AJPMHS GLOBAL RESEARCH NETWORK

AMERICAN Journal of Pediatric Medicine and Health Sciences
Volume 01, Issue 10, 2023 ISSN (E): 2993-2149

Allergic Reactions to Latex among Healthcare Workers

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Abstract: Since 2020, against the backdrop of coronavirus infection, allergic reactions among medical workers have become an important public health problem and require solutions both at the level of individual countries and the global community. Sensitivity to latex and its derivatives has been reported among medical workers in hot climates.

Keywords: latex, allergy, medical workers, coronavirus infection.

INTRODUCTION

According to the World Health Organization, the incidence of allergic diseases has increased in many countries over the past decade and has acquired epidemic [2]. Sensitivity to plant allergens has increased throughout the world in recent decades. The problem of sensitization to latex is becoming especially relevant. First of all, this is due to an increase in contact with latex both during various medical procedures and in everyday life. In the context of the coronavirus infection caused by SARS-CoV-2, latex and nitrile gloves were preferred over vinyl and polyethylene gloves due to their higher durability as part of biosecurity measures. This expanded manufacturers' interest in the design and manufacture of rubber gloves [7].

Occupational allergies to latex allergens in our country have not been studied enough and require a special approach, since in the context of the coronavirus pandemic, more latex medical products began to be produced and used [9].

According to the literature, occupational hand dermatitis is often found in Western European countries. Occupational allergic dermatitis is characterized by frequent relapses, often leading to temporary disability.

MATERIALS AND METHODS. We conducted a survey using a questionnaire developed by us, consisting of 32 questions, among medical personnel aged 18-69 years (n=520), men - 83 (15.96%), women - 437 (84.04%) surgical clinics in Tashkent.

RESEARCH RESULTS. Among doctors, men prevailed (n=74), among middle and junior medical personnel, on the contrary, women (n=437). The average age of men was 40.9 years (maximum age - 64 years, minimum - 24 years), the average age of women was 39.3 years (maximum age 69 years, minimum - 18 years). Thus, the average age of the medical staff of the surgical clinic was 39.5 years (the maximum age is 69 years and the minimum is 18 years). The study of the professional composition showed the following results (see pictures 1).

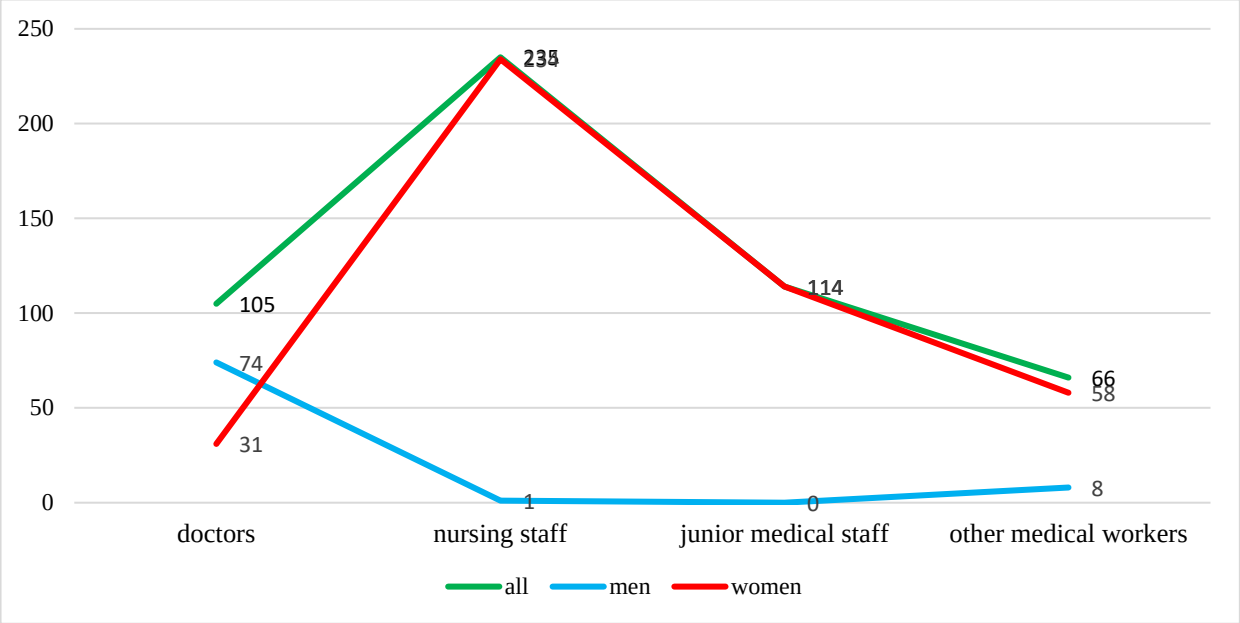

Figure 1. Distribution of medical personnel by profession.

