

Project Title: Omalizumab for severe food allergy in a large Italian cohort of asthmatic children

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Type, Duration and Location of Fellowship: Clinical Fellowship, 1 September 2024 -28 February 2025 (6 months), Bambino Gesù Children's Hospital, Rome, ITALY

Clinical Fellowship Report

Summary of Activities

It was a privilege to be awarded the 2024 Clinical Fellowship by the European Academy of Allergy and Clinical Immunology (EAACI), and I feel very fortunate to have shared this experience with the amazing team at Bambino Gesù Children's Hospital. During my fellowship, I was deeply involved in various clinical activities primarily focused on pediatric allergy. My experience included observing patient care, actively participating in examinations, conducting diagnostic procedures, and discussing complex cases with leading experts in the field.

During this period, I observed approximately 1,000 patients, averaging 50-60 patients per week over the course of 24 weeks. Each workday was around 8 hours long, resulting in an effective working time of 40 hours per week, with 2 days of the week extending to 13-14 hours. Below, I have provided a detailed description of my daily activities, patient interactions, and the clinical environments in which I was involved.

First of all, I participated in the activities in the Allergy Unit where I had the opportunity to observe patients with severe food allergies, anaphylaxis, eosinophilic esophagitis, asthma, allergic rhinitis, nasal polyposis and drug allergies. I observed oral provocations, the process of diagnosing food-allergic patients, and observed many patients regarding the evaluation of molecular allergen tests. I participated in drug and food provocations, immunotherapy applications and skin test applications in the day hospital.

Weekly plan:

Monday:

Morning: Attended oral food challenge sessions at the Day Hospital, where I observed quantified doses of food and protein for oral administration to patients with suspected food allergies. I engaged in patient history-taking and case reviews with consultants and residents in pediatric allergy

Afternoon: Accompanied Dr. Stefania Arasi in her specialized allergy outpatient clinic, where I gained additional insights into food allergy and other allergic diseases (allergic rhinitis, asthma, chronic urticaria..).

Tuesday:

Morning: Attended oral food challenge sessions at the Day Hospital where I observed quantified doses of food and protein for oral administration to patients with suspected food allergies. I engaged in patient history-taking and case reviews with consultants and residents in pediatric allergy.

Afternoon: Accompanied Dr. Stefania Arasi in her specialized allergy inpatient clinic in Gianicolo, where I gained additional insights into FPIES.

Wednesday:

Morning: I attended the outpatient clinic where patients with severe asthma and food allergies were seen, and here I learned the criteria for starting Omalizumab, follow-up processes, and the timing of oral food challenge tests for patients under biological therapy, and how to evaluate component resolved molecular test results in patients with multiple food allergies. I had the opportunity to examine these patients in the outpatient clinic. And I saw all the patients who participated in the study.

Afternoon: Accompanied Dr. Stefania Arasi in her specialized allergy outpatient clinic in San Paolo, where I gained additional insights into general allergic diseases.

Thursday: Attended drug challenge sessions at the Day Hospital, where I observed quantified doses of drug intradermal and oral administration to patients with suspected drug allergies. I engaged in patient history-taking and case reviews with consultants and residents in pediatric allergy. I observed the evaluation process and immunotherapy applications of patients with a history of venom anaphylaxis. I have observed numerous applications of sublingual immunotherapy for seasonal allergic rhinitis.

Friday: Attended oral food challenge sessions at the Day Hospital. I participated in the evaluation of patients with nasal polyps. I participated in the eosinophilic esophagitis clinic.

In addition to these routine daily responsibilities, I was engaged in the following additional activities:

-La Rinite e ... l'Allergologo "Focus On Gestione Specialistica Della Rinite Allergica"

(13-14.12.2024)

I was sent by the hospital to a two-day symposium on seasonal allergic rhinitis. I observed nasal cytology and nasal endoscopy applications at this symposium.

-Allergology Club in Bambino Gesù (29.01.2025)

-I joined an Allergy Club at Bambino Gesù Children's Hospital, Meyer Hospital, Bambino Gesù Hospital, where there were well-known professors in the field of allergy and a researcher from Canada. I followed the innovations in the field of allergy. Many topics were discussed.

-FAAM 2024 Athens

I attended the FAAM meeting and Postgraduate (Immunonutrition and atopic disorders) course.

Research Involvement:

We published a review article titled "New Approaches in Childhood IgE-Mediated Food Allergy Treatment" in the Current Opinion in Allergy and Clinical Immunology journal. We have been invited to write a review article as part of the EAACI Fellowship Program initiative (Hot Topic Review). This review article is currently under evaluation.

Details of the work carried out by Stefania Arasi are presented below.

Our project Omalizumab for severe food allergy in a large Italian cohort of asthmatic children is currently ongoing at Bambino Gesù hospital by Stefania Arasi. The study methodology

screened children (6-18 years) with severe allergic asthma and severe FA, food allergy with ≥ 1 food allergen. Oral food tests (OFCs), SPT, complete blood count, chemistry, IgA, IgG, IgM, total and sIgE were measured at T0 (baseline) and at 12 months of omalizumab. 76 patients (previously published cohort plus 11 newly enrolled patients) were included [OSAFA (Omalizumab for Severe Food Allergy in Asthmatics with Food Allergy) study]. 69.7% were male and 30.3% female, mean (SD) age was 12.2 (4.19) years. 77.6% had 2+ food allergies. Total IgE median was 778.73 kU/L. SPT response decreased gradually with Omalizumab treatment for all food allergens. The probability of reaching a free diet increased if there was a decrease in specific food SPT at 12 months. Omalizumab dose showed significant dose-related efficacy when administered according to body weight (OR=1.09, $p=.009$), independent of baseline tIgE levels ($p=NS$). Omalizumab dose (mg/month) correlated with efficacy in desensitization. SPT change (from baseline at 1 year) is a good predictor of desensitization under Omalizumab. This study data support that Omalizumab doses should be adjusted according to body weight alone, independent of tIgE levels.

Achieved Objectives:

I successfully accomplished the objectives established for theoretical knowledge, practical skills, and research activities in allergology during my fellowship at the Bambino Gesù Children's Hospital. Through active participation in specialised clinics and discussions with leading experts, I strengthened my comprehension of immunological processes and allergic reactions. I acquired practical experience in both in vitro and in vivo techniques, such as provocation tests, skin testing, and antigen preparation. Furthermore, I participated in research and teaching endeavours, including the observation of advanced research projects and the facilitation of interhospital sessions. My practical skills and expertise in the field of allergology have been significantly enhanced by this fellowship.

Conclusion:

In summary, the academic experience provided by this fellowship at the Bambino Gesù Children's Hospital has been invaluable. It enabled me to significantly expand my understanding of allergology, collaborate with distinguished professionals from countries other than my own, improve my English and Italian language skills, and exchange diverse approaches within our field. I am appreciative of the EAACI for providing me with this exceptional opportunity, which has made a significant contribution to my professional growth.

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