

Respiratory Allergies and or Skin at the Personnel in Care of Tlemcen Medical Analysis Laboratories

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Abstract

The main objective of our study is to determine the prevalence of respiratory allergies and skin at the personnel of the medical laboratories of care of the wilaya of Tlemcen. It is a descriptive cross-sectional study from the month of November 2013 in may 2014; Bearing on the staff of the laboratories for medical analyses of care institutions private and public of the wilaya of Tlemcen, whose 69 agents on 229 laboratory personnel or a rate of 30.13% with respiratory allergy and skin. Staff nursing laboratories for medical Analyses that presents respiratory clinical manifestations and or skin triggered or aggravated by work. A general clinical examination is practiced by the occupational physician; notices specialized: ORL of Dermatology and possibly the pulmonologist questioned looking for associated allergic disease (rhinitis, asthma). The registration of a flow - volume using a spirometer curve. Formula for blood count with determination of the rate of Eosinophilia: looking for a hyper Eosinophilia that is often transient but relapses [42]. The practice of skin testing: the prick-tests were performed by a physician allerguologue. Indicate whether or not the Organization has a reaction to the suspected allergen. The skin epi tests: the test patch. These tests have a dual function, highlight an allergic mechanism, and identify the responsible allergen. Statistical treatment: the seizure of data and descriptive analysis of results are carried out on SPSS software. Version 17

Keywords: Respiratory-Tlemcen-prick-tests-statistics-asthma allergy - rhinitis

Introduction

Skin or respiratory allergies affect a large number of professions and sectors of activity. They are due to exposure, even at low levels, to a sensitizing agent.

In the environment of care, as in many professional circles, allergic manifestations are common and their prevalence tends to increase, the diversity and the multiplication of allergenic products that are handled.

Among personnel of the laboratories; Risks relate mainly to a more intensive use of: gloves to protect themselves from accidents to blood (AES).

The high incidence of occupational latex allergy know antiseptics, disinfectants; and aldehydes in the fight against nosocomial infections; all this against a background of increasing the frequency of atopy in the general population.

The literature of these past ten years agrees to estimate the frequency of allergy to the latex in constant progression. With a prevalence of allergy to the latex in hospitals which can reach **17%** of caregivers.

The first observation of occupational asthma to latex has been described in 1988 in a **laboratory technician**

with criminalization of starch from corn that blowing his gloves.

1980, the latex allergy grew from a few cases described in a real public health problem, a marked increase in reported cases in France with the creation of the 95 table under the general scheme, acknowledging the latex allergy (1997)

Latex is not the only allergen responsible for allergic disease care.

Handling disinfectants and antiseptics, formaldehyde in the workplace and care in the medical laboratories is responsible for the appearance of new allergic diseases which may lead to asthma. (4)

Complaints of allergies "respiratory, dermal, conjunctival where General" from the staff of the medical care in the region of Tlemcen laboratories, continues to increase each year and the responsible allergen molecules are very many have significantly increased and changed since several years.

Our present study looked specifically for respiratory and skin allergies in the staff of public and private medical analysis laboratories, which remain exposed to several types of allergens during their professional activities.

Study which is currently a greater medical and social importance

The main objective of our study is to determine the prevalence of respiratory allergies and skin at the personnel of the medical laboratories of care of the wilaya of Tlemcen.

Study Population

It will be a descriptive cross-sectional study from the month of November 2013 in May 2014, covering a sample of 69 employees with a respiratory allergy and where skin on 229 agents operating at the level of the medical laboratories of private and public of the wilaya of Tlemcen care facilities contracted with the hospital and seen in the context of the medical periodical in the service of Medicine of work.

The criteria for inclusion

Staff nursing laboratories for medical Analyses that presents respiratory clinical manifestations and or skin triggered or aggravated by work

Exclusion criteria

- A seniority of less than 6 months
- Treatments antihistamine or corticosteroid long-term under treatment beta blockers

Materials and Methods

1-investigation initial on workplaces and exposure assessment

Is based on the perfect knowledge of risks to which employees are exposed, including the allergy risks

- ☐ Locate sources of exposure.
- ☐ Identification of positions exposed to known allergenic products.
- ☐ Identify the most vulnerable workers.
- ☐ Study of the positions of the trial of labour and work.

