■ ANNOTATION

Orthopaedics in Sri Lanka post-tsunami

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On 26th December 2004 a large earthquake (Richter 9.3) occurred on the Indian/South East Asian tectonic plate intersection with an epicentre 800 Km south west of Sumatra, Indonesia. This resulted in the production of a tsunami which radiated across the Indian Ocean.

Sri Lanka was the second most seriously affected country after Indonesia. There were 50 000 deaths of which 9000 were children, 20 000 people are still missing, believed dead. Nearly one million people were displaced following the destruction of 150 000 houses resulting in an enormous strain upon aid agencies providing tented accommodation and sanitation.

The Sri Lankan Health Ministry requested assistance from the United Kingdom emphasising that a great number of people with orthopaedic injuries had been transferred to Colombo, the capital. It was reported that definitive surgery could not be performed upon the many patients with open fractures due to the lack of external fixator equipment.

The Department for International Development (DFID) sanctioned a team from Leonard Cheshire International (LCI) to provide a Health Needs Assessment of Sri Lanka with particular emphasis on the provision of trauma/orthopaedic and psychiatric services. The team arrived in Sri Lanka nearly three weeks after the disaster. Their brief was to travel to the remote areas of the country assessing the hospital facilities available and the level of surgical expertise, before donating orthopaedic equipment such as external fixators. Our report was requested by the United Nations, International Red Cross and other Non Governmental Organisations (NGOs) to help co-ordinate disaster relief programs.

Findings

It soon became apparent that the situation in Colombo was very much under control. Few patients had been transferred from outlying areas and, despite initial reports to the con-

trary, there was enough equipment within the 3000 bed National Hospital of Sri Lanka in Colombo to manage these patients appropriately.

The Health Minister provided some statistics which made grim reading. The preliminary numbers of deaths far exceeded the numbers of those injured. It appeared that those who were crushed by falling debris or suffered a fractured limb during the wave and could not swim, simply drowned as a result. This contrasts with expected casualties following the effects of war or other natural disasters, such as land-based earthquakes, when such injuries may be limb-threatening but are often survivable.

This fact was starkly demonstrated in Karapitiya University Teaching Hospital, Galle on the south-west coast. The hospital serves a population of 1.8 million. It has one orthopaedic surgeon and two general surgeons. Within two hours of the tsunami 900 people attended the accident and emergency department and 313 required admission for treatment. However, 1200 dead were brought to the hospital within the first six hours and the final death toll for the area exceeded 5000. The practical problems of identifying bodies and the logistical hazards of their storage and disposal in temperatures of 32°C were immense. There are 640 bodies which remained unidentified, mainly of entire families with no one to recognise them.

A total of 41 children were admitted and four of them died from respiratory complications. The most common problem was near-drowning with swallowing and inhalation of sea water. There had been 100 patients admitted with orthopaedic problems, most had open fractures and several took up to three days to arrive at the hospital. Only two patients required early amputation. The others were treated with wound debridement and skeletal traction. There were less than ten external fixators available for the management of these fractures and all were used in the first two days following the disaster. There was a desperate

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Fig. 1

Widespread destruction following the tsunami.

shortage of Steinmann pins and Kirschner wires and no likely replenishment of external fixators in the foreseeable future, despite the promise of equipment by orthopaedic companies, aid agencies and officials in Colombo. Similar situations were encountered in hospitals along the South and East coastal regions.

The problem for orthopaedic surgery outside Colombo does not lie only with the lack of equipment. The poor facilities which are available make orthopaedic procedures difficult to perform. Theatres may be shared with general surgeons, the air-conditioning often malfunctions and access to image intensifiers is not guaranteed. Under these circumstances, any form of surgery involving an implant is risky and standard techniques for intramedullary nailing inappropriate. External fixators are the standard tools used by the local orthopaedic surgeons but access to replacement equipment is difficult.

