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CLINICAL IMMUNOLOGY AS A NEW SPECIALTY IN PUBLIC HEALTH: A MODEL FOR DEVELOPING COUNTRIES[1]

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Between 1975 and 1980 the Venezuelan Government established a National Clinical Immunology Center and six regional clinical immunology units. Results to date suggest this effort might be used as a model for establishing the practice of clinical immunology in other developing countries.

Introduction

"The extraordinary, rapid development of immunology, with its increasing significance in almost all other branches of the medical sciences, has created new needs with respect to the teaching of this subject in the medical curriculum." This initial paragraph of a 1967 WHO technical report (No. 358) recognized the urgent need to develop medical school teaching programs in immunology. The report also stressed the close link between immunology and clinical disciplines and suggested a model for integrating the work of several specialists within the basic structure of an immunology unit *(1)*. The same report presented the opinion of the British Society for Immunology on this topic and provided examples of immunology programs in several medical schools around the world.

In 1971 Whittingham and Mackay *(2)* wrote their classic treatise on the principles, structure, and functions of a department of clinical immunology within a hospital environment. That same year a WHO expert committee in Geneva described in detail the objectives, structure, and functions of a department of clinical immunology—both for a department operating in a standard medical school or hospital context and for one applying clinical immunology for public health purposes in either developing or developed countries *(3)*.

Further advancing this move to establish clinical immunology as a new medical specialty, in 1975 the Committee on Hospital-based Laboratory and Clinical Immunology of the Council of the American Association of Immunologists issued a position paper recognizing the need to organize clinical immunology units and outlining their functions. Among other things, the committee recommended creating a medical board to certify clinical immunologists *(4)*.

The next year the Clinical Immunology Committee of the International Union of Immunological Societies (IUIS) published its own conclusions on the matter *(5)*. These stressed the importance of offering criteria by which national agencies could recognize clinical immunology as a medical specialty. They also underlined the need to provide a basis for organizing departments, centers, and training opportunities in clinical immunology, as well as for evaluating and standardizing immunologic tests and the treatment provided for patients with immunologic disorders. Some aspects of these subjects that are still being developed were discussed at the recent (July 1980) IV International Congress in Immunology at Paris.

The Venezuelan Program

Efforts to establish the specialty of clinical immunology in Venezuela began in 1972 with the creation of laboratory facilities and initiation of medical school and postgraduate

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courses. These undertakings promoted an increase in the number of clinical immunology specialists acting as consultants in medical or pediatric departments and led to the opening of an outpatient service in clinical immunology.

In 1975 the Government founded the National Clinical Immunology Center to extend patient care, teaching, training, and research in clinical immunology nationwide. Preliminary results of this action were described at a course (the first investigative course in advanced rheumatology) sponsored by WHO and the International League Against Rheumatism that was held in England in 1977 *(6)*. In 1978 the Venezuelan Federation of Medical Societies approved the designation of clinical immunology as a distinct medical specialty. Overall, the successful evolution of Venezuela's clinical immunology program since establishment of the national center in 1975 is such as to suggest that this program could be used as a model for establishing the practice of clinical immunology in other developing countries.

The National Clinical Immunology Center

The National Clinical Immunology Center, an agency of the health ministry's Public Health Division, serves as the main office for this program. While one of the main reasons for the program's success has been extensive decentralization via regional units (each regional unit being independently administered), the center provides supervision for the regional units in scientific and technical matters. The national center's director, a clinical immunologist, is also the chief immunologist of the pilot regional unit in Caracas.

The national center is in charge of quality-control protocols for the immunodiagnostic services provided and organizes protocols for the preparation of stock biological materials (antisera, special reagents, etc.). The center also maintains international ties with major immunology institutes and laboratories around the world and conducts activities sponsored by the WHO Immunology Unit. In addition, the center was recently accepted as an active member of the International Union of Immunological Societies' clinical immunology committee in collaboration with the Venezuelan Society of Allergy and Immunology. Finally, the center publishes the journal *Inmunología Clínica,* the only journal on clinical immunology written in Spanish.