2 -Survey itself

The anamnesis, first step of this investigation is made by three questionnaires

- This questionnaire, based on the questionnaire prepared by the University of health McGill [19] is interested in allergic history adapted to the circumstances and conditions of life in our country.
- A bronchial symptoms questionnaire, prepared by the Committee of respiratory diseases, the international union against tuberculosis and lung disease (UNION) 1986) [20]: allows you to collect information on the existence of respiratory symptoms 12 months 'whistle and breathing difficulty, shortness of breath, cough and sputum, asthma, smoking... ' . ».

- A questionnaire diagnostic of allergic rhinitis (SFAR: Score For Allergic Rhinitis) [21]: collects the various symptoms of allergic rhinitis in the past 12 months and apart from any period of influenza.

It will offer employees a balance sheet clinical and para clinical, which will be done in the morning before any activity which will include:

A general clinical examination is practiced by the occupational physician; notices specialized: ORL of Dermatology and possibly the pulmonologist questioned looking for associated allergic disease (rhinitis, asthma)

The registration of a flow - volume using a spirometer curve. The validation of the review being carried out by the Visual control of registered trace .a minimum of three curves of forced expiration must be done for each patient and the best of the curves used for the calculation of the following parameters: vital capacity (CV), maximum expiratory volume during the first second of expiration (VEMS), report VEMS1 / CV, maximum Middle expiratory deficit (DMM), peak flow (DP) , expiratory flow rates at 75, 50 and 25% of the capacity vital (DEB 75.50, 25).

Formula for blood count with determination of the rate of Eosinophilia: looking for a hyper Eosinophilia that is often transient but relapses. [5]

Skin tests: the prick-tests were performed by a physician allerguologue

Indicate whether or not the Organization has a reaction to the suspected allergen. The principle of these tests is to put the skin in contact with the allergen. After 15 to 20 minutes, assessing the reaction of the skin (redness, formation of bubbles).

Latex will be tested by allergenic extract and latex gloves.

The skin epi tests: the test patch

These tests have a dual function, highlight an allergic mechanism, and identify the responsible allergen.

For the performance of tests, should eliminate any medication that could interfere with the interpretation, playback occurs at 48 h, 96 h and one week.

Test material

Test skin epi TROLAB Stallergènes on a bed isolation FINN CHAMBERS ON SCANPOR

Statistical treatment: the seizure of data and descriptive analysis of results are carried out on SPSS software. Version 17

Results

A. General population

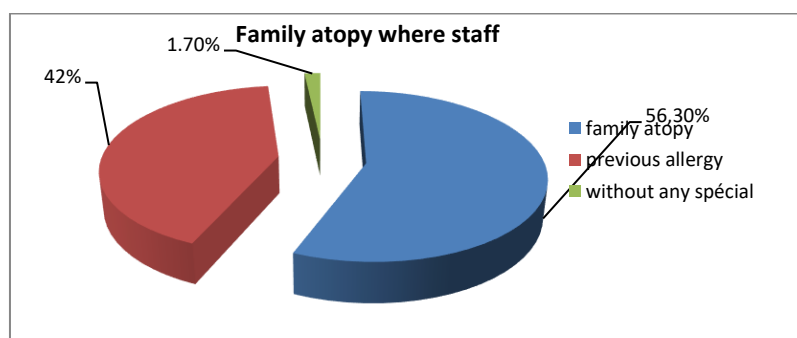
On 229 officers engaged in medical analysis laboratories, 69 employees, or 30.13% complain a respiratory allergy and/or skin.

Table 1: General characteristics of the population

Characteristics		Percentage %
General characteristics	Age	middle aged: 33,8 ans :+/-10 year old
	Sex	F : 84% H : 16%
	Seniority	average length: 8,9 +/- 9 ans year old
Establishment	Hospital laboratories Tlemcen	85%
	hemobiology	18.57%
	bacteriology	18.57%
	biochemistry	10%
	Pathology	18.57%
	Blood Transfusion Centre	10%
	histology	1.42%
	Occupational Medicine	1.42%
	Blood-clinical	2.85%
	hemodialysis	1.42%
	Laboratory EHS	5%
	Privates Laboratoires	10%
Behaviour	tobacco use	0,28%
	smoking	1,42%
	ex smoker	95,71%
	Non-smoking	
	alcohol	00%
	allergy treatment	49,3%
Antecedent family	Familial atopy	56.5%
Antecedents personal	Skin allergy	42%
	Respiratory respiratory	82,6%