Relatively healthy male health workers accounted for 77.02%. The main diseases that occur in men are shown in Figure 2.

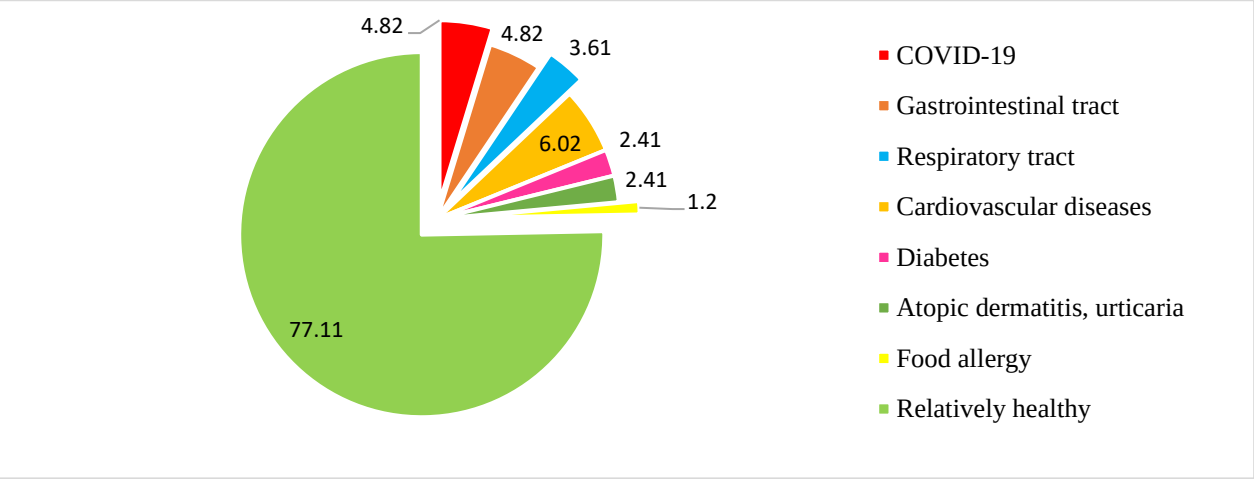

Figure 2. Distribution of comorbidities among surveyed men (n=83), %.

Among female medical workers, relatively healthy people accounted for 70.02%. The main diseases that occur in women are presented in the figure below.

Thus, in men, cardiovascular diseases prevailed, followed by gastrointestinal and respiratory pathologies.

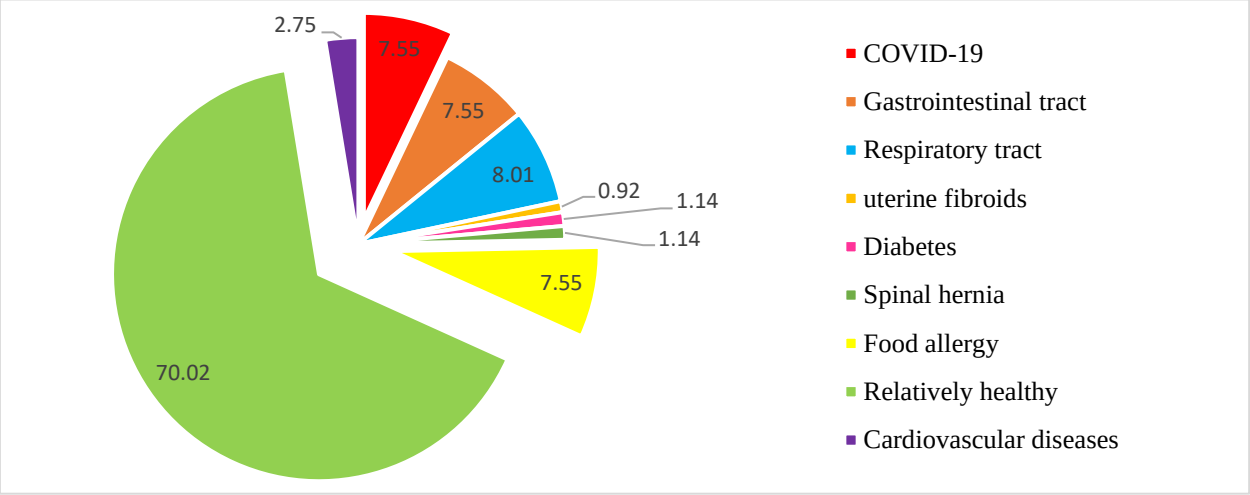

Figure 3. Distribution of comorbidities among surveyed women (n=437), %.

