

Personal Paper

Department of inappropriate investigations

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The amount of work done by the average x-ray department in a district hospital has doubled every few years. In countries where there is payment by fee for item of service this is good for the hospital, whose running costs are heavily subsidised by the x-ray department, and good for the radiologist, whose income is among the highest in the medical hierarchy. This is not so under the NHS.

Volume of investigations

Although there are periodic mutterings in the correspondence columns about the shortage of radiologists, little has been said about the relevance of the flood of investigations requested. The sheer volume of x-ray examinations demanded has two major deleterious effects. Firstly, few doctors take up a specialty where they know they will be shackled to a viewing box for all the working hours of the day. Secondly, and no less serious, is the result that there is no time to guide the investigator into asking for the correct investigation. Casualty x-ray examinations make up the largest single group, although they may not take up the largest share of the radiologist's time. The number of abnormalities found is tiny. Of the skull x-ray films seen, fewer than 1% show fractures. Of the fractures seen elsewhere, many are obvious clinically (although x-ray examination is usually necessary), and in others the demonstration of a fracture is irrelevant—for example, fractures of the tufts of terminal phalanges caught in car doors.

Medicolegal

In a recent symposium at the Royal Society of Medicine the bogey of "medicolegal" reasons was met face-to-face, and the conclusion was reached that *if the patient was properly examined*, and the decision reached that an x-ray examination was unnecessary, no British court would consider the lack of an x-ray examination as negligence. The crux of the matter lies in the clause "if the patient was properly examined." Many hard-pressed casualty officers have the x-ray pictures taken *before* they see the patient, others are haunted by medicolegal consequences, and still others are bullied by aggressive patients. Even when x-ray examination is justified, it is very often too extensive. Requests for x-ray examination of foot and ankle are standard when the injury might have caused a fracture of the

base of the fifth metatarsal or the malleoli. This combination is unnecessary when the patient has dropped a bottle on his toes. X-ray films of the whole hand may actually be deceptive when only the interphalangeal joint is in question, or "forearm, wrist, and elbow" when only the elbow is in doubt. Multiple views are needed to demonstrate rib fractures. Now that strapping is no longer fashionable the only matter of relevance in isolated rib trauma is whether a pneumothorax is present, which can be shown on a single chest film. One can go on ad infinitum in this vein.

The remedy lies in educating casualty officers while in post and the DHSS accepting responsibility in the infinitely small number of cases where damages would be awarded. This would be a minute fraction of the expenditure saved from clinically unnecessary investigations. Ad hoc solutions by radiologists in the form of not reporting on casualty films are far more dangerous.

Outpatient investigations

The fact that nowadays most patients, except in dire emergencies, are investigated as outpatients forms the other large block of the radiologist's work. Here again there is great room for improvement—not only by reducing the number of investigations whose results, whatever they are, will be irrelevant to the patient and problem—but also in choosing the form of investigation most likely to cast light on the matter. Examples of the former category include most x-ray films of the lumbar or cervical spine in cases of backache or pain in the neck in patients over 50. For practical purposes, everybody of middle age and beyond has disc lesions and degenerative changes, and the worst are often found in little old ladies having cholecystography or intravenous pyelography, and who have never complained about their back or neck.

We also all know of colleagues, racked with pain and confined to a wooden bed without a mattress, in whose lumbar spine films only the eye of faith can find any abnormality. The average department of a district hospital must see several hundred x-ray films of these regions every week.

There is an increasing tendency to request x-ray films of the abdomen in any patient whose symptoms are related territorially, rather than radiologically, to the gastrointestinal tract. In most departments examination of the "acute" abdomen includes at least three 43.2 cm × 35.5 cm films, consisting of erect and supine views of the abdomen and an x-ray film of the chest. Often the clinical indication is "massive rectal bleed," "haematemesis," "gastritis," or other condition in which the chances of finding a relevant abnormality must be less than one in a million. When taken to task over the "massive rectal bleed" and asked what possible finding could be revealed on a plain x-ray film, one of the casualty officers ventured "a calcified pile." What may be considered to make matters far worse is that often some irrelevant abnormality is turned up, which,

depending on your sporting interests, may either be considered as finding a red herring or starting a hare. The latter is probably the better metaphor, as the clinician is then forced to give chase in a completely different and irrelevant direction.

I am using the "abdomen" purely as an example of this category of misguided investigation. There are many other and even potentially more dangerous requests. Emergency intravenous pyelograms when there is no possibility of renal colic and x-ray films for what must be innocuous foreign bodies in young children come into this latter category. A child who has swallowed a small ball-bearing or bead is more likely to get leukaemia from the x-ray examination than any harm from the foreign body. An extreme example was a recent repeat x-ray film on a child where the ball-bearing was seen in the rectum on the previous films some days before.

Inpatient investigations

Inpatient investigations are often more time-consuming and labour-intensive. Daily, twice a day or more, frequent x-ray examinations as a matter of routine in coronary care units pander to the Walter Mitty instinct in the very junior doctor, or possibly result from a desire to please.