Table 2: Type of allergic disorders by institution and department

Establishment / Services	Respiratory allergy and Ear Nose & Throat	Skin allergy	Respiratory and skin allergy
Hospital laboratories Tlemcen	47	24	10
hemobiology	11	11	2
bacteriology	11	4	2
biochemistry	5	2	0
Pathology	11	2	2
Blood Transfusion Centre	5	2	1
histology	1	0	1
Occupational Medicine	1	0	1
Blood-clinical	2	2	1
hemodialysis	0	1	0
Laboratory EHS	4	2	4
private laboratories	6	3	3
Grand total	57	29	17

**Figure No. 1:** Family where personal atopy

More than half of our population reported a history of atopy family and 42% have a history of previous allergy.

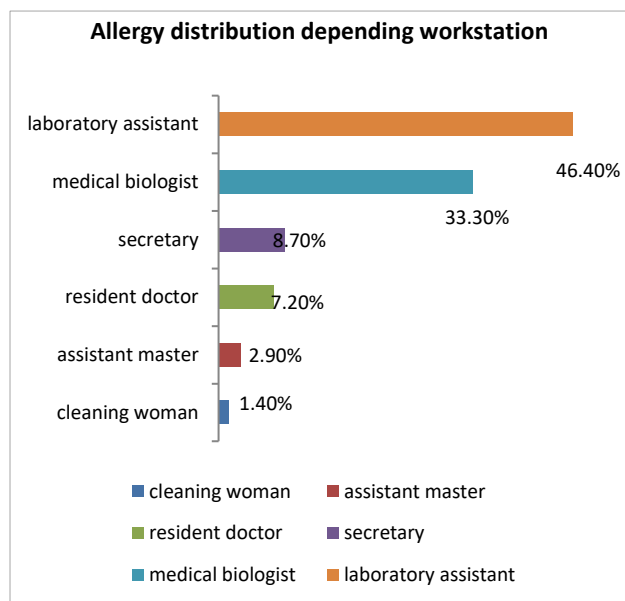


Figure No. 2 Distribution of allergy as the workstation

The position

In our population, the majority of allergic individuals are represented by the laboratory (46.4%), followed by biologists (33.3%) then the Secretaries (8.7%) and then medical residents (7.2%) teachers assistants (2.9%) and the housekeeper (1.4%).

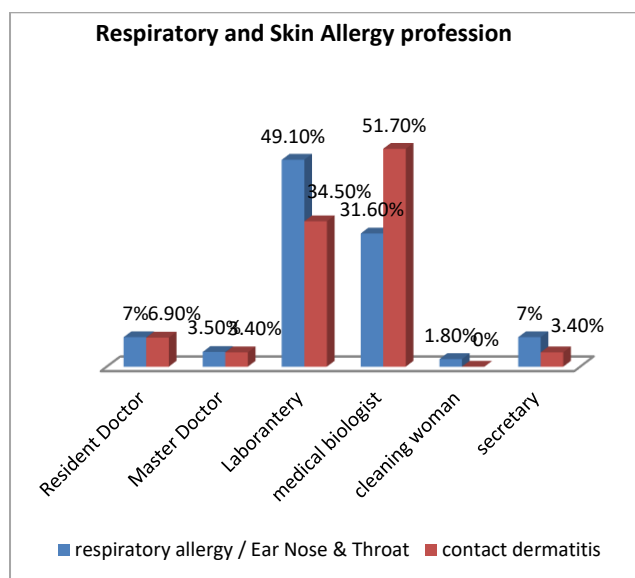


Figure No 3: Respiratory and Skin Allergy profession

The laboratory technicians and biologists virtually ensuring the same activity at the level of analytical laboratories medical have the highest rates of respiratory allergy and / skin (46.4% and 33.3% respectively)

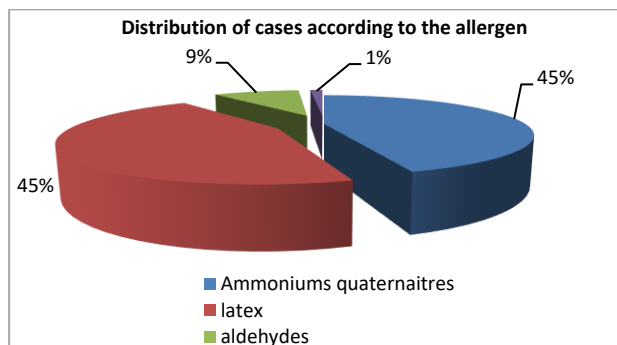


Figure No 4: Distribution of cases according to the allergen

The entire study population wears gloves in latex (100%) and manipulates disinfectants consisting mainly by quaternary ammonium (ANIOS) (100%).

