Pathology with altitude: a laboratory for Tibetans living in exile

Provision of pathology services in the Himalayas can be as daunting as the natural surroundings in which people live in this remote environment. Here, Michael Smith explains what, or who, stimulated his interest, and how a remote laboratory has developed over 30 years.

When someone as renowned as the Dalai Lama asks you to establish a pathology laboratory for the Tibetan community living in exile in northern India, it is hard to refuse… so I didn't! My fateful meeting with the 14th Dalai Lama lasted about two hours. We drank tea and discussed philosophy, but the conversation soon came around to the plight of the Tibetan people living in exile in India from their estranged homeland. So began a challenging and remarkable journey that started in 1980 and continues to this day.

INSTINCT AND OPPORTUNITY

Dharamsala (Fig 1) is a small town in the remote Himalayan region of northern India, and, following the escape of the Dalai Lama in 1959, it became home to approximately 130,000 Tibetan refugees. Over subsequent years refugees escaped from Chinese occupied Tibet (mainly on foot) across the Himalayas. The health of the refuges after months of such an arduous journey, mostly undertaken at night, was severely compromised. Malnutrition, tuberculosis (TB), parasitic infections, diarrhoea and vomiting, anaemia and infection were common.

A small hospital, the Delek Tibetan Hospital, was established in 1971 to cater for the needs of the refugees. The facilities at the Delek Hospital were overwhelmed as refugees continued to arrive. Even today, large numbers of Tibetans continue to flee their homeland and Dharamsala is the main centre for new arrivals.

In 1980 the Delek Hospital had limited facilities – a few wards, a small TB unit and an ancient X-ray machine. There was a small operating theatre, mainly inhabited by a group of monkeys and a few parrots. The only medical support was provided by volunteer doctors from the UK and USA, and a few Tibetan nursing staff. Everyone was overworked and rarely paid.

Having discussed my pathology background with the Dalai Lama, he immediately 'suggested' that it might be very useful to establish a diagnostic laboratory at the Delek Hospital, and subsequently he introduced me to the hospital director. Almost instinctively, I knew that this would be a once-in-a-lifetime opportunity to help these people and to use my multidisciplinary pathology skills.

'Following a meeting with the Dalai Lama, a challenging and remarkable pathology journey started in 1980 and continues to this day'

Fig 1. Dharamsala is a small town in the remote Himalayan region of northern India.

Fig 2. Returning to the laboratory in 2004, I found that Sonam was still there, along with his son, Tenzin, who had recently qualified from university as a biomedical scientist.

Fig 3. Thanks to the kindness and generosity of friends, I managed to procure a new Sysmex automated haematology analyser for the laboratory.

OLD SCHOOL

I trained in the RAF and therefore was what one might call 'old school.' My initial training was in microbiology and parasitology, as was required by the military; however, I also opted to further my studies in clinical chemistry, haematology and the blood bank. This multidisciplinary background served as an excellent basis to establish a basic 'field' laboratory at the Delek Hospital.

A small room approximately 12 feet square was identified at the rear of the hospital and two willing and enthusiastic Tibetans were recruited as trainee laboratory technologists. Sonam and Norbu had little scientific training but did speak English reasonably well. What they lacked in scientific knowledge they made up for with an abundance of enthusiastic perseverance.

Having identified a room and two keen students, I set about the task of implementing a 14-month full-time study programme that covered anatomy and physiology, physics, chemistry, microbiology, biochemistry and parasitology. The training involved days of theory combined with practical sessions. However, there was a slight problem to overcome before the training began… there was no equipment!

It was decided that I should return to the UK for one month and raise awareness of the 'Tibet Project', which basically took the form of begging for used equipment, textbooks, demonstration slides and pretty much any spare laboratory equipment destined for the dump. I managed to acquire a microscope, EEL colorimeter, Corning EEL flame photometer, Van Slyke manometer and numerous test tubes, flasks and other miscellaneous paraphernalia.

The items were packed into five suitcases in total weighing in at an impressive 120 kilos. A month later, flights were booked to return to India. On hearing about the project, British Airways kindly waived the excess baggage charge and I finally arrived at Delhi airport with a not inconsiderable pile of luggage. Needless to say there was considerable wobbling of heads and scratching of chins as the confused customs officers contemplated whether or not I was planning to build a nuclear reactor. Eventually, however, all the bags were cleared and were dragged by four helpful customs officers to the antiquated taxis waiting outside the airport.

