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EAACI Clinical Fellowship Final Report 2024

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Project title: Diagnostic Algorithm of Angioedema Created by Multidimensional Endotyping

Home Institution: Istanbul University, Istanbul Faculty of Medicine, Department of Internal Medicine
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Home Supervisor: Prof Dr Aslı (Gelincik) Akkor

Host institution: Immunomodulation and Tolerance Group (ITG), Department of National Heart and Lung Institute at Imperial College London

Host Supervisor: Prof Mohamed Shamji

Duration of Fellowship: 10JUN24-9SEP24 (including)

I was awarded a three-month Clinical Fellowship Programme at Imperial College London, within the Immunomodulation and Tolerance Group of the Department of National Heart and Lung Institute.

During my three-month stay in Prof Mohamed Shamji's group as part of the prestigious EAACI fellowship programme, I worked closely with Prof Shamji and a data scientist to develop a diagnostic algorithm for recurrent angioedema. During my time in the group, I was able to gain an understanding of basic laboratory principles and applications. I also had the opportunity to learn basic immunology skills, including peripheral blood mononuclear cell isolation and basophil activation assays. In particular, I acquired the skills necessary to interpret the basophil activation test, analyse the data obtained and draw appropriate conclusions. I have become more proficient in carrying out all the steps involved in the basophil activation test.

Moreover, we have commenced the preparation of a review on regulatory T cells (Tregs) and allergen immunotherapy with Prof. Shamji, thanks to the opportunity provided by EAACI. It is our intention to complete and publish the review in the shortest possible time.

I am pleased to inform you that significant headway has been made on the project that previously named with "Diagnostic Algorithm of Angioedema Created by Multidimensional Endotyping". However, there are still a few remaining tasks to be completed, which unfortunately means that the project cannot yet be considered complete.

Previously, patients presenting with both angioedema and urticaria were excluded from the study. However, we considered that the reflection of this situation would remain as incomplete data in our study and therefore planned to remove it from the exclusion criteria. In other words, the intention was to include cases of angioedema with urticaria in the study.

Moreover, the preliminary findings on artificial intelligence have demonstrated considerable promise in clustering the angioedema subgroups. To enhance the robustness of the study, the number of centres was expanded and a centre in Spain, which has considerable expertise in the field of angioedema, was included. It was intended that the anonymised patients from this centre would be included in the study.

Furthermore, it was determined that it would be more appropriate to first perform cluster analysis and then create an algorithm within the study. Consequently, the name was changed to "Artificial intelligence driven approaches to endotype patients with recurrent angioedema".

In order to conclude the project with the incorporation of the recently acquired data, a further three months are required. We will inform the EAACI about results.

This special experience has been very enlightening for me from an academic point of view. It has been a unique opportunity to collaborate with Prof. Shamji and his team. I am indebted to Prof. Shamji, my supervisor, for providing me with a singular opportunity, sharing his expertise and experience, including me in his team, and offering invaluable and unconditional support in preparing my research project. I would also like to thank Janice A Layhadi, Nichell Samson, Natanya J Cartwright, William T Fulton, Atharva H Karmalkar, Mikila R Jacobson and Sean T Keanee for their guidance, support and excellent friendship throughout my fellowship. Furthermore, I would like to express my gratitude to my mentor Prof. Dr. Asli (Gelincik) Akkor and Assoc. Prof. Dr. Semra Demir, Assoc. Prof. Dr. Derya Unal, for their invaluable guidance and support throughout this experience. It is a privilege to have worked alongside them as a member of the Istanbul University Istanbul Medical Faculty.

Sincerely

Ilkim Deniz Toprak