Aldehydes are handled by 20.28% of allergic individuals (service of pathological anatomy, the Hemobiology and the laboratory of histology personnel) and cytostatics are handled by 2.89% of the allergic (Hematology-clinical staff).

B. Clinical Features

1. Personal history of allergy

70% of patients included in our study already have previous allergy. Respiratory and/or dermal (82.6% and 42%, respectively).

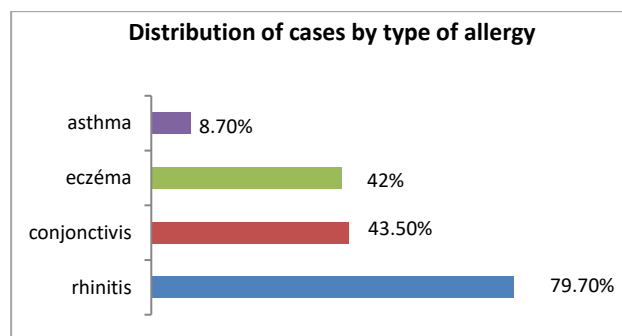


Figure No 5: Distribution of cases by type of allergy

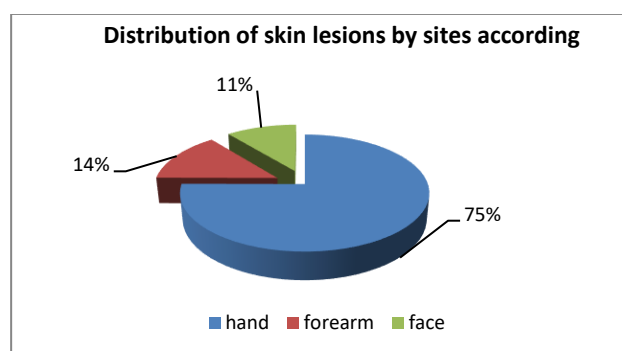


Figure No 6: Distribution of Skin lesions by sites according

Rhinitis represents most allergic manifestation at the level of the medical analysis laboratories (79.7%) followed by allergic conjunctivitis (43.5%), then the eczema and asthma (42%) and (8.7%), respectively

Among the 69 allergic subjects included in this study; 57 people have an upper airway allergy or 82.6 per cent

50.7% of cases complain secondary Erythema at the port of latex gloves or the use of disinfectants. 17.4% of our population has a skin rash after wearing latex gloves.

The hand represents the most relevant location by allergic contact dermatitis (69.6%), followed by the forearms and face (13%) and (10.1%) respectively (form of airborne eczema).

C. Additional Examinations

Table No 3: Spirometry results

	Grand total (%)
Normal Spirometry	38 (80,85%)
Obstructive syndrome	00 (00%)
Restrictive syndrome	04 (8,51%)
Joint syndrome	01 (02,12%)
Syndrome of the small airways	04 (8,51%)
Grand Total	47

Practiced in any person with respiratory allergic symptoms. Peak expiratory flow "DEP" has been calculated before and after occupational exposure to allergens: a decrease from DEP by 20% or more (before and after occupational exposure to allergenic products) in two patients.

The prick tests

33 people on 69 (is 47,82%) presentant a respiratory allergy where respiratory and dermal allergy benefited of a prick test)

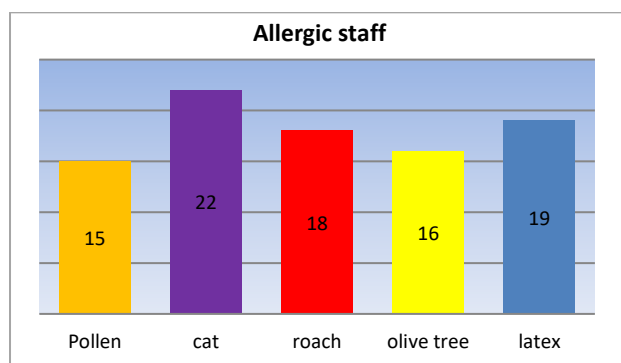


Figure No 7: prick test results performed

The rest of the subjects did not these pricks are as follows -04 patients are already under desensitization.