The Clinical Immunology Unit

The main thrust of Venezuela's program depends upon the development of clinical immunology units in each primary health zone, every unit covering two, three, or four states. All the units are administered by the Ministry of Health through its Public Health Division and the office of the National Clinical Immunology Center. The main objectives of these units are as follows:

- To provide medical care for patients with primarily immunologic diseases or with diseases that have significant immunologic components.
- To establish immunodiagnostic facilities for both chronic and tropical diseases.
- To evaluate the prevalence of immunologically mediated diseases by region, by conducting controlled immunoepidemiologic studies.
- To carry out research projects in both clinical and experimental immunology.
- To offer short (six-month) courses in laboratory immunology that are designed to train bioanalysts from the various states in each unit's primary health zone.
- To provide both basic and applied courses in immunology for medical students and hospital staff members (interns, residents, and postgraduate trainees) specializing in internal medicine, endocrinology, and other disciplines.

Each unit, which occupies approximately 300 square meters of space, is divided into areas for studying antibody and cell-mediated immunologic functions and for complement and neutrophil evaluations. All the units have cell culture, isotope, and cold-room facilities. The pilot unit (in Caracas) also has a fully developed tissue-typing laboratory. This unit serves the national renal transplant program; it also conducts its own disease and human leukocyte antigen (HLA) research, as well as

research on the immunogenetic characteristics of the general Venezuelan population.

The unit staffs consist of clinical immunologists, experimental immunologists, and well-qualified technicians. The clinical immunologists are in charge of coordinating patient care activities, supervising work at the outpatient clinic, and serving as interdepartmental consultants. They also participate in teaching and research performed at the unit.

The chief clinical immunologist (the regional unit coordinator) supervises the unit and prepares the budget for each fiscal year. Every six months he meets at the office of the national center to plan major policies jointly with the director of the national center and other regional coordinators. The regional coordinator also visits each major hospital in the states served by his unit in order to assess the immunodiagnostic laboratory services being provided by the unit.

Personnel Training

The National Clinical Immunology Center offers two types of training in immunology. One consists of a three-year, university-affiliated program intended to prepare physicians with previous training in internal medicine or pediatrics as clinical immunologists. The first 18 months of this program include familiarization with the different immunologic techniques (60 per cent of the total schedule), clinical rotations (duties at outpatient facilities and consultations), basic and clinical seminars, and work with journal clubs to review the available literature and specialized references. The second 18 months are devoted to preparation of a thesis in clinical or experimental immunology and to clinical activities for senior residents. Upon successful completion of this program, the candidate receives a MSc in clinical immunology from Venezuela's Central University Medical School. The other type of training in immunology is provided by a two-year, university-affiliated program intended for biologists or bioanalysts. The course includes one year of training in immunologic techniques combined with active participation in basic seminars and journal clubs. A research thesis is completed the second year. Those successfully finishing this program receive the degree of MSc in Experimental Immunology and Immunodiagnosis.

In addition, the Venezuelan Institute of Scientific Investigations has organized a two-year program to train candidates in basic immunology.

The National Clinical Immunology Center offers posts throughout its regional network to graduates of the two government programs. Graduates of the institute program are also eligible for these positions.

National Program Results, 1975-1980

During its first five years of operation, the national center established six regional units. Seven physicians completed their training as clinical immunologists, and six of these were either in charge of or assigned to the regional units. It was expected at the end of this period that each of the country's primary health zones would have at least one regional unit by December 1981. Basic courses in immunology were being given throughout the country; and eight issues of *Inmunología Clínica* had been published.

In addition, research has been oriented toward establishing normal immunologic parameters for the Venezuelan population (total IgE and IgG, IgA, IgM, circulating immune complexes, total serum hemolytic activity, and human leukocyte antigens) and toward investigation of chronic and tropical diseases *(7-11)*. In this vein, a reappraisal of the clinical immunology and classification of allergic reactions was recently proposed *(12)*. Table 1 shows a list of the immunodiagnostic tests most frequently conducted in 1980. The diseases most commonly diagnosed in 1980 were as follows:

(1) Atopic complex diseases (bronchial asthma, atopic rhinitis, dermatitis, food allergies, and others)
(2) Vascular collagen disease
(3) Auto-immune thyroid disease

(4) Immunodeficiencies
(5) Anergic forms of infectious diseases
(6) Monoclonal gammopathies
(7) Endocrine and liver disorders[a]
(8) Lymphomas, leukemias, and other cancers[a]

[a]Diagnosed through interdepartmental consultations.

In all, 3,732 cases of these diseases were diagnosed in 1980, 1,137 in new patients and 2,595 in previously diagnosed "controls" making return visits.