If questioned many would even admit to a belief that recovery is hastened by frequent x-ray examinations. Even the pious thought that hitherto unknown lesions might be found is defeated by the fact that the films are generally immediately removed "unreported" and return in thick batches to the x-ray department for reporting once the patient has been discharged or died.

Another category of inpatient investigations that would not be missed is one I have labelled the "ante-mortem" barium meal or enema. This is urgently requested on an aged patient who generally dies within a day or two—the demise possibly hastened by barium impaction in the colon. Whereas intellectual curiosity is often a laudable attribute, having investigations done in case the relatives will not give permission for necropsy is far less to be admired, especially by the radiologist, radiographers, porters, and nursing staff who have to move the patient into all the acrobatic positions necessary in these examinations.

More debatable is the extensive investigation consisting of at least a barium meal and follow-through, barium enema, intravenous pyelography and liver and bone isotope scans of patients in whom numerous secondary deposits are known to be present, and a search for the primary lesion is undertaken.

There should be the chastening thought that, while these are being carried out, other patients with more urgent and possibly treatable disease are queuing for their turn.

Effect on radiologists

Apart from this group kept out in the cold, the correct diagnosis in the patient himself may be held up by the wrong investigations being carried out. The radiologist today rarely works in the darkness and isolation that still plague his image in the minds of our more senior clinicians.

Nevertheless, too much of his time is spent buried among piles of reporting that prevents more time being spent in consultation with his colleagues and in helping to choose the investigations to be carried out. The pace of advances in radiology is possibly faster than in most other specialties, and learning new techniques and their application should take up an appreciable proportion of a radiologist's time. An equally important duty is disseminating this knowledge among his clinical colleagues.

ULTRASOUND

Ultrasound (regarded by my long-suffering colleagues as my particular King Charles's head) was a discovery potentially as important as that of x-rays themselves, which has largely been hidden under a bushel of physicists and radiologists. This may replace x-ray procedures, including arteriography, in investigating the aorta for aneurysms; the kidneys for tumours or cysts; the liver for jaundice, deposits, hyatid disease, and other lesions; the uterus and ovaries for tumours or cysts; and masses and lumps in most places; and offers most promise in opening up the pancreas to direct and non-traumatic investigation. At present many hospitals lack ultrasound facilities, and where these are available they are more than fully occupied in obstetrical work.

There is a pressing need for expansion, and in particular the carving out of enough time for the general radiologist to do this new facility justice. I believe that there is only one consultant in Britain who has been appointed in a full-time capacity in ultrasound. Such time could be found and also time for better dissemination of what general radiology has to offer if the clinician remembers the very limited pool of radiologists and x-ray facilities into which his request will fall. One might adapt the war-time slogan to conclude "Is your x-ray examination really necessary and have you asked for the right one?"

Reference

¹ Bovell, C H J, *Proceedings of the Royal Society of Medicine*, 1976, **69**, 762.

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A 72-year-old man has been recommended testosterone enanthate, 250 mg monthly by intramuscular injection, in the hope that it would improve his sexual potency, especially the ability to develop and maintain rigidity of the penis, so that he could continue normal sexual relations with his much younger wife. What are the risks that this treatment will induce carcinoma of the prostate or any other untoward effects on the prostate, in addition to those that may occur spontaneously at this age?

There is no evidence that androgens will induce carcinoma of the prostate, or indeed have any other appreciable adverse effects on the non-malignant prostate. What is well established is that testosterone should not be administered to someone with carcinoma of the prostate, which requires lowering of the endogenous testosterone concentrations by orchidectomy or anti-androgen treatment, normally with oestrogenic compounds. In a man in the age group where carcinoma of the prostate is common, a rectal examination must be performed before the start of testosterone treatment. If there is the slightest suspicion of malignancy then fine-needle aspiration¹ from the suspected area should be undertaken to obtain a specimen for cytological examination. Indeed, it could be considered justifiable to perform this simple outpatient procedure, which requires no anaesthetic, as a routine in

this type of patient. Certainly rectal assessment should be undertaken at intervals during treatment to ensure that there has been no appreciable change in the feel of the gland.

¹ Franzen, S, Giertz, G, and Zajicek, J, *British Journal of Urology*, 1960, **32**, 193.

The common hepatic duct of a middle-aged man was divided accidentally and resutured during cholecystectomy four years ago. He has since suffered recurrent ascending cholangitis, which has not been relieved by an attempted repair to the stricture that this produced. Are low-dose, prophylactic, broad-spectrum antibiotics which are excreted in the bile effective, and if so which would you recommend?

Antibiotic prophylaxis of recurrent ascending cholangitis has never been formally evaluated in a clinical trial, but in a case such as this it is certainly worth trying. A suitable regimen would be a combination of rifampicin and trimethoprim. These antibiotics have a synergistic bactericidal action on many organisms,¹ including *Escherichia coli*, which is the most frequent pathogen in ascending cholangitis.

¹ Keny, D W, et al, *Journal of Antimicrobial Chemotherapy*, 1975, **1**, 417.