Section Editor
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International Issues: On the localization of saintly neurology: A neurology elective in India

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Armed with the knowledge that I had passed my Bachelor of Medicine and Surgery examinations, I left for my elective in neurology in India. Little did I know that the next 10 weeks would be some of the most inspirational weeks of my medical training.

I landed in the lush modern utopia of Chandigarh (figure 1), the capital of the 2 states Punjab and Haryana. Chandigarh displays meticulous urban planning with Le Corbusier's sectorial design. It was also the first Indian city to become smoke-free in public places. I visited Shri Nek Chand's Rock Garden (figure 2) on my first day; a remarkable 18-acre space devoid of flowers but full, instead, of sculptures made from recycled bric-a-brac. The innovative, yet humble, Shri Nek Chand is a radical: he was recycling on a large scale in the late 1950s, well before the wheely-bin culture took off in the West.

My medical experience began with wearing my hitherto unused long-sleeved white coat, banned in the United Kingdom, owing to the bare-below-the-elbows infection-control policy practiced there. I am now able to appreciate my course tutors' comments of how useful the coat pockets are for keeping medical equipment, pocket textbooks, and jottings. I shall miss wearing the coat, which was cleaned regularly, and allowed for easy identification of the doctor among the mass of patients.

Figure 1 Chadigarh's welcome: The open hand monument

Figure 2 Shri Nek Chand's Rock Garden: Dolls made from recycled bangles

The neurology department at the Postgraduate Institute of Medical Education and Research (PGIMER, colloquially called "The Pig" by the residents) comprises only 5 consultants, about 20 senior residents (sitting the DM examination in neurology), and a handful of junior residents (sitting the MD examination in Internal Medicine). PGIMER has recently published the largest series of patients with ophthalmoplegic migraine in the world literature[1] and their Molecular Laboratory has published encouraging results on the herb, Bhrami, purported to be an Ayurvedic memory enhancer. Their mouse model of amnesia has shown that it improves parameters of learning and memory.[2] The doctors serve a large population from all walks of life; between 2008 and 2009, the Outpatient Department (OPD) saw 1,319,973 patients and there were 56,078 admissions to the ward. These patients flock from the northern states of India to this government, tertiary-level institution. Health care is offered free here at the point of delivery, although equipment (e.g., lumbar puncture kits) and most treatment (e.g., IV immunoglobulin) must be procured and paid for by the

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patient. However, certain inpatient prophylactic medication, such as low molecular weight heparin, can be administered free of charge.

Stamina and concentration were essential qualities: each resident tirelessly worked a 12-hour day, even on Saturdays. There is no European Community 48-hour Working Time Directive at play here. Three days per week, some 400–500 patients arrive at the OPD. Only 5% of them have an appointment and at least 100 of them are new patients. These patients have been referred by any doctor with an MBBS degree and, notably, there is no waiting period to see a neurologist, owing to the lack of a ceiling on the number of patients that can be seen in any one clinic. A small proportion of patients are on stretchers with a reduced Glasgow Coma Scale, requiring rapid decision-making and emergency admission. Hardly anyone has health insurance and to create a file in the OPD it costs the patient a mere one-off 10 rupees. Patients cling onto their previous treatment history cards, laminated sheets with the results of investigations already performed, and large envelopes containing radiologic films, often of extremely high quality. There is no high-tech, high failure rate, picture archiving and communication system. Thus, there is no excuse for the neurologist not having access to the scans or reports at her or his fingertips.

Two residents share a single, small, OPD room with a washbasin and an invariably dripping tap. Two patients are simultaneously consulted in a carefully staggered quorum to minimize the waiting around for the single examination couch per room and single mercury sphygmomanometer for 3 rooms. There is no confidentiality, but this does not appear to be an issue for the patients. Unfortunately, the patient's attendant must stand. Hands are not washed between patients unless the patient seems dirty.