-05 patients are under continuous Antihistamine treatment.

-04 patients reported their pregnancy during the investigation.

-A patient has resigned from his work position (moving abroad).

-A patient came out to retreat.

-09 patients remaining refused the test.

19 cases have presented a respiratory allergy linked to exposure to latex product, but most allergic individuals had an awareness at one where several allergens 'pollen and latex', 'cat and latex'.

Testing patches

Table No 5: Results of test patches

Allergens	The Number(%)
Latex	13(18,84%)
Formaldéhyde	3(4,34%)
Fragrance mix	3(4,34%)
Paraphynylène diamine free base	2(2,89%)
Cobalt chloride	2(2,89%)
Thiuram mix	2(2,89%)
Colophane	1(1,44%)
Wood alcohols	1(1,44%)
Néomycine sulfate	1(1,44%)
Nickel sulfate	1(1,44%)
budesonide	1(1,44%)

31 persons (i.e. 44,92%) have benefited from a patch test with an allergic skin reaction after advice from a dermatologist doctor whose 13 (18.84%), have patches positive tests to the latex powder, 3(4,34%) to formaldehyde. The rest of the employees has not benefited from these tests for the same reasons cited for the prick test.

Formula of blood count

NSF to practical summer; in 52 patients, either 75.36% and which has proved to be normal in 47 patients, and a noted hyper-eosinophilie in summer 05 patients.

E. Means of Protection

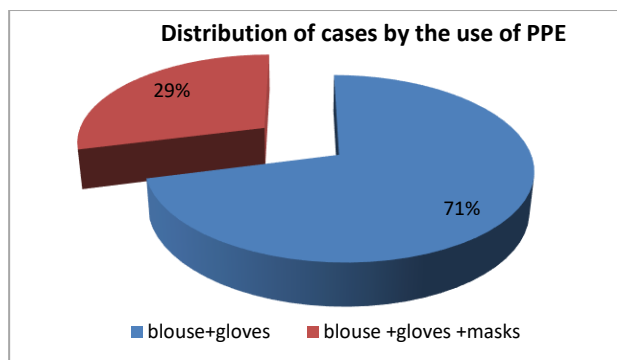


Figure No 8: Distribution of cases by the use of individual protective equipment

No service of public care facilities has a suction hood or adequate ventilation, the pathological anatomy service remains equipped with a hood but in a defective condition. On the other hand all private laboratories are equipped with a functional hood.

Discussion

Our study has brought on a population of 69 allergic subjects part of personnel of laboratories for medical analyses public and private of the city of Tlemcen with respiratory allergic symptoms and / or skin triggered or aggravated by work.

The average age of our population is 33, 8 ± 10 years with a majority age range between 20 to 30 years.

A clear female predominance is noted among our population with a rate of 84%, which can be explained by the female dominance in our laboratories for medical analyses, also of activities especially household professional extra-which are exercised by the female use of detergents and disinfectants and which may be the cause of an allergic reaction.

The average tenure at the workplace of our population is 8.9 ± 9 years with a majority slice between 1 and 5 years (63.7%), which joined the study made by

Mr. Batllo and collaborators on 11 public and private care facilities Montpellier who found an average age of 39.6 years (17-63) for an average tenure in the occupation of 11.7 years. There were 307 women, representing 84% of the total [15] which is consistent with our results (NET female 84%)

On the other hand, another study carried out in 2003 at the Morocco by A. Alaoui-Yazidi and coll has brought on 2831 personnel of health comprised 53.8% of women and 46.2% of men. The average age was 40.5 years with extremes of 18 and 60 years, average tenure at work was 16.1 years with extremes of 1 month and 45 years. [1].

Regarding lifestyle, the factor tobacco and alcohol have not been found, and only 1, 4% are for quitters, these results can be explained by our population which is predominantly female the laboratory of pathological anatomy, bacteriology and CHU Tlemcen hemobiology represent services that combine the highest number of allergic subjects with 18.57% for each lab, this can be in relation to the port of powdered latex gloves, and the use of quaternary ammonium-based disinfectants as well as handling and the inhalation of formaldehyde (service of pathological anatomy and Hemobiology) without adequate protection.

