

SPECIFIC PROFESSIONAL ALLERGENS AMONG WORKERS IN THE STOCK-BREEDING

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The study covered 446 stock farmers who suffered from occupational dermatitis. A total of 7562 epicutaneous tests including standard and special series related to corresponding occupations were performed. Positive results of epicutaneous tests with specific allergens (2,03 %) occurred by 8 times more frequently in the examined group than those when standard series were applied. The most common specific allergens of chemical origin were as followed: penicillin, formalin, furazolidon, etoxiquin, isopropylaminodiphenylamine (IPPD), and rivanol.

Key-words: Occupational dermatitis, specific allergens, standard allergens, stock farmers, diagnosis

INTRODUCTION

Recently, farmers are exposed to working conditions influenced by comparatively insufficiently investigated factors. The incidence rate of chemically induced allergic dermatitis increases as compared to that of occupational skin diseases of infectious origin (3 - 5, 7). The borderline between town and village concerning the incidence rate of occupational contact allergic dermatitis disappears (6, 8). There exist scanty data about the epidemiology and etiology of professional allergic dermatitis (PAD) in farmers occupied in stock-breeding.

The objective of this paper is to present our experience and to reveal some new etiological factors for PAD among workers in the cattle-farming.

MATERIAL AND METHODS

A total of 2570 workers were clinically examined. Their occupations were as followed: cow-, sheep-, and poultry-breeders; workers in a meat factory and fodder plant as well as veterinary surgeons and zootechnicians. PAD was diagnosed according to the clinical observation and the results from the epicutaneous tests after Jadasson-Bloch technique. Both standard tests and special series were used concerning the abovementioned professions.

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Specific Professional Allergens Among Workers in the Stock-Breeding

Table 1
Positive epicutaneous tests with standard allergens in 446 patients

No	Allergens	Positive tests		% of specific allergens
		(n)	(%)	
1.	Potassium dichromate	1	7,69	0,22
2.	Cobalt nitrate	2	15,38	0,44
3.	Sublimat	0		
4.	Mercapto-mix	0		
5.	Nickel sulfate	0		
6.	IPPD	4	30,76	0,89
7.	Thiuram-mix	1	7,69	0,22
8.	Formaldehyde	5	38,48	1,12
9.	Turpentine peroxides	0		
10.	Anesthesin	0		
11.	Phenylendiamine	0		
12.	Lanolin	0		

RESULTS

A total of 7562 epicutaneous tests were carried out. Of them, 58 tests (0,76 per cent) were considered positive. Standard series included a total of 5352 epicutaneous tests of which 13 tests (0,24 per cent) were positive. When using specific allergens, they occurred by 8 times more frequently in the individuals studied (in 2,03 per cent of the cases).

A special attention should be paid to the positive results of tests to formaldehyde (5 cases or 1,12 per cent) and to isopropylaminodiphenylamine (IPPD) (4 cases or 0,89 per cent) from the standard series (Table 1) as well as to penicillin (5 cases or 11,63 per cent), furazolidon (3 cases or 6,66 per cent), etoquin (2 cases or 2,98 per cent), and flavin (one case or 2,32 per cent) from the special series (Table 2).

DISCUSSION

Allergy to formalin appears mainly among the poultry-breeders and veterinary surgeons. The formalin solution is widely used as disinfection and fumigation means thus an everyday dermal contact is accomplished. First, this contact leads to skin irritation, and then, sensitization follows. It is experimentally proved that contemporary utmost permissible concentrations of formalin correspond to the threshold of its sensitizing action (1). The considerable sensitization effect of formalin in case of minimal exceeding of its level is due to the elevated formaldehyde reactivity towards proteins.

Allergic dermatitis is established in 3 milkers from a cowfarm as a result from contact sensitization to IPPD, the most powerful antioxidant for synthetic rubber which is widely used in milking machine

Table 2
Positive epicutaneous tests with specific allergens

No Allergens	Tests		
	total (n)	positive (n)	(%)
1. Tetracyclin	88	2	2,27
2. Streptomycin	62	0	
3. Penicillin	43	5	11,63
4. Tuberculin	43	0	
5. Pharmazin (tylosin)	63	2	3,17
6. Etoxiquin	67	2	2,98
7. Topenol	45	0	
8. Furazolidon	45	3	6,66
9. Flavor	43	1	2,32
10. Movilit subst.	31	0	
11. Movilit 10 %	31	0	
12. Movilit 25 %	31	0	
13. Movilit 50 %	31	0	
14. Kalii sorbas subst.	31	0	
15. Kalii sorbas 10 %	31	0	
16. Kalii sorbas 25 %	31	0	
17. Kalii sorbas 50 %	31	0	
18. Methionine subst.	20	0	
19. Washing powder	22	0	
20. Chloramin	87	1	1,14

production. IPPD warrants rubber stability under different atmospheric conditions and against detergents and disinfectants as well. It cumulates on the surface of the details and easily penetrates milker's skin. This penetration is facilitated by the excessive moisturizing and sweating during the working process.

Penicillin is a common reason for PAD among veterinary surgeons as it is most frequently applied in veterinary practice. Manipulations are done without gloves and antidust masks. PAD of flavin origin is diagnosed in a veterinary expert who has

used flavin unguent for local treatment of cow's udder. This antiseptic means possesses a high sensibilization index, and, therefore, its usage should be restricted. Sensibilization towards furazolidon, an antimicrobial drug of the nitrofurane series, is proved in two poultry breeders who mixed the powdered patent preparation manually in the moistured concentrated fodder to prevent coccidiosis. In our opinion, everyday skin contact during the manual instillation of furazolidon is dangerous and, therefore, usage of rubber gloves is strongly recommended.

Positive epicutaneous tests to etoxiquin, a 6-etoxy-2.2.4-three-methyl-1,2-dihydroxychinolin, are estimated in two poultry breeders as a manifestation of contact sensibilization. This antioxidant is commonly used as supplement to fodder as its powdered trade product santoquin. Experimental data prove a high sensibilizing potential of etoxiquin (2) determined by the cyclic chemical structure of its active ingredient hydroxychinolin.

. CONCLUSION

The etiological diagnosis of PAD in stock-breeders requires from dermatologists and occupational pathologists good knowledge of the occupational-chemical environment as well as availability of specific series for epicutaneous testing.

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Spezifische Berufsallergene bei den Viehzüchtern

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Zusammenfassung: Bei 446 Viehzüchtern mit Berufsdermatitis wurden 7562 epikutane Testproben durchgeführt, die in Standardserien und in spezifischen Allergenserien eingegliedert worden waren. Die positiven Ergebnisse der Testproben mit spezifischen Allergenen (in 2,03 % der Fälle) waren achtmal häufiger im Vergleich zu diesen mit den Standardserien zu beobachten. Die häufigsten spezifischen Allergene chemischer Herkunft waren die folgenden: Penicillin, Formalin, Furazolidon, Etoxiquin, Isopropylaminodiphenylamin (IPPD) und Rivanol.

Allergènes professionnels spécifiques chez les éleveurs

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Résumé: Sur 446 éleveurs, attrapés par la dermatose professionnelle, on a fait 7562 tests épicutanés qui englobent une série standartisée et des séries étroitement

spécialisées. Les résultats positifs du test épicutané pour le personnel étudié avec des allergènes spécifiques (2,03 %) sont huit fois plus fréquents par rapport au résultats positifs de la série standardisée. Les allergènes d'origine chimique les plus fréquents sont: pénicilline, formaline, furazolidone, étoxiquine, isopropylamino-diphénylamine (IPPD) et rivanol.