Ultrasound in remote Nepal – insight and a review of interesting cases

Table 1: Operations performed as a result of ultrasound findings.

Cholecystectomy	Pyelolithotomy	Nephrolithotomy	Cystolithotomy	Ovarian cystectomy	Foreign body removal	Haematoma evacuation
6	5	3	1	2	1	1

Figure 1: Sonogram of a foreign body – wood imbedded in the adductor muscle of a 55-year-old male.

Figure 2: A display of the piece of wood post surgical removal.

This year's surgical camp to Nepal organised by International Nepal Fellowship (INF) was held in Mangalsen, the administrative headquarters of the far Western district of Accham. Accham, regarded as one of the most remote districts in Nepal has a population of 231,285. It is accessible by roads leading from either Kathmandu or Nepalgunj.

In November 2011 the international surgical team flew from Kathmandu to Nepalgunj followed by a road trip to Mangalsen. The road to Mangalsen meets the Budhi Ganga river where vehicular crossing is normally by barge but, unfortunately on this occasion, was not possible due to damage of the barge

during the recent monsoon. The implications of our misfortune was a long detour, adding an extra day (each way) to our travel time. Nevertheless, this did not dampen spirits and the early departure of four Landrovers headed for a rugged, but scenic mountainous terrain.

This year's team was made up of the usual members of nurses, doctors, anaesthetists, surgeon and a sonographer (myself). Countries represented were Nepal (9), NZ (6), UK (4) and Australia (1). Residents were informed of the camp through local radio with some patients walking days to reach the health post. Batches of up to 200 patients a day were seen by the GP doctors. Due to an extended travel time this years camp had to be shortened

Figure 3: 60-year-old female with massive abdominal swelling.

Figure 4: Sonogram of the cyst. The echogenic suspension was later confirmed to be blood.

to a very hectic seven days. At the end of the seven days a total of 1199 patients had been assessed and treated, including over 334 ultrasound scans and 107 operations were performed.

Of the 107 operations performed, 20 of these were the direct result of abnormal ultrasound findings. A number of patients with abnormality arrived at the end of the camp only to be turned away without treatment as there was no continued post surgical care available. One such case involved an elderly gentleman who had walked four days to reach us only to discover that nothing could be done to relieve him of chronic renal disease. He was referred to Nepalgunj for treatment.

Examples of operations performed without ultrasound assistance included inguinal herniorrhaphy (30), rectal prolapse repairs, epigastric hernia repair, circumcision, mastectomy (neurofibromatosis) and release of a tongue tie.

The good news, on arrival at this camp, was the arrival of a donated Sonosite Micromax ultrasound machine which was to replace the old Medison SA600. The addition of a linear L38E (10-5 MHz) transducer in conjunction with the curvilinear C60 (5-2 MHz) transducer meant that we could now extend our investigations to high resolution, small part imaging.

Having acquired this new compact, hand-carry ultrasound machine with its own battery supply meant that urgent scans could be performed at various locations, such as theatre and the post-op ward at short notice.

As with previous camps there were many unusual and interesting pathologies found using ultrasound. One such interesting case requiring the use of the linear transducer, related to a 55-year-old man who presented with a history of trauma

injury to the thigh while chopping wood many years previous. Scanning his swollen right thigh confirmed the presence of a foreign body imbedded in the belly of the adductor muscle, which was successfully removed at surgery (Figures 1 and 2).

The discovery of cystic teratomas in two patients resulting in cystectomy drew bemused resignation from theatre staff when the contents of the cysts were revealed at surgery. A more detailed review of this case is presented in this issue.

There was an alarming number of people of all ages presenting with renal stones. In addition, the usual number of cholecystectomies were performed with the youngest patient being a four-year-old girl.

The arrival of a 60-year-old female with massive abdominal swelling was to break records for the largest ovarian cyst removed on a surgical camp; 10 L of haemorrhagic fluid was drained from the cyst (Figures 3 and 4). Once again ultrasound proved to be a useful mode of imaging in a remote setting. Having both a curvilinear and linear transducer enabled a wide range of scans to be performed in preparation for surgery. The compact and portable nature of the Micromax enabled the surgeons to perform scans on the operating table, such as post-nephrolithotomy to rule out residual stones. Scans to rule out wound collections or haematomas also proved to be very useful.

Alan Williams
Horizon Radiology
Auckland city
New Zealand