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FUNGAL ALLERGENS AND MOLD ALLERGY DIAGNOSIS

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Immunology is a branch of medicine that studies the immune system and its pathology. There are known scientific informations, that in medical immunology specific tests performed in the laboratory for diagnosis. In addition, good to mention that allergies include medical diagnostic methods such as blood tests. Also, there are used for detection the presence and the levels of IgE antibodies. Currently within the present describtion aim to discuss some aspects reffering to fungal allergen and mold allergy diagnosis, in a shortage following steps of our purposed description.

Molds produce mycotoxins, unfortunately with carcinogenic, teratogenic and neurotoxic properties, with a possible negative impact on individual healthy. Allergies related to fungi together with comorbidities, mainly concern immunocompromised patients. The currently describeing knowledges in the field of allergy between fungal allergens and human subjects, and also established the diagnosis and treatment, offer us a complex vision. For the future, hope to find into the research studies, proper knowledges in this field, with applicability in routine practice.

Key words: allergy, allergens, diagnostic, strategies, management

INTRODUCTION

In 1921, was studied the first existence of a presumptive substance with a respons to hypersensitivity. Allergic pathology is better known as a disease with a higher incidence nowadays. Mold within simptoms in peoples, caused diagnosed diseases as allergy and asthma and is a type of fungus that produces spores which float through the air., as it is known from the past [17]. A mold source can send the spores into the air, which are dangerous from healthy. In how they reproduce and grow, molds are specific from plants and also distinct to the animals. Spores causes allergic reactions in people [18]. Many questions and unclear things are in scientific world, about the patho-mechanism of allergic diseases. In principle researchers try to test allergens for a proper diagnostic and also for a good treatment which is specific for each patient. Symptoms from allergy for fungus spores are common in restrictive period of time. Allergens, in the spring become dangerous but in the winter become inactive. Many molds grow routinelly in different places. Unfortunatelly pollen, molds do not die so easy. Also, most outdoor molds become dangerous [45]. Researchers and their studies, try to find, pathophysiology mechanism about mold allergy diagnostic. In this context, results of studies, conduct to conclude about fungal allergy prevalence and immunotherapy efficacy. More than it is important to establish as well the diagnosis and therapy of fungal allergy.

WHO International Reference Centre for Immunoglobulin, told plenary about previously mentioned informations reffering to the immunology implied in allergy and concretly scientists told plenary about the presence of a fifth immunoglobulin isotype, IgE. Referring to IgE and allergy, Coombs and Gell pointed reactions types in allergy as I, II, III [22]. Different studies and their finally discussions and results, show us that the simptoms of allergens on the peoples, affecting health, play a role also in the environmental life medium [48]. The clinical manifestations, signs and simptoms of hypersensitivity reactions, affect sensible organs to peoples from differents groups of age and from different areas of life as urban or rural areas of residence [22, 24]. In context referring to alergic diseases, human individs sensible to mold has different signs and simptoms, more severe in asthma, comparing for example, with allergic rhinitis [46]. Important to know and to present a very poor shortage about treatment

directions in allergic diseases. We have not enough knowledges from practicum, about importance of AIT for treat and for cure allergy, if possible maybe. The important thing reffering to AITs for different molds is a lack of standardized extract allergens [1]. The European Academy of Allergology and Clinical Immunology (EAACI) did not recommended AIT for mold extracts in tratment to youth. As a true curiosity, lack of efficacy and safety, was observed of mold extracts therapy [31]. Nowadays, not many results of specific research studies, referring to the usage of fungal extracts for immunotherapy report a relatively poor reduction in signs and symptoms, in patients diagnosed with allergic disease [1, 17, 34].

TRADITIONAL KNOWLEDGES

Not new, that allergy has shown a higher prevalence in the last few decades. From past history, in the nineteenth century, has been started allergology as a scientific medical field of study. The central descriptions has been the hay fever. In the twentieth century research studies had in attention the anaphylaxy. Also the research conduct to routinally applications, as Prausnitz-Küstner test and IgE discovery. Another preoccupation in medicine was on T-cell description with subsets Th1 and Th2, knowing as an important progress in medicine and more exactly in immunology. Reffering to alergy and environment, including the role of pollutants in allergy, it is known that are more and different types of factors and products in environment.All of them has a bad impact on healthy. During years, scientific medical progress in allergy diagnostic, has in attention, laboratory tests, which are used basophils and mast cells. In this direction, allergen-specific immunotherapy was introduced also for allergy diagnostic. Also the first description to histamine was a great knowledge for medical purpose and in addition leukotrienes were also detected. In progressive experimental medicine for allergology and immunology field of research, medicins for therapeutics have been discovered, for practicum applications, related atopy [43]. Allergy was defined and also anaphylaxy. In 2005, an interdisciplinary team, named as experts, pointed the recognition of negative simptome in allergy disease, knowing as anaphylaxia. More than, in addition, experts designated the criteria for allergy and connected comorbidities, diagnosed [19]. Actually, it is know that allergy and immune system overreacts to a specific allergen. Then it follows antibodies production known such as Immunoglobulin E (IgE).