HIMALAYA

Bags were piled inside the taxi, in the boot and on the roof and we rattled, heaved and creaked our way to the train station. With considerable manhandling, the baggage was piled into the carriage and the train pulled out of the station and began its long journey of 477 kilometres up into the Himalayas. Following arrival in northern India, there followed a four-hour journey by bus to Dharamsala, and then an excruciatingly steep climb, made possible by four donkeys and three coolies (porters), up to the Delek Hospital.

My own accommodation was a small room with outside toilet and a cold-water tap. Electricity proved unreliable and there were frequent power cuts and water shortages. The water pipe actually ran across the road and every time a truck (or wandering elephant) crossed the pipe it would rupture, and it might take days for it to be repaired. However, it was to be home for 14 months and it proved to be comfortable once painted and cleaned.

> 'Donated equipment for the Delek Hospital laboratory was packed into five suitcases, in total weighing in at an impressive 120 kilos'

RELIABLE AND CONSISTENT

The equipment was duly installed and the training began in earnest. Each day, notes were taken, a million questions asked, and patience was tested (on both sides). The students were amazing and absorbed the new information with relish. After six months the room actually resembled a working laboratory and the first samples made their way through the system. Initially, the laboratory offered testing for haemoglobin, erythrocyte sedimentation rate (ESR), white cell count, red cell count, blood film and differential; sodium, potassium, bicarbonate, blood glucose and urea; Ziehl Neelsen stain for TB, iodine stain for stool parasites, and various stains for other parasites. As Sonam and Norbu developed their academic knowledge so their technical skills improved. Combining theory with practice proved a successful combination, especially when seeing clinically significant results.

At first, patient samples arrived in a slow trickle but soon word got around that the laboratory was producing quality results and the volume of work escalated. After 12 months the two laboratory technologists were competent and diligent in their work. Quality control was carried out daily using aliquoted samples, as there was no commercial QC available. A small diesel generator provided power when the mains power supply died, which was mainly due to enthusiastic monkeys swinging on the power lines.

The doctors also began to utilise the service in a constructive way and many commented that the new service improved the diagnostic quality of their practice. Of course turnaround time was not short as many of the tests were manually intensive; however, with the emphasis on quality rather than quantity, the results proved reliable and consistent.

Fig 4. The equipment was inaugurated by the Minister of Health representing the Tibetan government.

HOME AND AWAY

After 14 months in India I had to think about leaving as my funds were getting low – I had relied upon savings to sustain me – and it was necessary to return to the UK to work. When the time came to depart, it was a sad day as I had enjoyed teaching these amazing guys. The laboratory was functional and well respected and I was very proud of my students.

On the morning I left the small hill station of Dharamsala, the streets were lined with doctors, nursing and administrative staff, all holding the traditional white Kata, a silk scarf traditionally given as a sign of good luck and symbolising the purity and compassion of the giver. It was a touching scene as the Kata scarves were placed around my neck. I was also given a beautiful Tibetan carpet that I still have today, along with a letter of thanks from His Holiness the Dalai Lama.

I visited the laboratory again in 2004 (Fig 2) to find that Sonam was still there, along with his son Tenzin who had recently qualified from university as a biomedical scientist. The laboratory had moved to a new building and had acquired some additional equipment. However, haematology was still being performed by hand using an old cell-counting (Neubauer) chamber that I had brought from the UK in 1980. As the demand for full blood counts was increasing it was essential that a reliable automated analyser be identified.

The challenge in choosing the correct equipment was difficult in terms of maintenance, running costs and procurement of spare parts. Eventually, however, it was decided that the most suitable piece of equipment would be the Sysmex pocH automated haematology analyser, and, thanks to the kindness and generosity of friends, I managed to procure a new one for the laboratory (Fig 3). The equipment was inaugurated by the Minister of Health on behalf of the Tibetan government (Fig 4).

I returned again in 2006 to live and work in Dharamsala, helping the laboratory to upgrade other equipment. The most recent purchase was a BioSystems A15 random-access analyser, and now the list of tests being offered is impressive, even by Western standards. When I left in 2011 there were six staff and a very impressive workload. ■

USEFUL WEBSITE LINKS

- www.tibetfund.org/prog_health_delek.html
- www.dalailama.com
- www.facebook.com/pages/Friends-of-Tibetan-Delek-Hospital/37844681036

BIBLIOGRAPHY

Michael Smith (michael.mikegb@gmail.com) is now working in pathology in the UK, but the work continues in Dharamsala. Michael now wishes to develop a medical library for the dedicated staff at the Delek Hospital, and would be grateful for the donation of books in order to realise this aim. Further information about the Delek Hospital is available on its website (www.delekhospital.org).