

## Room for a view

## Pathology in Laos — a start

The Mahosot Hospital in Vientiane occupies the better part of a city block on Fa Ngum Road, which runs parallel to the east bank of the Mekong River. It's a heterogeneous collection of oddly matched buildings that includes bungalow-style wards, a two-storey emergency ward with an adjacent gazebo for visitors and a three-storey building devoted to I'm not sure what. Many are surrounded by algae-covered moats filled with slow-moving grey water, into which dribble the effluents of sinks and tubs from the nursing floors above. All are covered with the wind-blown, flour-fine brownish silt from the Mekong flats. Large SUVs from the likes of the wealthy WHO and small, three-wheeled, two-cycle, sputtering tuk-tuks of the Laotians sit on the grass and asphalt in between. The Faculty of Medical Sciences building and the medical school are two blocks away, separated from the clinical facility by the ridiculously opulent and falsely secure French Embassy.

Laos is among the poorest countries in the world. For centuries it has been buffeted by invasions and other dubious influences by the Chinese, the Thais, the Vietnamese, the Cambodians, the Russians, the French and the Americans. I am here to establish a bone marrow service under the aegis of the University of Calgary's International Health Program. This is my first encounter with medicine in the developing world. I have sent ahead two cartons of various laboratory supplies and carried with me thirty Jamshidi bone marrow biopsy needles.

It becomes obvious, after a half-day's assessment of the Mahosot Hospital's laboratory infrastructure, that producing technically satisfactory bone marrow smears and biopsy sections will be impossible during my two-week stint. The dingy white-tiled basement room devoted to histopathology is scattered with islands of chaos. The Autotechnicon tissue processor is crippled, re-

sponding to its power switch by consistently blowing its own circuit breaker. Thirty years without preventive maintenance gives it the look of a miniature merry-go-round caked with lumps of grimy paraffin. The water bath used for floating delicate wax tissue sections has lost its innards. It has no heating element, let alone a thermostat. Most of the uncovered staining jars are partly filled with exhausted solvents. There is a peripheral crystalline crust on the surface of the hematoxylin. Somewhere beneath one of the sagging benches is an insufficient supply of formalin. Stacked in close-packed clusters on the floor are partly filled Winchester's of ethanol, xylene and other volatile liquids whose labels have long since dropped off.

Of all the tissue removed surgically in Laos, barely fifteen percent is examined for pathology. Many specimens are brought to the laboratory by patients' kin, some from as far away as the Chinese border. Faucets and taps are draped with pink plastic bags containing unfixed or insufficiently fixed tissue: fifty grams of degenerating prostatic tissue, an unopened uterus, a 400-gram goitrous thyroid, two dried ovaries. The registering and labelling of specimens lacks order. Samples submitted for processing are too thick; only one of the two wobbly microtomes works at all. The water bath is maintained at the wrong temperature with dollops of boiling water from a tea Thermos. The resultant sections are thick and wrinkled, the eosin is too deep, and the hematoxylin is reduced to a trace. In truth, the slides are uninterpretable.

At the medical school, Dr. Bounthome Samounry is the only functioning anatomic pathologist for the country's five million people. He is a remarkable man. For financial support he used to grow sticky rice on his family farm, which meant that during his six-year, fifty-week-a-year medical school commitment he worked in a



**Dr. Bounthome Samounry: one anatomic pathologist for five million**

rice paddy many evenings and weekends. His postgraduate education totals eighteen months of anatomic pathology in Thailand. He has had no hematopathology training. He is thoughtful and overworked. His department is understaffed. His responsibilities include service pathology, medical school teaching, resident teaching and curriculum development. Between his rudimentary English and my sign language (both modified with laughter) we agree that I should try to improve his laboratory as best I can. If there is time, we'll look at some cases together.

