

Biological Exploration of Immunoallergic Events at the Pasteur Institute of Côte d'Ivoire

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Abstract—Introduction : The Immunology Laboratory at the Pasteur Institute of Côte d'Ivoire (IPCI) provides the diagnosis of many diseases including immuno-allergic diseases. This study aimed to indicate the various biological tests used in the diagnosis of immuno-allergic diseases. **Patients and methods:** This was a retrospective study from 2012 to 2014 with 113 patients. Multi allergenic specific IgE Test, ALL ONZE and ALL CHECK and automated assay VIDAS system for total IgE were used on sera of patients. **Results:** Private and public hospitals provided all the patients. The clinical manifestations were mostly skin, respiratory and ENT diseases (76,10%). About 65,48 % of patients were aged 3 to 45 years. Pneumallergens occupied the first place, followed by dust cockroaches, moulds, and pollens. **Conclusion:** It is necessary to advocate epidemiological investigation on a large scale following the U.S. and Europe investigation models to screen local allergens.

Keywords— specific Ig E, total IgE, pneumallergens, trophallergens, immuno-allergic diseases, Pasteur Institute, Côte d'Ivoire.

I. INTRODUCTION

In Côte d'Ivoire, there is a variety of clinical symptoms of allergy. Numerous studies carried out in different clinical departments revealed a significant increase of allergic diseases independent of the high parasitic endemicity. Few studies are interested to perform *in vitro* biological exploration (1,2,5,6). Diagnosis of allergy, very often comes down to an interrogation and detection of total IgE. Indeed there is little testing by skin and blood tests and they are not very accessible with the use of multiallergenic tests coupled or not with the total IgE assay for detection of the allergy. The main objective of this study was to detect the allergens currently incriminated in allergic diseases in Côte d'Ivoire in order

to identify allergenic specificities of the Ivorian population.

II. PATIENTS AND METHODS

Patients

This is a retrospective study carried out between 2012 to 2014 on 113 patients residing in Abidjan, the capital city of Côte d'Ivoire. Both sex were represented and the age ranged from one year to 71 year old. Patients were coming from the public and private hospitals of Abidjan. These patients were referred to the Unit of Reception of the Pasteur Institute of Côte d'Ivoire for blood analysis. The serum collected was used at the Biology of Immunity Laboratory for biological tests.

Methods:

The biological tests below were carried out on the serums of the patients with:

- The VidasTotal IgE Assay using VIDAS system [VIDAS PC-Vitek System (version 4.0.0)] an automated assay combined the indirect enzyme immunoassay method with a final fluorescence detection (ELFA). The results of VIDAS TOTAL IgE were expressed in units KIU / L : 120 KIU / L about 6 years to adult, 0- 45 KIU / L about 0 to 6 years.
- The Multiallergenic Assay of ALLDIAG Laboratories, ALLONZE (representing 11 individual pneumallergens) and ALL CHECK+ (representing 11 mix family panel of allergens, pneumallergens and trophallergens) (Figure 1). This assay used Immunoblot assay for the quantitative determination of circulating allergen-specific Immunoglobulin E (IgE) in human serum. The results of other immunoenzymatic tests in solid phase (ALLONZE et ALL CHECK+) was expressed in unit class. This classification used color chart variant between class 1 and 4. The two IgE specific ALL ONZE and ALL CHECK tests were used either alone, both associated or associated with the Total IgE test.



Whatever the test used to detected IgE specific, it arise that the pneumallergen family was strongly represented with successively the dust/cockroaches [D/ I, D1 D2 I6], the moulds [M3,M6], the pollens [(T9,T23,G3)Grasses,Tree,Weeds]. The trophallergens occupy the second rank with the following allergens [(egg white,milk,cod,crab) Pediatric Mixture] followed by Nuts ,cereals and fruits (**Figure 3**).

III. DISCUSSION

The clinical aspect of our target population was similar to that of several studies which reported that several target organs were affected in allergic manifestations [7] [3].The high total IgE values deserve extensive hematological exploration in search of hypereosinophilia and parasitological examination in the context of African tropical countries with high malaria endemicity and intestinal parasitosis [3].