Thus, pathologies from the respiratory tract prevailed in women, followed by gastrointestinal diseases and food allergies. Allergic reactions to latex gloves, food products (eggs, legumes, peach, strawberries, tomato, nuts), dust, perfume and antibiotics have been identified among medical personnel.

Among animal allergens, allergic reactions were caused by cat and dog allergens in the form of respiratory symptoms.

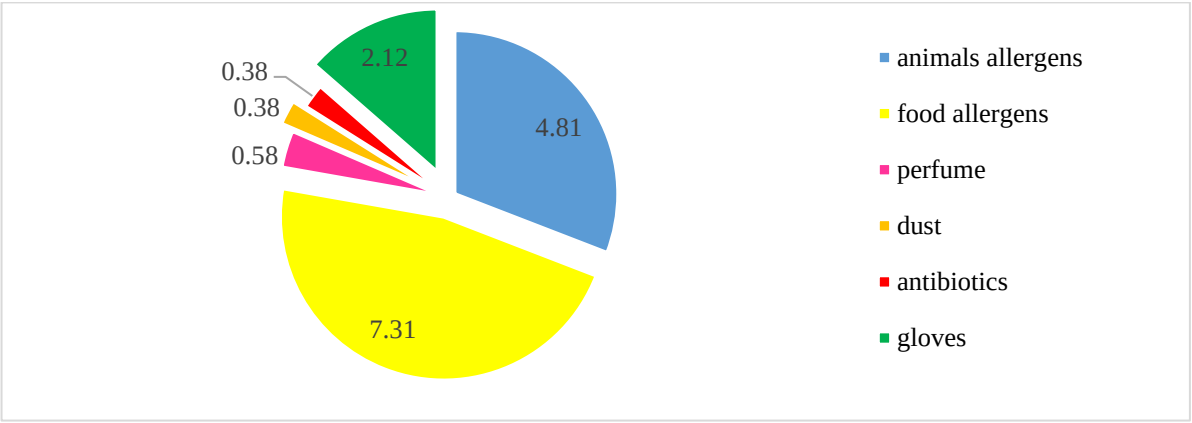

Figure 4. The frequency of occurrence of allergens among the medical staff of surgical clinics (n=520), %

Allergies to food, medical devices (eg, latex gloves), dust, and other allergens have been reported in both male and female healthcare workers.

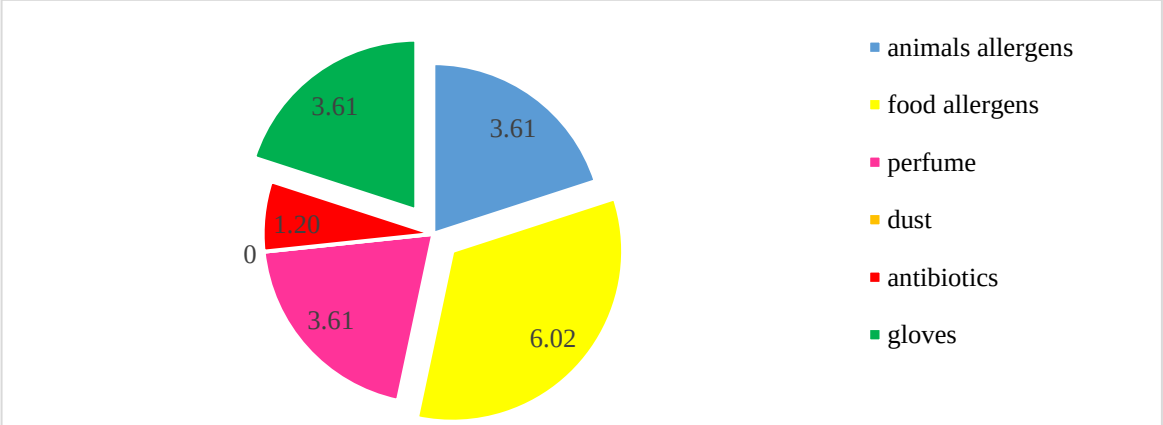

Figure 5. The frequency of occurrence of allergens among the medical staff (men) of surgical clinics (n=87), %

Foods such as eggs, nuts, citrus fruits, peaches, strawberries, legumes caused respiratory and gastrointestinal symptoms in 6.02% of men and 7.55% of women.