For those patients undergoing amputation, access to limb-fitting is difficult. The only reliable service available to those on the South and East coasts is provided in Colombo. The cultural problems and financial costs to the patient travelling large distances make this service impractical. The situation of young permanently disabled individuals without a prosthesis and little or no prospect of work will add to the financial burden of a developing country.

The only exception to these orthopaedic challenges identified outside Colombo was in the far northern peninsula of Jaffna. The 1100-bed Jaffna Teaching Hospital was

founded in 1860 by a British Christian mission and the one orthopaedic surgeon serves a population of 650 000. Because of the war with the Tamil Tigers (LTTE), the orthopaedic service was only resumed in February 2003, when the peninsula came under government control after a vacancy lasting 17 years. Because of its local population and relatively isolated position it also provides orthopaedic care to a large proportion of the LTTE controlled North-east. As a result, despite the cease-fire, mine victims and blast/gun shot wounds are regularly encountered among the average daily admission of 150 patients. It is very well-equipped with a dedicated laminar-flow theatre, modern image intensifier and CT. Access to trauma equipment (external fixators, IM nails, plates etc) was not a problem and re-supply was readily available. Between four and six total joint replacements are performed a month. One area of concern was raised. The absence of an orthopaedic surgeon for 17 years and the continuing lack of a paediatrician had resulted in a great number of patients with untreated club foot. This problem appeared to be present throughout rural areas of Sri Lanka and has been identified as a potential area for further development and training in the future.

The Sri Lankan Orthopaedic Association has 40 members but only 22 consultants work within the public sector looking after a population of 18 million. During the four-year orthopaedic specialty training, one to two years experience is gained abroad, usually in the United Kingdom or Australia. Outside Colombo, the trauma service is usually

provided by one orthopaedic consultant and two general surgeons serving one to two million people. Acute trauma is managed initially by the general surgeon on call and then handed over to the orthopaedic team the following day. During our assessment of seven hospitals accepting victims of the tsunami, the standard of initial management of open fractures with debridement and skeletal traction was excellent. We encountered only two cases of death due to overwhelming sepsis from an injured extremity and one case of on-going deep infection of an open fracture five weeks after the tsunami. However, the orthopaedic experience of the general surgeon is variable and basic training in the management of open fractures and the use of external fixators would be useful.

The future

LCI published its report on the regions of Sri Lanka affected by the tsunami in early February 2005. An interim report was published at the end of January 2005 by David Alexander, Professor of Psychiatry at Aberdeen University. As the acute crisis resolved, there was an increasing recognition of the psychological trauma suffered by the victims and the bereaved, particularly the children. His report secured funding for a psychological rehabilitation project which began in February 2005.

During the assessment, the Leonard Cheshire team was able to distribute £200 000 of external fixators to ortho-

paedic surgeons working in the coastal hospitals. Copies of the report have been made available to the Sri Lankan Health Ministry and the Orthopaedic Association who are aware of the pressing problems of the further supply of such equipment in these remote areas.

A limb-fitting centre on the East coast has now received finance through Handicap International and LCI are considering proposals to set up a service for the South coast. In May 2005, LCI are funding an orthopaedic course in Galle for orthopaedic trainees and general surgeons admitting trauma patients. An international faculty, including Sri Lankan orthopaedic surgeons, has volunteered to teach on the use of external fixators, wound debridement and techniques of soft-tissue cover. A further project is underway to promote awareness of club foot and education in treatment such as the Ponsetti method.

Sri Lanka, as a developing country, lacks the resources necessary to improve the orthopaedic service which its surgeons are capable of providing. The service, however, coped admirably with the overwhelming numbers of casualties received in such a short period of time. The international response to the Asian tsunami was huge but the LCI report highlights the recurrent problem of supplies reaching the countries affected but not necessarily the victims. The Sri Lankans are proud, have great hope for the future and, with assistance from future LCI projects, are determined to rebuild their lives.