During consultations, there is a trickle of patients attempting to jump the queue, interrupting the doctors' flow. India's tiresome bureaucracy does not spare the consultation room, as unsolicited patients present pages and pages of invoices that require the all-important doctor's signature and stamp in order to have their payments reimbursed. Drug representatives come with their business cards, paraphernalia, and post-it notes, asking doctors to prescribe their drug. Other doctors may enter the room to offer their expertise and, if they are more senior than us, we stand up to show respect. The traditional values of calling people "Sir" or "Madam" have been lost in Britain, but are practiced reverently in India. Every couple of hours, fragrant elaichi-chai is slipped through the door and we gulp it down in between seeing patients. Despite this multitasking, the residents give each patient the necessary time to tell his or her history in his or her own words. The resident elegantly screens for a distal pattern of weakness, in the upper limbs, by asking whether the patient has any problems breaking chapatis with the fingers or, in the lower limbs, by asking whether their chappals slip off their feet. Furthermore, the latter information is refined by checking for a sensory overlay: Do the chappals slip off with or without the patient's knowledge? The clinical examination is impressively thorough. It is what I had dreamed neurology should be like, and the degree of meticulousness that the residents take in their examination testifies to the encyclopedic knowledge that they have. They do not have the luxury of being able quickly to check UptoDate, or, dare I say, Wikipedia, online, since there is no computer in sight. The temptation to look at the scribbles made by previous practitioners, many of whom are not medically qualified, is huge, but the residents are immune from any bias. Next, we move rooms with the patient, and the resident presents the findings to a consultant (who is also seeing new patients). After reviewing the analysis, any investigations, and perhaps even repeating aspects of the history-taking and examination himself, the consultant takes the time to teach us about the nuances of the condition. The consultants are therefore very much in the front line and in tune with the residents' academic needs. The residents are conscious of the costs of the various brands of medication and tailor their prescription accordingly. Management plans are written in duplicate, both on the file that is retained by the hospital and also on a summary card that is kept with the patient. A diagnosis, even if it is provisional, is always offered to the patient in writing. The patient is told where to purchase the medication and roughly how much it would cost, so that he or she is not abused by the vast array of pharmacies in the local bazaars.

The Emergency Department is an occupational hazard and both the doctor and the patient require heroism and faith. Patients lie unconscious on metal beds that allow for only a horizontal lie (perhaps this uncomfortable setting is the basis for my observation that patients in India admitted with acute ischemic strokes seem to do rather well, often with little intervention; is this because of relatively increased perfusion to the cerebrum in this position?).[3] Beds are separated from each other by a maximum distance of 10 centimeters; fortunately, most of the doctors are slim. Attendants perform bag-valve-mask ventilation with one hand and hold up a drip with the other. Their services are called upon for venipuncture as they occlude venous return. There is no aseptic non-

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touch technique being practiced here, yet line-related infections are seldom reported. Junior residents perform lumbar punctures at the bedside and central lines are effortlessly placed without ultrasound guidance. My mentor supervises me as I appear lost in the mélange of activity and covers the mouth of an unconscious patient, who has oral candida and miliary shadowing on his chest radiograph, while I perform funduscopy. Twice daily there is a consultant ward round where the 20 or so neurologic emergencies are reviewed. I am asked to localize the lesion that is provoking downbeat nystagmus in my patient. In a patient who should have an extensor plantar response based on her clinical presentation I am shown the plethora of methods other than that of Babinski (absent in this patient) of how to elicit the important plantar reflex; Chaddock's and Oppenheim's signs are present. I was able to contrast this to my observations back home, where a significant proportion of plantar responses (elicited by only the method of Babinski) are recorded as equivocal or mute. Neurologists at this institute have both the knowledge and the passion to elicit all relevant signs and will not be satisfied unless their clerking documents a coherent account.