The clear regression of the demand for total IgE for the benefit of specific IgE is explained by the fact that it retains only an orientation value whenever it is not

possible to easily dose specific IgE. Current technological advances have led to a better knowledge and appreciation of the indication of allergenic panels for the determination of specific IgE [3]. The seropositivity of tests with pneumallergens mainly to mites, insects (cockroaches) and to moulds is certainly linked to the climatic characteristics of the city of Abidjan, where there is a high rainfall between 150 <P <300 mm and a high hygrometry between 80 <H <90 mm [6] responsible for the proliferation of pneumallergens in the indoor environment of homes and outdoors. A recent study in the district of Abidjan [4] highlighted pollen exposure in the district of Abidjan, incriminating plants such as *Ceiba pentandra* (Malvaceae), *Petersianthus macrocarpus* (Lecythidaceae), which are responsible for pulmonary, ENT and dermal manifestations. As for trophallergenes, they are part of the food allergens commonly found in the literature [9], [8], [7]. However, work should be carried out to identify local allergenic specificities according to new eating habits and

lifestyles in order to enrich the tests already available [10].

IV. CONCLUSION

This study provides a panel of allergens to improve local specific allergens. The management and biological exploration would be easier and accessible to the low income section of the population of Côte d'Ivoire.

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Table.1 : Clinical signs distribution as a function of age and gender.

Signs	Number of patients	Sex			Age (years)				
		Men	women	Not specified	1-3	3 -15	15-45	>45	Not specified
Cutaneous	44	18	25	1	2	9	24	6	3
Respiratory & ENT	42	22	20	0	16	21	2	3	0
Ocular	1	0	1	0	0	1	0	0	0
Digestive	0	0	0	0	0	0	0	0	0
Association of signs	5	2	3	0	2	0	2	0	1
Not specified	21	10	8	3	1	6	9	3	2
Total	113	52	57	4	21	37	37	12	6

Table.2: Number of patients from Hospital by year

Hospital Structure	Number of patients by year			Total
	2012	2013	2014	
Pasteur Institute	10	5	6	21
University Hospital	11	10	19	40
public Center	5	4	3	12
privateCenter	7	18	13	38
Not specified	1	0	1	2
Total	34	37	42	113