Each step to enhance the quality of the histology slides is accompanied by an unexpected complication. Exposing dust-covered outdated reagents beneath ancient cloth wraps releases clouds of mosquitoes. I recall that there have been four cases of Dengue fever in the Mahosot Hospital in the last month. Despite my reading of a travel brochure's bold statement to the contrary, I am not satisfied that there is no malaria in Vientiane. A listing shelf above the tile counter holds, perched precariously near its outer edge, two bottles of colourless

syrupe clear liquid: one nitric, the other sulfuric, both concentrated. An adjacent rickety cupboard holds a large bottle of twenty-year-old desiccated Ferrari-yellow picric acid (trinitrophenol). It has a mate on the floor. Dry trinitrophenol, like its cousin trinitrotoluene (TNT), gets cranky when disturbed; it is less explosive but has seven times the sensitivity to shock. We repair to the Internet and Google "picric acid disposal." The unanimous recommendations of the first five hits are to walk away softly and phone the nearest military. Bounthome agrees, noting that the Laotian army engineers are expert at defusing bombs. There are an estimated ten thousand unexploded incendiaries in Laos, residua from the Vietnam conflict. Apparently some look like Fisher Price toys. Every year hundreds of Laotians, including children, are maimed or killed by these leftover bombs. I learn the following day that the department of pharmacology has agreed to take the picric acid. Mercifully, the pharmacists occupy a separate building.

Yet progress is surprisingly easy. The heavy tissue processor takes a tuk-tuk ride to the medical school. A microtome follows on the back seat of a motorcycle. I break the tissue processor down to its axles and armatures with my Leatherman and find a fried electrical coil and a broken cam. The instrument now looks like an exploded view in a manual that we don't have. The motor is rewound by a local electrician and the cam stuck together with cardboard and Crazy Glue. I send a pathology resident to a motorcycle repair shop for a plug of grease. When the whole thing has been reassembled we discover one bolt lying on the bench. Despite the missing fastener the carousel assumes a quiet, oscillating, steady-state hum. The water bath is re-

placed by an electric frying pan. The microtome is cleaned and charged with disposable blades donated by Fisher Scientific. We rejuvenate the staining jars, retime the tissue processor and fire up an old but serviceable hotplate used for sticking five-micron-thick sections to the glass slides before staining with fresh eosin and hematoxylin given to me by Surgipath Canada.

The day before I leave we produce H & E slides that would pass Canadian quality standards. We sit down to cloudy microscopes to interpret our handiwork. The first case is a pleomorphic adenoma from a young woman's parotid gland — very common in Laos, notes Bounthome. I think, too soon, that the harder part is over. The second case, for which there is but one small nicely prepared section from a single block and no history, looks to me like a rare ovarian tumour with an unusual pattern, possibly one of the abstruse sex cord stromal tumours. But there is no decent surgical pathology textbook to repair to, there is no one across the hall, there is no immunohistochemistry, and there isn't a consultant gynecological pathologist in the country.

Walking away from the medical school one afternoon past a soccer field sprinkled with medical students practising their military skills with real weapons, I think, "What could I achieve if ever I came back?" We haven't begun to sort out Vientiane's hematopathology. On the other hand, we do have some excellent histology sections that Bounthome can compare with images in contemporary surgical pathology textbooks, if only he had one. I have the idea that I should steal him away from Laos and immerse him in my hospital in Canada, where he could sop up technical expertise, discuss surgical pathology with my colleagues around a four-

headed microscope, and get a head start with bone marrow pathology. I know we could find him some good used textbooks. It wouldn't be that expensive. It would be money effectively and efficiently committed to Laos. It would be ideal for Bounthome. We wouldn't have to buy an SUV. A leathery woman selling bright orange temple trinkets from a sagging tricycle overhears me murmur, "I'm going to do it."

Back home, fundraising begins with thirty letters to colleagues and friends and ends with a presentation to Rotary. The hospital kicks in free lunches, the Victoria pathologists add the new edition of *Rosai's Surgical Pathology*. For three weeks Bounthome observes and practises all manner of histotechnique. Bone marrow samples are split so he is able to make his own squash preparations and smears. His afternoons are consumed reading surgicals. His English improves and the marrows become less mystifying. And we learn from him. As one of the five percent of Laotians who are parasite-free, his frequent and fastidious hand washing routine is catching. We show him a black bear and the whisky jack. He leaves with a bundle of books. I'd like to have him back.

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