NOWADAYS DIAGNOSIS PRINCIPLES

Nowadays, there are knowledges about the guideline (S2k) reffering to allergen-specific immunotherapy (AIT), as a specific therapy with a great purpose in modifying effects of allegic disease. In this direction, using allergen extracts, could be possible antibodies bloking activated. Beside previously mentioned idea, in reaction following steps, mediators and tolerance-inducing cells, are also activated. This pathophysiologically mechanism together with others specific points, play a role in prevention of exacerbation of the allergen-triggered immune response. Finally point, is blocking the specific immune response with attenuation in the inflammatory tissue response [27]. Pathophysiology in allergy, is complex. There are different mechanisms depending on the basic cause. In one of pathological way, we can tell about haptens. So, the hapten (drug) binds directly to connective cells as mast cells, with implications in the immune system. Connective cells, concretlly mast cells proceed to degranulation. Then, is released histamines and also chemotaxis [7, 47]. Medications can become immunogenic, knowing informations by this smallest covalently structures. This little compounds could be observe, as specifc structures forming hapten complex. The human leukocyte antigen (HLA) molecules is an important end point in pathophisiology mechanism of allergy. In addition we can mention that in the liver metabolism, cytochrome P450 enzymes play a role, forming metabolites then become pro-haptens [8, 20]. There are knowledges reffering to a concept of a direct immune response to drugs and other biologic products for therapies that use proteins in order to stimulate a proper response. Nowadays, in allergy diagnosis, in research activity, genetic compounds is important, in attention with TCRs and HLA. Some drugs, which produce a specific reaction, are also in research attention. At the end of alergic pathology reactions, in the human body, could be observe a specific systemic symptoms, as drug-induced hypersensitivity syndrome (DRESS/DiHS) and additionally blood hemoleucogram modifications with an eosinophilia [3, 32, 35, 37]. PilA model is also important to mention in this field [37]. Actually knowing about very complex signs of allergy pathology, we can mention that there are not enough studied in this diseases, to look for specific symptoms to patients [11, 41]. Risk factors for allergy disease are pacients diagnosed with other comorbidities as COPD, obesity, and cardiovasculare pathology as hypertensive patients [15].

People must be carefully to daily diet in allergy, in order to avoid negative simptoms. So, there are known types of foods which contain various substances with a bad potential in inducing anaphylaxis signs in allergic persons [9, 12, 38]. Concluding, in illness persons, diagnosed with allergy, anaphylaxis should be take into consideration [26, 44]. Reffering to epidemiology of allergy, laboratory diagnostic criteria are signifiant. Allergic rhinitis is also a common pediatric disease. Pathophysiology of allergic rhinitis with Th2 responses in disease mechanism and also

pharmacological and immuomodulating therapy are proper for treat. Prevalence in allergic rhinitis (AR) has increased significantly [5, 6, 29]. We can mention that in allergic rhinitis, commonly pathology to children, could be observe developing symptoms as early age, starting with 6 years old [13, 25, 42]. Common allergens include an enlarge types [2, 28]. Antihistamines are used as medication to treat allergic rhinitis [14, 23, 36]. In allergen immunotherapy (AIT) blood cells as basophil cells, can demonstrate a potential tolerogenic roles of IgE/FcεRI signaling in DCs in the setting of AIT [21]. Important to mention that cytokines profiling was investigated in allergic rhinitis treatment [39]. Connective cells as basophils are mediators with a great role in initiating early phase responses in allergic rhinitis. Long-term therapy can reduce the threshold of basophil activation, which highlights the importance of AIT in treatment with a finally end point stopping the disease progression [10]. In allergic rhinitis (AR) diagnosed, nasal epithelial cells were used samples. RNA samples were extracted from previously mentioned mucosa, for laboratory analyses [40].