Finally, what happens on the wards? The floors are continuously being cleaned and the nurses and doctors help one another to give the best care to the patients. A consultant notices that a trainee nurse is giving an IM injection in the wrong quadrant of the buttock and he stops to teach her how it should be done. I am shown how to perform chest physiotherapy and the dietician teaches the residents about nutrition issues in patients who have had a stroke. The senior residents, remarkably, perform nerve biopsies and sometimes even percutaneous tracheostomies. We workup patients ready for the teaching ward rounds. Each of us takes our turn in the firing line as we are asked questions about our diagnostic formulation and the justification for our chosen investigations. I am quizzed on whether creatine kinase levels alone can be used to measure the response of polymyositis to steroids, and on the latest evidence for optic nerve fenestration in idiopathic intracranial hypertension. A resident is counseled by a senior about the awful practice of Nazi doctors and is encouraged to refer to the eye-of-tiger MRI appearance, not as suggestive of Hallervorden-Spatz disease, but instead of pantothenate kinase–associated neurodegeneration. Certain cases are promoted to a more in-depth discussion in the seminar room. Refreshments are plentiful and the setting for the majority of us is relaxed. Nevertheless, 3 senior residents sit in a line and are asked to localize in the neuraxis every symptom the patient complains of. The approach taken is that

Figure 3 International Stroke Conference, All India Institute of Medical Sciences, New Delhi

of Sir Gordon Holmes, who seems to have found a new home here in India.

I have 2 weeks left here in India, and have now moved to the All India Institute of Medical Sciences (AIIMS) (figure 3) in fast-paced and sweltering New Delhi. A recently published elective experience at AIIMS by an American neurology resident[4] aptly depicts the liveliness of this busy center, which nurtures the academic neurologists of tomorrow. The campus is beautiful but daunting in size. I have been given a spectacularly warm welcome by the neurology department and have not been allowed to pay for lunch while in the presence of the team. The hospital is air-conditioned and the wards are similar in design to those at Oxford. The neurosurgeons are doing deep brain stimulation for the treatment of movement disorders and the interventional neuroradiologists are experienced in carotid stenting for symptomatic internal carotid artery stenosis. AIIMS also runs and coordinates worldwide collaborative clinical trials and is currently taking part in stem cell trials for ischemic strokes and Parkinson disease (PD). April is PD Awareness month and the Movement Disorders Unit hosted a well-attended educational morning for its patients and their carers. The chief guest was the retired cricketer, Bishan Singh Bedi, of the Indian spin quartet. I was impressed by the patient participation in group therapy and their understanding of their disease. The neurologists take pride in empowering their patients with holistic, yet simple, information and provide practical suggestions on how to live a full life. In the United Kingdom, this rewarding aspect of management has largely been delegated to nurse specialists.

I shall miss working in India very much and have been lucky to have had this unique opportunity to see so many interesting patients in such a short time. With the reduction in training that we are seeing in

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the West, such experiences are invaluable in one's personal development. As I embark on my academic foundation-year job in neurosciences, I am sure that the wisdom that has been passed to me here will enhance my undergraduate knowledge and experience. Together, this will improve the care that I can offer to my patients. My overseas friends are to be saluted for working in extraordinarily challenging circumstances and for not deviating from their goal to serve their country. For them, there are no greener pastures.

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REFERENCES

1. Lal V, Sahota P, Singh P, Gupta A, Prabhakar S. Ophthalmoplegia with migraine in adults: is it ophthalmoplegic migraine? Headache 2009;49:838–850.
2. Saraf MK, Prabhakar S, Anand A. Bacopa monniera alleviates N(omega)-nitro-L-arginine arginine-induced but not MK-801-induced amnesia: a mouse morris watermaze study. Neuroscience 2009;160:149–155.
3. Wojner-Alexander AW, Garami Z, Chernyshev OY, Alexandrov AV. Heads down: flat positioning improves blood flow velocity in acute ischemic stroke. Neurology 2005;64:1354–1357.
4. Sheikh SI. International issues: of saints and sickness: a neurology elective in India. Neurology 2009;72:e24–e26.

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