REPORT

Report on participation of the ICMR International Fellow (ICMR-IF) in Training/Research abroad

1) **Name and Designation of the ICMR-IF**: Dr Suvasini Sharma, Associate Professor, Department of Pediatrics, Lady Hardinge Medical College, New Delhi

2) **Address:** A-103, Mahindra Apartments, Vikaspuri, New Delhi-110018

3) **Frontline area of research in which training/research was carried out:** Pediatric neuro-immunology and movement disorders

4) **Name and address of Professor and host institute:**

Professor Russell Dale, Professor of Paediatric Neurology, Clinical school and Neurology, The Children's Hospital at Westmead, NSW 2145, Australia E-mail: Russell.dale@health.nsw.gov.au

5) **Duration of fellowship:** 3 months

6) **Highlights of work conducted:**

i) **Technique/Expertise acquired:**

a) Movement disorders: I attended speciality multidisciplinary clinics for children with movement disorders and Tourette syndrome. I was able to see many children with complex and genetic movement disorders, e.g. movement disorder associated with ADCY5 mutations and KMT2B mutations. I learnt regarding their clinical evaluation, investigation planning especially the genetic work-up and multi-disciplinary management including medical management, rehabilitation and deep brain stimulation. I learnt about the clinical evaluation and multi-disciplinary management of Tourette syndrome and its co-morbidities.

b) Neuroimmunology: I was able to see children with neuro-immunological disorders such as auto-immune encephalitis, inflammatory demyelinating disorders (acute disseminated encephalomyelitis, multiple sclerosis, neuromyelitis optica and demyelinating disease associated with myelin oligodendrocyte glycoprotein (anti-MOG) antibodies), opsoclonus myoclonus syndrome, myasthenia gravis and pediatric acute neuropsychiatric syndrome.

I learnt about the clinical, neuroradiological and immunological work-up of these children, especially newer techniques such as the use of CSF neopterin as a marker of brain inflammation. I learnt about the spectrum of

anti-MOG seropositive demyelinating disease, which is one of the recent developments in the field of inflammatory demyelinating disease.
I learnt about the latest advances in the treatment of these disorders with immunotherapeutics- the use of rituximab, steroids, IVIG and mycophenolate mofetil- the various dosing regimens, and the monitoring used. I was also able to observe and learn the use of two new immunotherapeutic agents- natalizumab in a child with multiple sclersosis and ruxolitinib in a child with Aicardi-Goutier syndrome.
I also learnt about the clinical recognition, diagnosis and management of children with pediatric acute neuropsychiatric syndrome (PANS), a relapsing remitting post-infectious brain inflammatory disease. . This is clinical condition defined by the unusually abrupt onset of obsessive-compulsive symptoms and/or severe eating restrictions and concomitant cognitive, behavioral or neurologic symptoms. I learnt about the use of macroloide antibiotics as immunomodulators, steroids, IVIG and rituximab in this condition. I also learnt the neuro-psychiatric evaluation (including the use of psychiatric scales) and treatment with neuropsychiatric medications such as fluoxetine, risperidone, aripiprazole, clonidine and sertraline.

c) Miscellaneous: I saw children with many other neurological illnesses- such as complex genetic epilepsies, genetic peripheral neuropathies etc. I learnt the multidisciplinary management of these children and parental counselling. I also attended the "Encephalitis Project" meetings where cases of childhood encephalitis from all over Australia were reviewed and diagnosis ascertained by expert consensus.

ii) **Research results, including any papers prepared/submitted for publication:**

- Collaborative work- Collected the clinical and laboratory data of 36 children with pediatric acute neuropsychiatric syndrome. This data will be collated along with ongoing CSF cytokine studies and immune pathway gene expression studies and presented once the results of these studies are available.
- Worked on the development of a Clinical severity rating scale for anti-NMDA receptor antibody encephalitis. This scale is intended to gauge the severity of the disease and monitor the patient during follow up, and help guide therapeutic decisions. The first draft of the scale has been prepared and will be sent to international experts for their comments and suggestions.
- Collaboated on review on immunotherapeutics in autoimmune brain diseases: Nosadini D, Sartori S, Sharma S, Dale RC. Immunotherapeutics in pediatric autoimmune CNS disease: agents and mechanisms. Sem Pediatr Neurol 2017; In press

- Review and chapter on Acute Disseminated Encephalomyelitis: Sharma S, Dale RC. Acute Disseminated Encephalomyelitis. Textbook on acute encephalopathies in children. In press.

iii) Proposed utilization of the experience in India

I will be able to utilize what I have learnt here for the better clinical and diagnostic evaluation and management of children with movement disorders and neuroimmunological problems in India. I will also share my knowledge with fellow pediatric neurologists, and paediatricians and trainees.

There is currently no data on PANS from India. I will try to increase the awareness of this entity amongst pediatric neurologists, paediatricians, and psychiatrists.

I hope to start a multi-center database to collect data on the clinical presentation and treatment of children with multiple sclerosis and neuromyelitis optica in India. Many centers in India (including ours) are using inexpensive therapies as compared to the West, and this data needs to be collated and reported. Also, a database will help in the long term follow up and understanding the evolution of these children.

I will also try to coordinate with colleagues in biochemistry and immunology and build up the laboratory facilities for the diagnosis of these conditions.

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Dr Suvasini Sharma