FUTURE DIRECTIONS

Nowadays studies offer us an enlarged perspective from different medical fields as anatomy and physiology. Currently findings reffers to few directions in optimizing allergic diseases management. For this medical purposed objectives, play a central scientific role news in allergic sensitivity and allergen exposure. Also medical strategies reffers to studies and their results in allergic diseases comorbidities. As a future direction of research could be a proper communication between neuroendocrine mediators, nerve fibers and immune cells in allergic diseases also could be observe during studies. Diagnosis in allergy is more challenging in patients with dual AR (DAR). Relatively recently defined AR phenotype is a great key point for future diagnosis in allergy. In this mentioned circumstance, the DAR patients display perennial and seasonal allergies-related nasal symptoms [30, 33]. A present but also future perspective, is relation between the adverse role of psychological stress in allergic disease. As a long term future direction, is importance to find more accurate assessment of the specific impact of stress on various regulatory and effector components of the immune system.

CONCLUSIONS

Molds produce mycotoxins, unfortunately with carcinogenic, teratogenic and neurotoxic properties, with a possible negative impact on individual healthy. Allergies related to fungi together with comorbidities, mainly concern immunocompromised patients. The currently describeing knowledges in the field of allergy between fungal allergens and human subjects, and also established the diagnosis and treatment , offer us a complex vision. For the future, hope to find into the research studies, proper knowledges in this field, with applicability in routine practice.

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A. Chesca – concept development

N. Shambilova – processing

A. Chesca, N. Shambilova – execution

A. Chesca, N. Shambilova – article writing

Conflict of interest. No conflict of interest has been declared.

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ГРИБКОВЫЕ АЛЛЕРГЕНЫ И ДИАГНОСТИКА АЛЛЕРГИИ К ПЛЕСНЕВЫМ ГРИБАМ

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Иммунология – раздел медицины, изучающий иммунную систему и ее патологию. Общеизвестна научная информация о том, что в медицинской иммунологии специальные лабораторные тесты предназначены для диагностики иммунопатологии. Наряду с этим следует отметить, что для диагностики аллергии применяют такие рутинные методы диагностики, как анализ клеток крови. Также для диагностики аллергии используется количественное определение иммуноглобулинов класса IgE. В настоящем обзоре авторы имели цель обсудить некоторые аспекты, относящиеся к грибковым аллергенам и диагностике аллергии на плесневые грибы.

Плесневые грибы вырабатывают микотоксины, которые, к сожалению, обладают канцерогенными, тератогенными и нейротоксическими свойствами, что может негативно сказаться на здоровье человека. Аллергия на грибы и сопутствующие заболевания в основном касаются пациентов с ослабленным иммунитетом. Накопленные в настоящее время знания в области аллергии на грибковые аллергены и людей, а также установленная диагностика и лечение предлагают нам комплексное видение.

В будущем мы надеемся найти в научных исследованиях надлежащие знания в этой области, применимые в повседневной практике.

Ключевые слова: аллергия, аллергены, диагностика, стратегии, менеджмент

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САҢЫРАУҚҰЛАҚТАР АЛЛЕРГЕНДЕРІ ЖӘНЕ ЗЕҢ САҢЫРАУҚҰЛАҚТАРЫНА АЛЛЕРГИЯ ДИАГНОСТИКАСЫ

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Иммунология – иммундық жүйені және оның патологиясын зерттейтін медицина саласы. Медициналық иммунологияда диагностика үшін арнайы зертханалық зерттеулер тағайындалатыны жалпыға белгілі ғылыми ақпарат.

Сонымен қатар, аллергия диагностика үшін қан жасушаларын талдау сияқты күнделікті диагностикалық әдістер қолданылатынын атап өткен жөн. IgE класы иммуноглобулиндерін сандық анықтау аллергия диагностикасы үшін де қолданылады. Бұл шолуда біз саңырауқұлақ аллергендеріне қатысты кейбір аспектілерді және келесі қадамдардың қысқаша сипаттамасы арқылы зең аллергиясының диагностикасын талқылаймыз.

Зеңдер, өкінішке орай, канцерогенді, тератогенді және нейротоксикалық қасиеттері бар микотоксиндерді шығарады, бұл адамның денсаулығына теріс әсер етуі мүмкін. Саңырауқұлақтармен байланысты аллергия қатар жүретін аурулармен бірге негізінен иммунитеті төмен науқастарға қатысты. Қазіргі уақытта саңырауқұлақ аллергендері мен адам субъектілері арасындағы аллергия саласындағы сипаттайтын білім, сондай-ақ диагностика мен емдеуді анықтаған білім бізге күрделі көзқарасты ұсынады. Болашақта зерттеу жұмыстарынан осы саладағы тиісті білімді, күнделікті тәжірибеде қолдануға болатындығын білуге үміттенемін.

Кілт сөздер: аллергия, аллергендер, диагностика, стратегиялар, басқару. менеджмент