International Issues: Neurology in Bangladesh

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Ascending the steps of the Pink Palace, it is easy to imagine the land of the old Nawabs. Their dough-faced, proud faces, now confined to mere portraits, are still poised to overlook Old Dhaka. Below, on the Sardhat, the palatial park is crowded with people of all ages: sellers, schoolchildren, rickshaw drivers, peddlers, beggars, artisans, businesswomen, and many people, it seems, without any business at all. Wrapped by this megacity of 20 million people, the Pink Palace is a reminder of the wealth once known to the Indian subcontinent and its capacity to build for the ages. Most of my neurology rotation in Bangladesh had been a reminder of its poverty: its crowded waiting rooms, its overworked doctors, and the end-stage pathology, previously beyond my imagination.

BACKGROUND Bangladesh is a young country, both by population and existence. When Bangladesh gained independence in 1971, it had both the highest population density and the highest fertility rate in the world.¹ As one of the world's least developed countries, Bangladesh has an average life expectancy of approximately 60 years.² The chances of dying between the ages of 15 and 60 years are more than 1 in 4.² More than 50% of the population lives in poverty³ and approximately half of the population is literate.² Health remains an important goal and instrument of development in this ever-growing nation.

The strides Bangladesh has made in assessing, treating, and preventing neurologic disease, and promoting health in general, are worthy of emulation by all countries of all income levels. Nongovernmental organizations (NGOs) including BRAC (formerly, the Bangladesh Rural Advancement Committee) have begun the fight for disease prevention, head-on, through the education of 76,000 community health volunteers, nearly all women. These women teach basic sanitation and health strategies as well as sell essential drugs and health products at a minimal cost. Although no medications for neurologic disease are on the top 10 drugs available to the extreme poor through BRAC, there is an indirect benefit in the

prevention of neurologic disorders through the provision of vitamins, antihypertensives, and water sanitation supplies.

TRAINING IN NEUROLOGY Bangladesh has approximately 60 neurologists in practice today, including an estimated 6 women. Neurology training programs are available in 2 major centers, including Dhaka Medical College and Bangabandhu Sheikh Mujib Medical University (BSMMU). At BSMMU, where I visited, there are 9 new students per year. Neurology is considered a competitive career path. Approximately 30 applications are turned down annually at BSMMU, and these physicians will be forced to choose other specialties in spite of the overwhelming shortage of neurologists in Bangladesh. Among accepted neurology trainees, some hold positions sponsored through the Bangladeshi government and a few are chosen by the university, but others must privately pay for their opportunity to be a resident. Stipends are provided to students chosen by the university, and students work 6 days per week. The total duration of training to be a physician with specialty training in adult neurology is 5 years.

There is enthusiasm to do clinical research among neurologic trainees in Bangladesh. In fact, a thesis is required before completion of training, and graduation is dependent upon producing an adequate study of approximately 40 to 60 pages in description. Trainees have become most familiar with United States-based literature and often model their work on existent publications from major European and North American institutions. In this way, diseases common or especially seen in Bangladesh—including neurolepttyrism,⁴ lead poisoning,⁵ leprosy,⁶ and nutritional disorders⁷—are understudied.

NEUROLOGIC ILLNESSES AND CONTRADICTIONS The neurologists I met reported that they see relatively few cases of HIV/AIDS. They suspect this is related to the social structure in Bangladesh. Reported research concurs: the prevalence of HIV is less

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Figure 1

Woman who underwent recent neurosurgery for primary brain tumor resection, Neurology Unit, Bangabandhu Sheikh Mujib Medical University Hospital, Dhaka, Bangladesh

than 1% in Bangladesh.⁸ Notably, this is in spite of an unregulated blood supply where HIV testing is not routine,⁹ unsterile injections in health and non-health-care settings,⁹ and concentrated HIV epidemics in IV drug users and sex workers.^{8,10} Yet, HIV testing is not routinely done and is essentially unavailable in public facilities. Likewise, testing for lead poisoning and possibly common diseases, including diabetes,¹¹ is not routine. Electromyography and electroencephalography are largely considered luxuries, although a few skilled neurologists perform these tests regularly.

In spite of the clearly dangerous traffic jams and lawless driving, the number of people presenting with traumatic head injury seems low. Although there is no dedicated neuroICU, intensivists are particularly skilled at caring for neurologic disease in Dhaka, including acute inflammatory demyelinating polyneuropathy, encephalitis, subarachnoid hemorrhage, and ischemic stroke. Most of the ICU beds in the BSMMU hospital were dedicated to patients with neurologic disease during my visit. Although “Westernized” knowledge of neurologic disorders is expected and acquired among neurology trainees, almost all neurologists practice by employing the neurologic examination alone.

