of the general population 25 years later. Nearly half the cases were diagnosed as acute myeloid leukaemia, and chronic lymphatic leukaemia was uncommon. These findings broadly agree with observations on the incidence of leukaemia in the Japanese who survived the atom bomb.[5]

The proportional increase in radiation induced cancers, including those of the oesophagus, lung, bones, lymphomas, breast, and brain, reached a maximum of 71% between 10 and 12·4 years after radiation treatment and then declined. Beyond 25 years the risk remained raised only for oesophageal cancer. This study is the first to show an apparent limit to the time during which radiogenic cancers may appear. The continued excess in oesophageal cancer shows, however, that this is not true for all cancers. Data on a selected group of solid tumours from the life span study of survivors of the atom bomb suggested that the relative risk did not vary between 5 and 30 years.[5] Similarly, data from the follow up of women treated with radiation for carcinoma of the cervix has shown an increasing relative risk of cancer with time.[6] Importantly therefore these data start to suggest the possibility of different time patterns of risk between different cancers.

The increased relative risk of breast cancer in the patients with spondylitis who received estimated doses of 0·5 Gy is in sharp contrast to the lack of increase in women who survived the atom bomb and who received comparable doses of radiation (0·1-1 Gy).[7] The results are, however, compatible with the increase among women given x rays for acute postpartum mastitis in the 1940s and 1950s[8]; there was a threefold increase over the incidence in the unirradiated breast and a linear dose response relation of a 0·4% increase in risk for each rad between 60 and 500 rad (0·6 and 5·0 Gy). No dose response relations have been presented for the patients with spondylitis, and further analysis of possible dose relations will be important in understanding any heterogeneity of response.

The risks are, however, small. A member of the public receives four fifths of his total radiation exposure from the natural background sources and only one fifth from diagnostic and therapeutic procedures.[9] Even so, occupational and general environmental radiation doses and doses from medical usage must be kept as low as possible. Therapeutic uses of radiation for benign disease must always be questioned, but alternative treatments—for example, phenylbutazone for ankylosing spondylitis—may also be leukaemogenic.[10]

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Old and new causes of superficial dyspareunia

Introital pain during intercourse or when inserting tampons occurs in up to 40% of women attending gynaecology clinics but is the principal symptom in few.[1] Dyspareunia is both a cause and a symptom of sexual difficulty and is perhaps best investigated by a general practitioner or family planning doctor, although an increasing number of women are attending genitourinary medicine clinics as their first choice.

Managing superficial dyspareunia of acute onset is straightforward. It follows infection, allergy, or trauma—episiotomy or other injury from childbirth[2] or gynaecological surgery.[3] Postherpetic neuralgia can give pain without objective signs, and a common cause of superficial dyspareunia, which is not apparent on examination, is inadequate genital lubrication.[4] This usually results from lack of effective sexual stimulation or from sociopsychological factors that inhibit arousal. If arousal fails during thrusting pain appears for the first time during intercourse rather than at penetration. Local trauma is a more likely cause of dyspareunia if the woman has atrophic genital epithelium after the menopause or another cause of oestrogen deficiency.

Chronic introital pain is more difficult to manage. It can follow acute infections or other problems—for example, postradiation vaginitis can develop years after radiotherapy—but many of those with chronic disease have psychological disorders; diagnosing a psychological cause demands, however, excluding organic disease and positively finding psychological disorder. Psychosexual counselling does not cure all women.[5]

The clinical examination of a woman with longstanding dyspareunia needs to be more detailed than for one whose problem has begun acutely. The doctor must examine that part of the vestibule around and above the hymenal ring that contains the crypts of the minor vestibular glands. This is achieved by rolling the hymenal ring towards the vaginal orifice with a moistened applicator.[5] Some women with chronic introital pain may have focal vulvitis, a newly described lesion characterised by intensely tender areas of focal erythema that may be swollen or ulcerated on the endodermal mucosa of the vestibule.[5] Three quarters of the lesions are located around the openings of the Bartholin ducts or between them posteriorly (usually between 4 and 8 o'clock). They can be seen with the naked eye, but using a colposcope makes identification easier. They are exquisitely tender to touch, but the mucosa adjacent to them is non-tender and looks normal.

