro, 890 Sala 603
Santa Efigênia
30150-281 Belo Horizonte, MG
E-mail: dulcilea.ferraz@terra.com.br

How to cite this article: Rodrigues DR, Neves DR, Pinto JM, Alves MFF, Fulgêncio ACF. Results of Patch-Tests from Santa Casa de Belo Horizonte Dermatology Clinic, Belo Horizonte, Brazil, from 2003 to 2010. An Bras Dermatol. 2012;87(5):800-3.