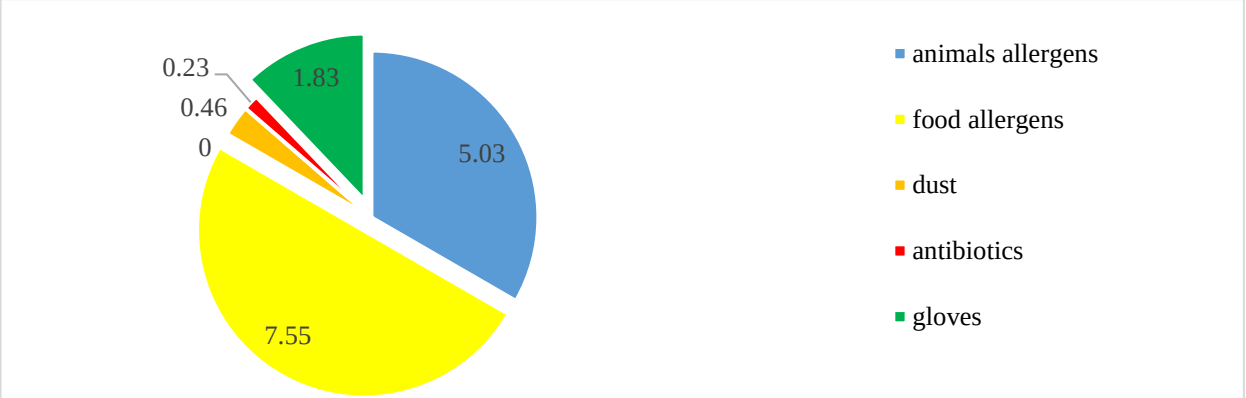

Figure 6. The frequency of occurrence of allergens among the medical staff (women) of surgical clinics (n=437), %

Latex gloves caused allergic skin reactions in 3.61% of male and 1.83% of female healthcare workers.

DISSCUSSION. The latex allergy problem is an example of a «new allergy» that suddenly emerges with enormous consequences for the health of patients and the economy. More than 12 million tons of natural latex are produced annually from rubber, but a limited number of latex-derived products have been approved and regulated by government agencies such as the FDA [9]. The prevalence of latex allergy ranges from 0.8 to 6.5% and is the second cause of perioperative anaphylaxis. The main risk factors are a healthcare worker or latex manufacturer, many hours of use of latex gloves or products, exposure to other hand irritants, a history of atopy, neural tube closure defects, or multiple surgeries at an early age [1]. In the context of coronavirus infection, adverse reactions to natural latex can have undesirable consequences, especially among healthcare professionals. Latex allergy can manifest as either immediate hypersensitivity or delayed hypersensitivity (contact dermatitis) [4, 8]. Latex allergy has also become a well-known problem among healthcare workers while wearing gloves or inhaling aerosolized particles [6].

The twenty-first century is considered to be the century of allergies, as the prevalence of allergic diseases has increased throughout the world in recent decades. One third of the world's population suffers from allergy symptoms that are often severe, disabling and life threatening, such as asthma and anaphylaxis [2].

Thus, the COVID-19 pandemic requires a special approach to the vulnerable category of persons' sensitive to latex. Recent epidemiological data illustrate the importance of this problem as an interdisciplinary one. As such, it still requires a comprehensive solution. Of particular relevance is the development of complex diagnostic measures that should be accessible to the patient and at the same time informative to establish both sensitization and allergy to latex.

In the context of coronavirus infection, occupational contact with latex allergen is every day for medical workers who work in intensive care units, virological laboratories, in departments of the sanitary and epidemiological welfare and health services, etc. Often they have to change gloves 20-50 times a day. According to a survey of medical workers, on average they change gloves more than 30 times per working day.

In the context of coronavirus infection, the frequent wearing of gloves, frequent medical procedures and the use of latex-containing products dictate the need to solve this problem. Since, in addition to medical workers, representatives of public utilities, employees of food enterprises, shops, warehouses, and pharmacies often come into contact with latex products. Scientific work to identify risk groups, early diagnosis of latex sensitivity can contribute to the prevention of

unwanted local and systemic reactions. Thus, elimination - breaking contact with latex remains the main method of preventing not only sensitivity to latex, but also the formation of atopic manifestations to other allergens.

CONCLUSION. Based on the above experimental data, a review of domestic and foreign literature, a questionnaire to identify risk factors for latex allergy can be recommended to people with atopy in the family, before hiring such people, if allergic or occupational diseases are suspected in individual workers in contact with latex products.

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