Several occupational categories are listed, laboratory technicians and biologists performing the same tasks at the level of the medical laboratories have the highest rates of allergic manifestations (46.4% and 33.3% respectively) followed by Secretaries (8.7%) which can be in relation to the daily inhalation of products a laboratory whose inhalation of allergens may be responsible for respiratory allergy).

More than half of our population has a family history of atopy (56.5%) and a personal history of allergy skin in 42% and respiratory in 82.6%

12 persons on 19 allergic to latex (or 63.15%) have a family history of atopy, and subjects with confirmed their allergy to latex by skin test. For Levy 67% of patients sensitized to latex are atopic [12].

Outside atopy, the literature suggests that the concentration of allergens from the latex in the working atmosphere is involved in awareness [22].

The concept of cross-ownership between latex and various food allergy is now classic. M'Raihi proved this allergy cross between latex and banana [13]. Cossart described 2 cases of allergy to counsel, banana and latex [11].

In our work, a single case of food allergy has been found (the fish - tuna - allergy) (he is a person whose the prick was positive to latex) but no link can be made between latex allergy and food allergy to tuna (cross-allergy) due to the low frequency of the latter.

Concerning the clinical manifestations, 79.7% allergic subjects included in our study represent isolation or in association allergic rhinitis followed by conjunctivitis in 43.5% of cases, and eczema in 42% of cases, asthma has been present in 8.7% of allergic patients.

The first observation of occupational asthma to latex has been described in 1988 in a laboratory technician with criminalization of starch from corn that blowing his gloves (79).

The Moroccan study 2831 health personnel were 22.8% of rhinitis, 17.4% of conjunctivitis and 10.4% asthma (63). the prevalence of rhinitis, conjunctivitis and asthma was significantly higher among biologists with respective rates of 39.6 and 43.8, 27.1%. According to assignment services, the rate of prevalence of the three diseases was higher in anaesthesia and resuscitation services and laboratories. [11].

Rhinitis and asthma are often associated because all asthmatics have chronic rhinitis, the severity of asthma and rhinitis are parallel and finally the seriousness of rhinitis has an influence on the severity of asthma [13].

Thus the studies have shown that the prevalence of asthma varies from 2 to 15%, which is consistent with our results 8.7% [11.14]

The overall rate of 10.4% of asthma in the Moroccan study was fluctuating between different services but the rate is very important in laboratories (32.8%) which was predictable given the allergic risk particularly important in these places.

More than 63% of the study population suffers alone or in combination of the signs of allergic rhinitis (nasal obstruction, rhinorrhea and sneezing), and then come the low respiratory allergic manifestation (sensation of breathing difficulty, coughing, feeling of whistling and dyspnea)

In our study rhinitis was found in 79.7% of allergic patients, also Moroccan studies have found rates of

allergic rhinitis ranging from 24 to 47% and the study by A. Alaoui-Yazidi and al, has observed a rate of 22.8% [1]. This reflects the reality of the allergic risk in hospital and medical analysis laboratories especially.

On the other hand, skin diseases are common in hospital. It is most often dermatitis irritation, but contact with eczema or hives allergy can occur when sensitizations hospital disinfectants, or LaTeX. The prevalence of the dermatitis in caregivers ranged from 12 to 41% [16] the port of powdered latex gloves, the frequent washing of hands and the daily use of disinfectants (sometimes without any means of protection) containing quaternary ammonium are responsible for the appearance of pruritus of the hands in 72.5% of allergy sufferers included in our study, a dryness in 24.6% of cases and a skin rash in 17.4% of cases (the diagnosis of contact urticaria was made by the dermatologist).

Complementary exams, among our population consisted of a spirometry carried out at anyone presenting a respiratory allergic manifestation and occupationally exposed to allergenic products, only 47 person could benefit from this, it was normal in 38 patients. 4 patients presented a restrictive Syndrome, and 4 others have presented a small airway Syndrome, one patient presented a joint Syndrome

A measurement of "peak expiratory flow" DEP before and after occupational exposure has been practiced in 30 agents, and a decrease in DEP of more than 20% between the two measures is found in only 2 patients.

The prick tests (PT) were carried out in 33 cases with allergenic extracts Stallergènes® whose positivity was particularly marked for pollen, cockroach, cat, olivier and latex (19 people have a prick test + LaTeX or 27.53 per cent).

