

Imaging in Ghana

Sue Carter, Clinical Tutor, Furness General Hospital, describes her experiences carrying out voluntary work in Ghana, West Africa.

Introduction

During the last two years I have paid four voluntary visits to Ghana, West Africa. Ghana is approximately the same size as the UK and has a population of almost 20 million, 70% of the people living in rural areas with a staggering 58% having no access to treated water. The reliable supply of electricity and water has yet to be achieved even in the capital city of Accra.¹

My involvement is a private initiative and I take annual leave from work. The initial visit was at the request of Professor Genevieve Scarisbrick, Specialist Radiologist at the Komfo Anokye Teaching Hospital (KATH) in Kumasi, who was working



Figure 1: Komfo Anokye Teaching Hospital.

there as a volunteer for the Rotary Doctor Bank. KATH is an 800 bed hospital which serves the city of Kumasi and the surrounding Ashanti region, a population believed to be in excess of three million. Kumasi lies in tropical rainforest and is a five hour drive from Accra.

The purpose of my visits is to assist the staff in improving image quality, problem solve the many equipment and processing dilemmas and provide education for all imaging staff, not only at KATH but further afield in distant mission hospitals, poly-clinics, and other government hospital units.

Healthcare

There is no health service in Ghana, nor is there a widely available insurance scheme, although one is planned for the future, therefore patients pay in cash for all of their healthcare needs. The minimum wage is approximately 45 pence a day and a PA chest film costs 25,000 cedis, approximately £2.50. An ultrasound scan costs £3 and a barium meal £8.50, consequently patients present when a disease process is well established and when the local herbalist has been unsuccessful. Most images show pathology and this can make interpretation difficult, especially on ultrasound when it is sometimes impossible to tell from which organ a tumour mass has arisen. Insufficient numbers of health professionals is a major problem, and at the moment there is just one permanent, fully qualified radiologist in the country.

Health issues

The major cause of death in Ghana, including all age groups, is bacterial infection, with pneumonia being the commonest cause. The incidence of HIV infection varies widely from 4% in the Upper West to 30% in the Ashanti Region. Official figures for AIDS released by the Ministry of Health, shows an overall

Leeds General Infirmary welcomes buckyStar

A new buckyStar general radiography system has been installed by Xograph Imaging Systems in Leeds General Infirmary's orthopaedic x-ray department.

The buckyStar system has been ergonomically designed by radiographers to ease the workload on those that use it on a regular basis. Controls are well positioned for comfort and vertical table movements can be controlled from the tube support to eliminate stooping and bending.

buckyStar is a digital ready general x-ray system with proven digital upgradability. As soon as it's the right time to 'go digital', Xograph will upgrade with the latest DR buckys and portable DR detectors from Canon.



Pictured from left: Joanne Miller, Radiographic Assistant; Christine Rhodes, Superintendent Radiographer; Karen Wainford, Advanced Practitioner/Clinical Tutor; and Stan Zaremba, Xograph Imaging System's North East Territory Manager.

incidence of 4.6% in Ghana.² The number of cases of TB reported per year is rising as a result of the HIV/AIDS epidemic and is the leading cause of death among people who are HIV positive.³ Patients do not pay for TB treatment, consultation or diagnostic tests in an attempt to encourage patients to come forward and be treated. Misconceptions about healthcare are rife and recent headlines in a local newspaper read 'Aids patient marries after divine healing'.⁴ Immunisation programmes for children which would protect them against potentially fatal disease are thwarted by the religious beliefs of church leaders in some regions, who insist that 'it is the belief of the church that members do not seek any medical attention other than their faith in God'.⁵

Pathologies

Contrast agent studies are carried out in most hospitals, ranging from IVUs to barium studies, sinograms to hysterosalpingograms (HSG). In virtually all instances, these procedures are carried out blind without the use of fluoroscopy. The water-soluble contrast agents used are ionic, however, there is limited availability of the more costly non-ionic agents.