Histological examination has not confirmed the association between the lesions and the minor vestibular glands,[6] and there is no specific pattern of inflammatory reaction. Focal vulvitis can be differentiated from vulvitis circumscripta plasmacellularis (Zoon's vulvitis), a rare cause of dyspareunia,[7] by the absence of infiltration by many plasma cells. The aetiology of focal vulvitis is unknown. It does not respond to local treatment with antimicrobial drugs, corticosteroids, cryotherapy, or systemic antibiotics, but about half of the women have a spontaneous remission, though this may be after 12 years.[5]

Local anaesthetics may give sufficient relief for intercourse. Woodruff and Parmley have excised the hymenal ring and contiguous mucosa and submucosa of the vestibule,[6] but Peckham *et al* believe surgical treatment should be considered

only in those women who have unremitting dyspareunia associated with focal vulvitis for at least six months.[5]

Dyspareunia is a distressing symptom that may lead to serious conflicts in relationships, and those conflicts are sometimes considered to perpetuate introital pain after conventional treatment has failed. Perhaps, however, failure to examine the vulva adequately has meant that the doctor has failed to diagnose focal vulvitis in such patients.

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Keeping up with orthopaedic epidemics

Britain is experiencing an epidemic of surgery for fractured necks of the femur and for arthritis of the hip. The work load and its economic implications are posing a formidable challenge to the Health Service. Over 100 different types of total hip replacement are available, varying in price from just over £100 to well over £1000. There is an urgent need to compare the different prostheses, yet controlled trials that will produce statistically meaningful results will take at least 15 years. Thus, if Britain is to remain at the forefront of researching and developing implants techniques must be devised for predicting the reliability and longevity of an implant within months rather than years. Such techniques are being developed and need encouragement.

The epidemic of fractured necks of femur is overwhelming the wards allocated to the trauma service and spilling into the beds needed for both general surgery and elective orthopaedics.[1] Not only is the incidence increasing with an aging population but also the risk at all ages is in itself rising.[2] In elective orthopaedics a similar epidemic is occurring: in 25 years the number of total hip replacements performed in Britain has risen to 35 000 a year. By 1990 the government expects the annual number of operations to have stabilised at 50 000 (N Fowler, Conservative Party Conference, Bournemouth, 1986). Total knee replacements lag a few years behind—only 10 000 were performed last year. American experience suggests, however, that the number will eventually rise to equal the number of hip replacements.

The traditional concepts of patients "earning" their operations is being abandoned in many units, and the days of most elderly patients taking their original joint replacement to the grave with them are now over. Young people crippled by an arthritic joint are determined, despite dire warnings, to opt for a joint replacement immediately and face the consequences of implant failure later. Yet revision rates in young patients may be as high as 25% within five years.[3] A new epidemic of patients requiring joint revision is starting to make inroads into operating lists: in Oxford one in five operations to replace hips are now revisions (J Spivey, personal communication). They require on average twice as much operating time, and patients need to stay in bed longer than those having a primary implant. The results too are not nearly so certain.

The choice of implant is difficult. The criteria are simple—reliability, longevity, and revisability—but the solution is not. Many different types of prosthesis—cemented or cementless—and the choice of approach to the hip multiply the possible permutations into the thousands.

Despite the cemented Charnley hip being one of the first joints to be used in large numbers 25 years ago, it still reigns supreme as the gold standard. Not one of the dozens of "newer," "better," and more expensive implants being used by many surgeons in the Health Service can match the figures obtained with the Charnley hip in proper hands.[4] Nor can they ever do so. A controlled trial of several hundred implants over at least 15 years would be required to make valid comparisons. There is no prospect of a controlled trial of this size being carried out in the foreseeable future for even one of the implants on the market. Even if it was possible the results would probably be irrelevant by the time they became available. That is why we need techniques to test implants quickly.

A technique using stereo *x* rays and bone markers has been developed that can measure the migration of implants within their bone beds to within fractions of a millimetre.[5] The technique is complex but does seem to predict the lifetime of an implant. The immediate implementation of this and other complex measuring techniques will be needed if clinical research is to be used to define the design criteria of a new generation of reliable implants.

Without this research to determine efficacy cost may be the only criterion used to decide the best implant for use in the health service. This would block all improvements in implant design in Britain and would sound the death knell of the British implant industry. Conversely, encouraging this type of research would allow Britain to move ahead in the forefront of implant development while ensuring that the health service obtains the best implants in both clinical and economic terms.

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