Phenobarbital, a cheap and effective drug for epilepsy, is not readily available in Dhaka. Reportedly, the poor availability is due to the concern that it may be a stimulant as well as the general lack of impetus for companies to manufacture a nonprofitable drug. As a solution, one village I visited has trained and hired hundreds of previously unemployed women. Through a local NGO, they run a quality drug-

manufacturing plant. Essential medications, including antibiotics, anticancer drugs, and vitamins, are produced on-site and are used by local villagers and in nearby hospitals. Most of the work is done by hand or hand-operated machine, but the drugs nonetheless are produced with the goal of meeting international safety standards. Because Bangladesh has a nonfunctioning drug regulatory authority,¹² it is not certain whether or not they meet this goal. Even so, local drug manufacturing plants are just one way in which Bangladeshi NGOs, village-by-village, have started to solve problems felt in poorer countries around the globe.

The Indian subcontinent remains burdened by excess early cerebrovascular disease.¹³ Stroke carries a comparatively high risk of mortality in Bangladesh.¹⁴ I did not, however, see many patients with stroke, and suspect they do not usually receive specialist attention. Thrombolytics of any kind are unfortunately unavailable, and even urokinase and streptokinase are not used. Traffic prevents most patients from arriving within a therapeutic time window, and the need for more coordination among the radiology, emergency, and neurology departments is clear.

In prevention, the largest strides are being made. The last case of poliomyelitis occurred in Bangladesh in 2006 and was an imported case from India.¹⁵ In spite of endemic poliomyelitis persisting in this region, including India, Myanmar, Pakistan, and Afghanistan, Bangladesh has not reported local wild-type poliomyelitis since 2000. This success is attributed to persistent vaccination initiatives throughout the country, mostly performed by BRAC’s women workers (“Shas-thya”) as collaborative partners in the Global Polio Eradication Initiative (personal communication, BRAC representative).

Yet, in spite of the attention paid to poliomyelitis and neuroinfectious illnesses by the developed world in Bangladesh, neurologists in Dhaka still mostly see patients with chronic neurologic diseases. When asked what the most common disorder seen among neurologists is in Dhaka was, I had a resounding consensus on the answer: headache. Parkinson disease and motor neuron disease are also studied with interest, but the patients presenting with these diseases tend to be younger overall, given the overall mortality of the population. I found no published articles related to Parkinson disease or amyotrophic lateral sclerosis in Bangladesh in PubMed from any point in time. Whether genetics, environmental influence, diet, climate, or some other yet unidentified factor will reveal a different range and phenotype of chronic neurologic diseases in Bangladesh (as compared to

Figure 2 Woman receiving preventive care in a village outside Dhaka from one of 76,000 Shasthya (woman workers), skilled basic health care providers, educated through the nongovernmental organization BRAC

our understanding of these diseases in the developed world) has yet to be adequately explored.

CONCLUSIONS Bangladeshi neurologists and residents are challenged to master and extend their skills with the most limited of resources. Their papers go mostly unpublished and their work is often unpaid. An average clinic day involved 100 to 150 patients, seen by groups of 2–3 residents and 1 staff neurologist. Visits would last as little as 2 minutes, but no one was turned away. The chairman of the BSMMU Department of Neurology has a sign above his office desk, in Bangla, that reads: *If you can't pay, please let me know*. Those patients had their medical visit fees waived. I challenge developed country chairpersons to consider raising the same sign, if not sentiment, in their practices.

The final image, in my mind, confirming the necessity of neurologic care in Bangladesh was a man who presented with a brain tumor so large that it had engulfed the orbit of his eye, disfigured his head, and could be seen externally. With his permission, I have shown his photograph to the (many) people who were surprised that I would be able to partake in the

care of neurologic patients in Bangladesh, a specialty they felt was too unique and focused to be of value to the very poor.

Although I have often heard the argument that the care of people with neurologic disease in developing countries must wait and follow the achievement of the broader goals of development, including primary health care for all, my experience has taught me that the goal of specialized medical care and attainment of the broader determinants of health can and should move in parallel. Certainly, even in the developed world, primary health care for all remains an unrealized ideal. To the extent that we are able to achieve it, neurologic care should be incorporated into the provision of primary care in the least developed countries. Bangladesh has employed a model that celebrates the widespread engagement of women in the changing health care workforce of the 21st century. As a populous nation, it is an example of large-scale health-based initiatives done well; perhaps not top-down like the Nawabs had imagined, but rather village by village, NGO by NGO. As a result, hospitals for cancer and heart disease have sprung up throughout Bangladesh. Why not one for neurologic diseases too?

DISCLOSURE

Dr. Mateen serves as an editorial board member of the Resident & Fellow Section of *Neurology*®.

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