In a study of the carers hospital Ibn-Sina (CHIS of Rabat) 119 participants reported of allergic manifestations, i.e. 44.4%. After an allergic assessment, only 45 participants were actually allergic events in connection with the handling of materials containing natural rubber latex proteins is

16.7% of all people who participated in this study.

In 1998 a French study on the staff of the CHU de Montpellier objectified a prevalence of 7% of workers sensitized to latex in care staff with a total of 537 topics. The results can mean that either the population was poorly targeted and that the proportion of sensitized staff is unfortunately stronger described, either the prevalence of sensitization to latex among healthcare staff tends to decrease [8]

Also allergy to cockroaches is found in 18 sufferers having benefited of prick test, it is strongly linked to the adverse socio-economic conditions. The cockroach can be found in care facilities

A single study to determine the prevalence of sensitization to allergens of roaches among 623 people aged 20-60 years of a Marseille medical centre [8]

Test patches were indicated for patients with a skin allergy, 26 subjects have benefited from this test whose 13 (18.84%) have presented a positive reaction to the latex powder, and 3 (4.34%) presented an allergy to formaldehyde.

20.28% of officers are in contact with aldehydes (for handling or inhalation) it's pathological anatomy and histology laboratory staff and the Hemobiology service using formaldehyde mainly for the establishment of anatomical parts. The study héraultaise made by Mr. Batllo and coll, shows that among the 175 agents using disinfection or sterilization products cold, 90, or 52%, were embarrassed at their contact, mainly at the level of the respiratory tract and nasal [15]

These products are extremely widespread in the hospital or their replacement by other less allergenic disinfectants seems little conceivable given their high biocide efficiency but maintenance of service personnel remains little or poorly formed on the use of such products.

The adjustment of the family atopy factor with factor latex allergy and exercise service, was represented by a rate of 15.9% of allergic subjects of the hemobiology service, but the difference is not statistically significant which can be explained by the reduction of strength of our population;

In other epidemiological studies the allergy to the latex /atopie family relationship is established, they demonstrate that atopy is 2 to 5 times more frequent among workers sensitized to latex than among their non-sensitized counterparts, [16]

In addition to repeated exposure to latex, the presence of atopic land seems to be a main risk factor in the onset of allergy to latex [12.16].

Concerning the means of prevention, found that EPI are likely in a different way with a subject to other, 71% wear aprons and gloves (rubber) and 29% of wear aprons and gloves (rubber) and even masks (it is surgical masks); As the means of protection collective, there is a marked failure specifically in laboratories of CHUT or no service has a suction hood or proper ventilation except the service of pathological anatomy which is equipped with a hood but in a defective condition. also private laboratories are all equipped with a functional hood.

Given the frequency of allergies found in laboratories for medical analyses, confirmed by skin testing a declaration in respect of disease to professional character "illness unrecognized by the Algerian occupational diseases table" has concerned all patients with an allergy to latex is found positive skin tests, and a declaration in respect of occupational disease according to TMP No. 43 interested 3 patients with a clinical manifestation of allergy confirmed by a positive reaction to the formaldehyde.

A review of fitness and workplace planning was issued to anyone with an allergy to latex with contraindication to contact with latex products.

Conclusion

Professional pathology of allergic-type reactions in hospitals is a hot topic and a global health problem. The incidence and prevalence of these disorders are probably undervalued and certainly very underreported. The causes of these ailments are varied

Our study looked at the medical laboratories staff handling allergenic substances (latex, formaldehyde) and established the risk of allergy respiratory and skin resulting from contact with these products.

The questionnaire is still insufficient for an accurate assessment of the prevalence of asthma and other allergic diseases because the door diagnosis is before any clinical.

But despite the "difficulties" of a such cross-sectional study, our survey gives an idea of the magnitude of the problem of allergic diseases in medical analysis laboratories.

It would have been more interesting to control data by immunological assays more particularly subjects with an allergy immediate type, but, in practice, it was difficult to achieve.

(Prevalence of different conditions) results that we have obtained seem predictable and prevalence rates are virtually the same found in studies in the staff what means that the allergic risk and is present in all health facilities.

So it is important to give the necessary attention to the allergic risk identification, risk factors (e.g. atopy 56.4%) and their evaluation to implement strategies tailored support based on preventive measures and early detection of occupational allergy in analysis laboratories medical.

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