Concluding Remarks

We believe that clinical immunology has acquired sufficiently extensive development to be considered a distinct medical specialty throughout the world. To cite only one example, scientific journals frequently publish significant contributions on current knowledge about immunologically mediated clinical entities.

However, major diagnostic problems still remain to be resolved. For this reason it is essential to use an integrated approach in examining patients suspected of having an immunologically mediated disease. This approach should include simultaneous measurement of antibody and cell-mediated immune responses; and, whenever indicated, complement and neutrophil evaluations should be performed as well. Such an integrated approach is particularly useful when an antigen-specific response is being sought. In contrast, it helps little to perform isolated immunologic tests such as immunoglobulin quantitation, T and B cell distribution, or a single immune complex determination.

At the same time, it is essential to standardize the various antigenic preparations and methods currently employed in clinical immunodiagnosis, and to clearly specify the usefulness of these preparations and methods in the clinical setting.

Finally, ways of performing two formidable tasks remain to be devised. That is, we need to determine the correct applications for the various forms of specific and nonspecific immunologic therapy, and we need to establish a convenient and effective bridge that will permit the field of clinical allergy to merge with that of clinical immunology.

Within this context, progressive development of clinical immunology is essential in the world's developing areas. Among other

Table 1. Immunodiagnostic tests conducted by the regional units of Venezuela's National Clinical Immunology Center in 1979. In all, 22,178 tests were conducted.

Test	No. of tests performed by each regional unit					
	North (Pilot)	South-west	North-west	West	Central-south	South
Ig's	339	1,550	285	545	180	242
CH_{50} antigens[a]	1,738	655	1,050	-	242	840
Antinuclear antibodies	1,272	508	1,069	931	224	1,081
C3	46	108	-	592	-	-
Anti-tyroglobulin	-	-	192	141	-	-
Anti-thyroid microsomes	238	-	47	52	-	-
Anti-amebiasis	-	134	-	-	-	-
Anti-toxoplasmosis	-	827	-	449	-	-
Rheumatoid factor	745	1,268	671	221	113	445
Cryoglobulins	105	65	45	85	-	-
Anti-DNA	125	-	-	-	-	-
Immune complexes	172	-	-	-	-	-
Renal biopsies (IF)	224	-	-	-	-	-
HLA typing	361	-	-	-	-	-

[a]CH_{50} = total serum hemolytic activity.

things, efficient immunologic facilities are needed to combat the very high prevalences of parasitic and other tropical diseases. Such facilities can also help to screen and appropriately diagnose many chronic diseases that are often not perceived but that nevertheless cause substantial morbidity among the at-risk populations of the developing world.

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SUMMARY

Efforts to establish the specialty of clinical immunology in Venezuela began in 1972 with provision of undergraduate and postgraduate courses and creation of laboratory facilities. However, a major step forward was taken in 1975, when the Government founded the National Clinical Immunology Center to extend patient care, teaching, training, and research in clinical immunology nationwide.

This national center's responsibilities include establishing regional clinical immunology units and providing scientific and technical supervision for those units. The functions of the units, in turn, are to provide medical care for patients with immunologic diseases, help diagnose various chronic and tropical diseases, assess the prevalence of immunologically mediated diseases, conduct immunologic research, and give a variety of courses in clinical immunology that are designed to prepare laboratory personnel and physicians in this field. Six of these regional units were established by the national center during the years 1975-1980. Overall, the success achieved in the first five years of these activities (1975-1980) suggests they might be used as a model for establishing the practice of clinical immunology in other developing countries.

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BARBADOS NUTRITION SURVEY COMPLETED

A team of nutritionists from the National Nutrition Center and the Caribbean Food and Nutrition Institute (CFNI) recently conducted a National Food and Nutrition Survey in Barbados. Beginning in May 1981, the group collected and analyzed data on household food consumption and production, dietary histories (using the 24-hour recall method), breastfeeding and weaning practices of mothers with children 0-1 year, and the etiology of obesity. Interviews were carried out both at the Center and in the field on a selected sample of the population.

A previous survey, conducted in 1969 by the Government of Barbados in collaboration with CFNI, was published in 1972 by PAHO (Scientific Publication No. 237).

Source: Caribbean Food and Nutrition Institute, *Cajanus, The Caribbean Food and Nutrition Institute Quarterly* 14(4):235, 1981.