The range of conditions seen on a daily basis is vast and their radiological presentation fascinating. During the last 12 months, over 2000 patients have been examined for infertility at KATH, by HSG. The most common abnormalities demonstrated are hydrosalpinges and fibroids, which present in patients as young as 16 years.

Approximately six new cases of pulmonary TB present each day, often with extensive bronchopneumonia with large cavities. (Figure 2.)

Apart from injuries due to trauma, osteomyelitis is the most common bony abnormality to be seen on x-ray (Figure 3) and this is sometimes associated with a staphylococcal septicaemia but commonly occurs in patients with sickle cell disease.

Schistosomiasis haematobium (blood flukes) is endemic, causing urinary tract problems. (Figure 4.) The usual source of infection is through bathing in contaminated water. Micturition becomes painful and is accompanied by haematuria and progressive damage to the bladder, ureters and kidneys. A calcified bladder outline is a common x-ray appearance and is due to calcification of eggs in the bladder wall. Obstructive uropathy and bladder tumours are common complications.⁶



Figure 2: Pulmonary TB.



Figure 3: Osteomyelitis with pathological fractures.



Figure 4: Bilateral hydronephrosis in schistosomiasis.

Perforation due to typhoid is the commonest cause of perforation in Ghana, especially in children. (Figure 5.) The bowel becomes infected and inflamed, Peyer's patches in the ileum ulcerate and if the full thickness of bowel is involved, perforation follows.⁶ Images in typhoid perforation frequently show massive amounts of free peritoneal air. The best-known radiological sign of pneumoperitoneum on supine abdomen films is the demonstration of air on both sides of the bowel wall. This was first described by Rigler in 1941.⁷

Conjoined twins are not an unusual event. The twins pictured in Figure 6 were successfully separated at KATH following ultrasound imaging and individual barium meals being performed, without the aid of fluoroscopy.



Figure 5: Rigler's sign in typhoid perforation.



Figure 6a: Conjoined twins.

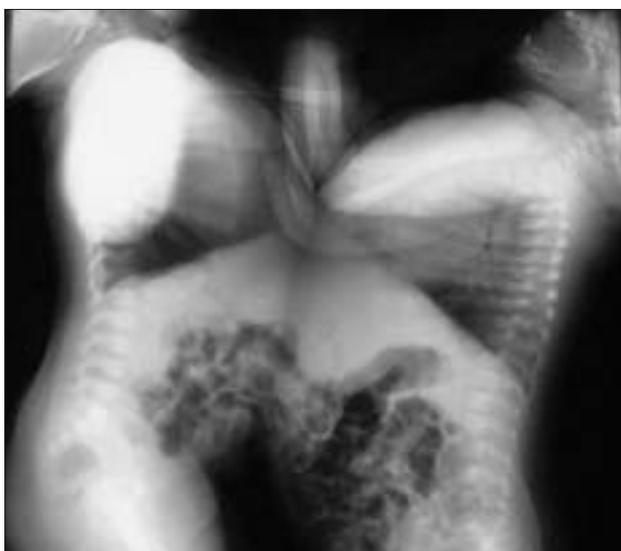


Figure 6b: X-ray showing twins joined at the liver.

Equipment

The type of x-ray equipment in use varies considerably from the basic yet relatively up to date Siemens Multix Polydoros LX 30 at KATH, to a 1954 Picker US military unit in the mission hospital, Ankaase, which is used on a daily basis.

Most x-ray departments are in desperate need of basic equipment, such as foam wedges, sandbags, grids, gonad protection, R & L markers, name markers and cassettes.

Virtually all hospitals in Ghana use wet processing. Developing is by inspection as there are no timers and film washing depends on the availability of water.

Safelights tend to have heat-damaged filters or no filter at all, just yellow paper. Film is almost a luxury item in most departments and is used sparingly. It is not unusual to run out of certain sizes and when this happens larger sizes are carefully cut to fit the smaller cassettes and usually without waste. Having no 35x43cm film for chest radiography does not present too many problems, as two 18x43cm films are placed side by side in a cassette then similarly arranged by the radiologist on a viewing box for reporting.

