

Experience with the use of Ultrasound at Queen Elizabeth Central Hospital, Blantyre

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INTRODUCTION

Clinical ultrasound is now a routine service investigation in most hospitals in the developed world. By contrast, in the developing world ultrasound facilities are usually only found in tertiary or private hospitals. In Malawi ultrasound equipment is available in the three central hospitals, some district hospitals and in a number of mission/private hospitals. There is only one medical radiologist in the country and ultrasound is usually performed either by an interested clinician or by a radiology technician. The capital expense for a machine is high (in fact, most machines in the government service have been donated), but once installed it is inexpensive to run, it is mobile and requires very little servicing. Ultrasound is held to be a most valuable diagnostic tool in the tropics, if the capital expense can be afforded (1). There has been little documentation of the value or otherwise of ultrasound in Malawi and we therefore describe our experience with ultrasound investigation during a twelve month period in 1992.

PATIENTS AND METHODS

Queen Elizabeth Central Hospital is fortunate in having two ultrasound machines in the out-patient department; one donated by the Dutch Government (Toshiba Sonolayer-L model 32-A scanner) and one by the Japanese government (SDU-SOO Shimadzu scanner). Over a twelve month period in 1992 ultrasound investigations were carried out by two clinicians (EVH and ADH). A record was kept of the indications and the findings of these investigations.

RESULTS

During 1992, ultrasound investigations were performed on 555 patients (446 investigated by EVH and 109 by ADH). The TABLE shows the number of ultrasound investigations and the number of abnormal findings in, relation to anatomical site.

In all ultrasound scans of the abdomen and/or related organs, a full survey of the abdomen was carried out. The commonest abnormal finding in abdominal scans was a

fluid collection; intra-abdominal abscesses were found in 26 patients and ascites in 22 patients. When an abdominal tumour was suspected clinically it was confirmed by ultrasound in 76% of cases. Burkitt's lymphoma accounted for 28% of these abdominal tumours. The most usual indication for ultrasound of the heart was for determining the cause of 70 patients had cardiomegaly on chest radiography; of these 42 had pericardial effusions. 14 had constrictive pericarditis with fibrinous exudate between visceral and parietal pericardium, 7 had a dilated cardiomyopathy, and in the remainder a cause for cardiomegaly could not be ascertained by ultrasound. In 9 patients ultrasound combined with M-mode echocardiography was used to assess valvular heart disease; of these, 6 patients had either mitral stenosis or mitral valve prolapse, and in 3 patients the investigation was normal. In the urogenital system, the commonest abnormalities were hydronephrosis in 36% and neoplasms of the bladder/kidneys in 17% of patients. In general, abnormal liver scans revealed either hepatic tumours (primary or secondary) or dilated intrahepatic bile ducts in patients with jaundice. Two thirds of the miscellaneous scans were for confirming the presence of pleural effusions, determining the presence of thyroid abnormalities or performing hydrocephalus measurements. The spleen was mostly examined to confirm or exclude splenomegaly, and to look for focal lesions such as abscesses. Scans of the gall bladder revealed gall stones in 4 patients and hydrops in 3 patients.

DISCUSSION

Ultrasound investigation during this 12 month period was very helpful in our clinical practice at Queen Elizabeth Central Hospital. The ability to differentiate between fluid and solid tissue was of great help in establishing a diagnosis of abscess, cyst, effusion or tumour. Ultrasound facilitated the use of interventional techniques such as percutaneous drainage of abscesses and other fluid collections. After drainage of such fluid collections, patients could be followed up to determine whether fluid had reaccumulated. Likewise, the use of ultrasound in differentiating pericardial effusion from dilated cardiomyopathy was invaluable to medical management of what was sometimes a difficult clinical problem. In the non-functioning kidney, obstructive uropathy could easily be diagnosed by ultrasound, and in this way urography with contrast media and ionizing radiation could be avoided. Finally, ultrasound allowed certain types of neoplasm to be staged, and some idea about prognosis and the probable success of planned intervention techniques could then be discussed with the patient and relatives.

The World Health Organization believes that the first need of a hospital for diagnostic imaging is the acquisi-

TABLE: ULTRASOUND INVESTIGATIONS IN QUEEN ELIZABETH CENTRAL HOSPITAL, 1992.

ANATOMICAL SITE	No. INVESTIGATIONS	No. (%) ABNORMAL FINDINGS
ABDOMEN (other than tumours or specific organs)	138	64 (46)
TUMOURS	123	95 (77)
CARDIOVASCULAR	79	70 (89)
RENAL / UROGENITAL	77	52 (68)
LIVER	55	39 (71)
MISCELLANEOUS	50	50 (100)
SPLEEN	23	23 (100)
GALL BLADDER	10	8 (80)
TOTAL	555	401(72)

tion of an x-ray unit. and that ultrasound is an additional luxury. However, in a busy general hospital, there are sufficient number of suitable medical and surgical cases to justify the expense of purchasing a machine, particularly when other specialities such as obstetrics and gynaecology can also benefit from the improved diagnoses which will inevitably occur. Ultrasound is a quick procedure and in some cases completely obviates the need for ionizing radiation. The running costs are small, and the use of the machine is straightforward and can be learnt with a minimum amount of training. It is the interpretation of ultrasound that requires expertise and training. A busy central hospital should really have a radiologist on the staff who is trained in the use and interpretation of ultrasound. However, interested clini-

cians can learn enough from a session a week over 3-6 months to become conversant in it's use, and this extra skill will undoubtedly improve the accuracy of clinical diagnosis.

REFERENCE

1. Editorial. Clinical ultrasound in developing countries. *Lancet* 1990;336:1225-6