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THE FIELD OF INTERVENTIONAL NEUROLOGY (IN) IN PAKISTAN: SCOPE AND CHALLENGES

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Interventional neurology (IN), a subspecialty of neurology, has been evolving in Pakistan since 2000. Initially, Interventional Radiology (IR) led the field, with most procedures being elective. The establishment of IR fellowships in nine centers across the country marked a significant milestone.¹ The rising prevalence of stroke in Pakistan has led to the establishment of stroke units in major cities, with some centers offering endovascular procedures like mechanical thrombectomy (MT) and stenting.

The pioneering work in stroke care in Pakistan first began in the field of IR at Aga Khan and Shaukat Khanum hospitals in 2000 and similarly acute stroke management was also pioneered at AKU IR under the leadership of Dr. Tanveer. In 2013 Prof. Qasim Bashir, a renowned neurologist, upon returning from USA started stroke intervention at Lahore both in Services Institute of Medical Sciences (SIMS) hospital as well as in private. SIMS hospital was the only center for tPA at that time. In the following year Prof. Qasim Bashir also started neuro intervention cases at Punjab Institute of Neurosciences (PINS). MT was also started at Lahore General Hospital (LGH) in 2014 by Prof. Umair Rasheed Choudhry in collaboration with international experts Prof. Ossama Mansour and Dr. Husnain Haider Shah.¹ These landmark achievements marked the beginning of a new era in stroke care in Pakistan. Soon neurointervention and stroke care was started at Pak Emirates Military Hospital (PEMH), first in Interventional Radiology department and later in Hyper Acute Stroke Unit in 2016. The later was established by Lt. Col. Dr. Jahanzeb Liaqat.²

The history of IN highlights the contributions of pioneers like Dr. Camilo Gomez and Dr. Adnan Qureshi. Dr. Gomez performed the first neurointervention case in stroke in December 1993 and coined the phrase "Time is brain." Dr. Qureshi initiated the first formal IN fellowship training program in the United States in 2002.³ In Pakistan, efforts have been made to train neurologists in neurointervention. In 2021, the Pakistan Stroke Society and Neuroradiology Society of Pakistan (NRSP) launched a neurointervention fellowship program at LGH, with Prof. Umair Rasheed Choudhry as the supervisor. Under his guidance so far

two batches of neurologists from across Pakistan have received neuro intervention training, significantly enhancing the country's neurointerventional capabilities. Following this, in May 2023 SIMS signed a special MOU with PINS and started fellowship of IN by Prof. Qasim Bashir at PINS.

Despite these advancements, training in IN faces significant hurdles in Pakistan. The lack of dedicated training programs, limited access to biplane angiography machines, disposables, trained staff, and limited coordination between centers are major challenges. Moreover, the high cost of disposables and limited budget allocations for neurointervention procedures add to the difficulties.

In Pakistan, the aforementioned requirements for neurointervention training are only met in a few large tertiary care hospitals and dedicated cardiology centers. There is a lack of coordination and cooperation between these centers hence there is limited treatment access for the patients of stroke and others requiring interventions. The scarcity of neurologists, limited endovascular capabilities, and scarce radiological resources (CT/MRI scans only available in major cities) hinder quality care.⁴

Acute stroke care in Pakistan is especially affected by limited availability of interventional expertise leading to wastage of golden hours and delayed treatment. The lack of awareness among patients and referring physicians about the availability and benefits of stroke interventions exacerbates the situation. Additionally, the high cost of procedures and limited insurance coverage further limit access to care.⁵

In recent years, cardiologists have also entered the field of neurointervention, contributing to alleviating the stroke burden. In November 2021, interventional radiologist and cardiologists at NICVD in Karachi first started acute stroke treatment including MT. Since then, two other NICVD centers are providing stroke care at Sukkur and Tando Mohammad Jan. Beside this in Punjab the Rawalpindi institute of Cardiology (RIC) is also a major cardiac facility providing tPAs and MTs free of cost under the leadership of Dr. Asim Javed. Since the start of its stroke program, RIC has performed 550

plus MTs. Despite their significant services in acute stroke care, limitations of cardio-based hospitals highlight the need for neurologist-led care. Collaboration with or presence of neurologist is mandatory in such facility who can understand requirements of stroke patients, provide continuity of care both during hospital stay and at follow ups for optimal outcomes.

To address these challenges, the Pakistan Stroke Society (PSS) should establish a two-year fellowship program in IN, recognized by the College of Physicians and Surgeons Pakistan, and ensure fully funded fellowships with stipends. The PSS should also collaborate with the Pakistan Society of Neurology to establish comprehensive stroke units in major tertiary care hospitals in each province, equipped with neurointervention capabilities and trained interventional neurologists.

Moreover, the government and healthcare organizations should allocate resources to improve access to neurointerventional care, provide funding for

research and training, and create awareness campaigns to educate patients and referring physicians about the benefits of neurointerventional procedures. Cardiologists and radiologists should also be encouraged to collaborate with neurologists to provide comprehensive care.

In conclusion, IN in Pakistan has evolved significantly since 2000, with pioneers and international collaborations contributing to its growth. However, challenges persist, and addressing these hurdles is crucial to providing quality care for patients requiring neurointerventional procedures. By establishing dedicated training programs, improving access to resources, enhancing coordination between centers, creating awareness, and encouraging collaboration, Pakistan can improve its neurointerventional care and stroke management, ultimately benefiting patients and advancing the field of IN.

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