Education and CPD

During each visit, a two day symposium is held for radiographers/radiological technicians and all hospitals in Ghana are



Figure 7: 1954 Picker control panel. Maximum output 15mA and 75kV.



Figure 8: Elvis Basoah proudly demonstrates his 1954 Picker US military unit.

invited. Professor Scarisbrick and myself provide the teaching. The last symposium saw every region in the country represented with a total of 50 participants. Some travel many miles to attend, over dirt roads from distant mission hospitals. These study weekends provide the opportunity for radiographers, many of whom work in isolated areas in single-handed departments, to meet their colleagues and exchange ideas/thoughts/problems.

Lectures cover a wide range of topics, from digital imaging, role extension, contrast studies and quality control, to pattern recognition, film evaluation, image interpretation and radiation protection. Practical instruction and discussion of various imaging projections is included in each of the symposia. Quizzes, crossword puzzles (all related to radiography) and image evaluation tests are also included with prizes awarded.

During my first visit I discovered there were no books, journals or professional papers available for staff to read – nothing to stimulate enquiry or endorse the training they had received as student radiographers. Now, following each symposium, every delegate is given a radiographic textbook and a selection of journals. Study days stimulate their thirst for knowledge and many now are keen to study further.

I am pleased to report that these radiographers have formed



Figure 9: The 4th symposium attracted over 50 delegates. Ghanaian dress for Professor Scarisbrook (right) and myself (left) was provided by one of the participants.

the Ghana Society of Radiographers and Radiological Technicians and have become members of ISRR (International Society of Radiographers and Radiologic Technologists).

Training and development is also provided for the darkroom technicians, through tutorial sessions, practical instruction and the provision of reference material.

To date, two crates have been sent to Ghana containing various radiographic items donated by imaging departments throughout the UK. These include x-ray film, donated by a hospital going digital, cassettes, grids, books, journals, imaging accessories, ECG monitor, laptop computers and various medical supplies.

Personal comments

Imaging in the third world is a challenge by western standards – no ceiling suspended tubes, high output generators, trauma trolleys or imaging aids to deal with the seriously injured RTA cases. Improvisation is the key and the staff are experts at dealing with adversity.

I feel I never stop learning in Ghana. There are new problems to solve on a daily basis, which I find extremely stimulating. The pathologies encountered are fascinating, providing excellent CPD opportunities. Wet processing is something I haven't done since I was a student, and some of the equipment such as the Odelca camera (mass miniature chest radiography equipment used in the Goldmine Hospital of Obuasi) I thought I would never see again, let alone use. I realise now that being one of the more mature radiographers does have its advantages! I value each visit.

Acknowledgements

The response to the photograph, published in *Synergy*, appealing for grids has been excellent and I wish to thank everyone who responded. Special thanks to Neil Staff of X-Ograph who provided new grids and to Stewart McArdle of testobjects.com who donated a fluoroscopy test tool.

I am indebted to the Rotary Doctor Bank who kindly meet the cost of my flights on each visit, the Society and College of Radiographers for their generous donation from the Overseas

Placement Fund and the World Radiography Education Trust Fund (WRETF) for their support.

And finally my thanks to the radiographers, x-ray technicians and darkroom technicians I've had the privilege to work alongside. 'Akwaaba' – you are welcome in my country – is a greeting that is used by everyone and I am indeed made most welcome, their friendliness and genuine desire to learn is an inspiration.

And finally a plea... KATH is desperate for two Kodak minR mammography cassettes, size 24x30cm. If you can help, please contact me at sue.carter@fgh.mbht.nhs.uk.

References

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The SoR Overseas Placement Fund

Applicants must:

- ◆ Be a member of the Society of Radiographers;
- ◆ Work overseas on the project;
- ◆ Work in a role to assist an emerging radiographic system.

Applications are welcomed from individuals setting up self contained projects, or supporting an existing project.

All applications are considered by the College Board of Trustees. To request an application form, contact Gill Smith, Executive Secretary, the Society and College of Radiographers, 207 Providence Square, Mill Street, London SE1 2EW. Tel: 020 7740 7203 or email gills@sor.org