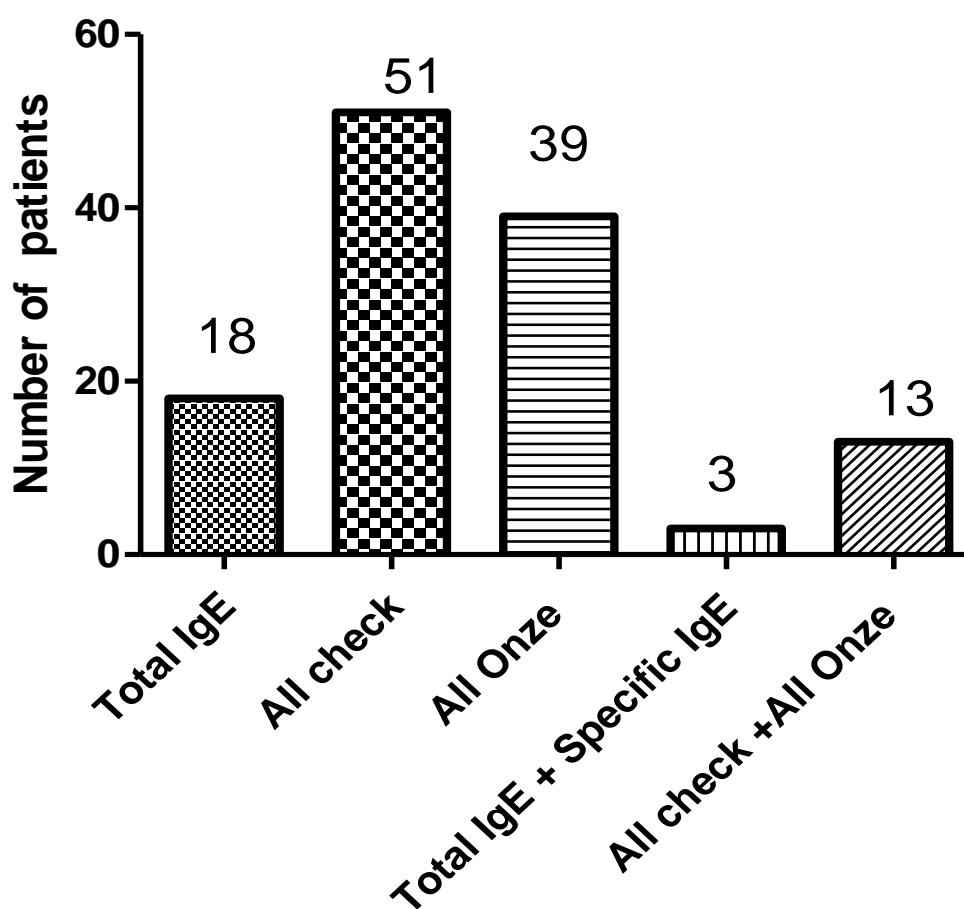


Fig.2: Seropositivity profile of patients for different tests

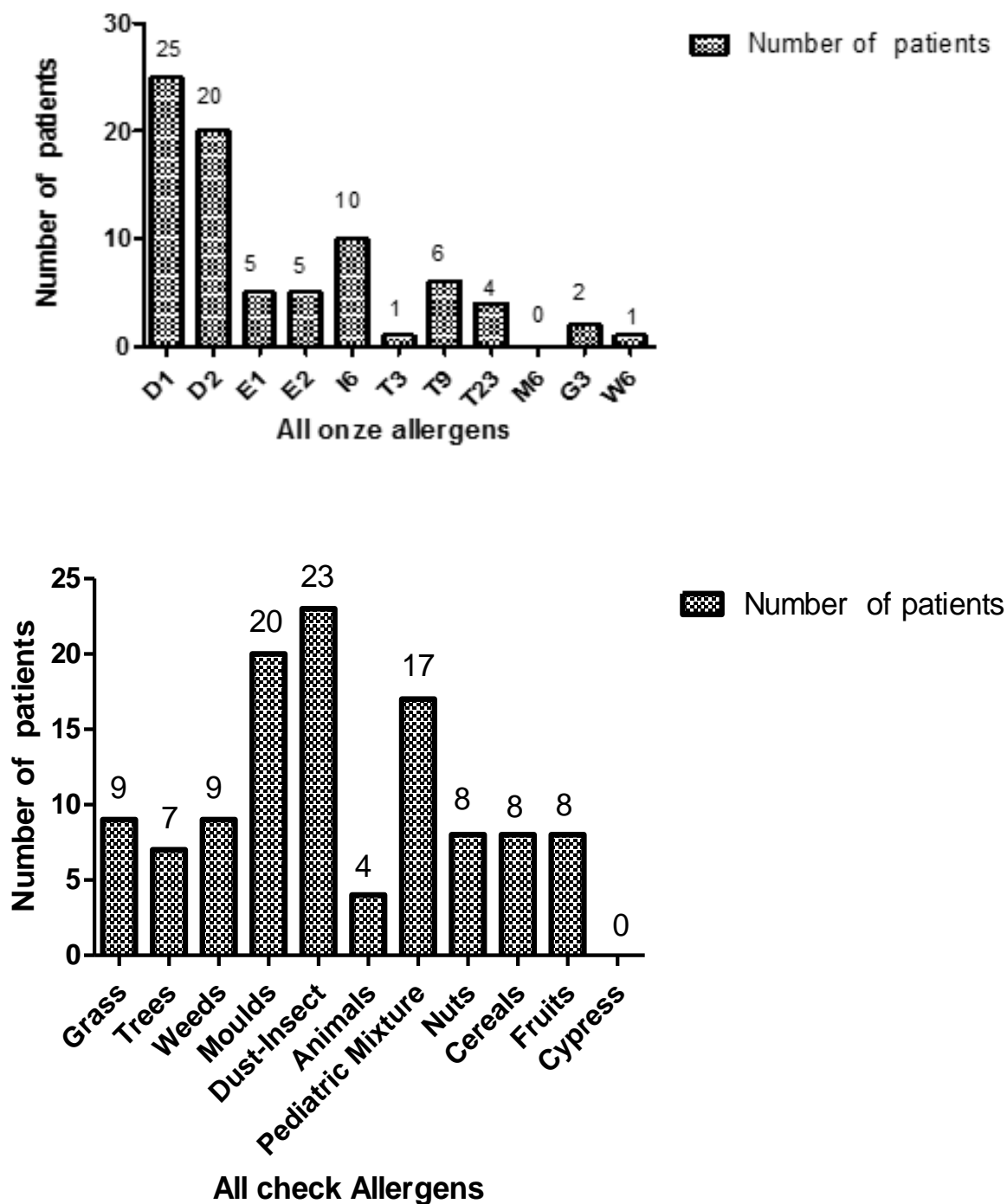


Fig.3: Seroprevalence of specific allergens (All check , All onze) for patients