sample of the patients in the housewives category was taken, and only the benefits of surgical treatment were considered for those interviewed.

PROF. DUTHIE (Edinburgh) You were estimating the value of surgery in treatment of rheumatoid arthritis. I think it is important that we should be clear about this.

PROF. KELLGREN (Manchester) There were only thirty operated cases. In estimating the cost benefit of treatment was this based on what was saved by the thirty, or what was saved by all operated cases, on the inference that they all did well.

MR. BROOKS These are the figures for the thirty cases only; they are very pessimistic assumptions. Benefits accrued in respect of 22 patients out of the thirty treated by surgery. The benefits estimated for these 22 were calculated on the most pessimistic assumptions used about the discount rate, the real earnings growth rate, and the length of time patients could be expected to work after successful surgery.

PROF. BYWATERS (Taplow) I wonder whether you would hazard a guess about the observer error in cost-benefit analysis. If somebody else did a similar survey, would their observations differ greatly from yours?

MR. BROOKS As far as I know the only person who has been out and interviewed the persons is myself. Other cost-benefit studies have been carried out on a national scale using national data.

DR. SCOTT (London) A patient recently died at home and his son brought along a small sackful of drugs which had been prescribed, dispensed, and not used. I carried out a cost-analysis of these drugs: their value was £56. It is encouraging to know that, despite appalling wastage of this sort, treatment of the rheumatic diseases is still an economic proposition.

DR. PALFREY (London) I gather the cost-benefit analysis might be of value in relating the capital required to the benefits obtained from research programmes. I am particularly interested in how one assesses the benefits of the sort of research I do, which is concerned with basic science rather than with particular treatments.

MR. BROOKS I obviously do not know the answer to that. Further development of cost-benefit techniques should enable the evaluation of basic science expenditures.

DR. ZUTSHI (London) Were your benefits estimated on the patients that you interviewed, or were the costs calculated on the whole series of patients?

MR. BROOKS On the whole series.

DR. HOLDEN (Worthing) If you regarded these figures as being profits from a company, could you tell us what proportion that company might spend on research? What would be the normal for I.C.I. for example?

MR. BROOKS I could not say.

DR. HOLDEN (Worthing) Figures of the amounts companies spend on research are available.

MR. BROOKS I do not know what proportion of their profits these represent.

Arthrography of the Knee following Synovectomy. By MR. A. R. TAYLOR and DR. B. M. ANSELL (*Heatherwood Hospital, Ascot*)

Contrast arthrography was performed on twelve patients before synovectomy and repeated at varying intervals from 3 months to 1 year after synovectomy. The findings at operation of fibrin, adhesions, Baker's cysts, etc. were correlated with the arthrographic findings. At the time of re-examination the clinical state of the joint was noted with particular reference to the presence of pain, soft tissue swelling, recurrence of effusion, and recurrence of Baker's cysts.

In one patient who had a recurrence of synovial proliferation and an effusion at 3 months, the preoperative and postoperative arthrograms could not be distinguished. Conversely, those patients who were doing well after one year showed a considerably reduced synovial cavity with a completely smooth outline.

Discussion

DR. GOODE (Hull) I have done a number of arthrograms before and after surgery, and find it is extremely difficult to obtain comparable pictures. I know that the speaker has had the same trouble. The position of the knees can greatly influence the appearance before and after, as can the amount of fluid in the joint.

MR. TAYLOR We have tried to standardize the technique regarding the amount of dye injected and the radiographic views.

PROF. KELLGREN (Manchester) It would be interesting to obtain similar pictures of knees in which the synovitis resolved without operation.

DR. WRIGHT (Leeds) Since the arthrographs correlate so closely with the clinical appearance, do you think that there is any value in this apart from an investigative procedure? Secondly, have you any explanation why some knees do well and some do badly?

MR. TAYLOR The only thing that can be said is that postoperatively those knees that show a return to a more normal-looking arthrogram are those that have done well clinically. I cannot make any suggestions why some do well and some badly after synovectomy.

DR. ORLOFF (Brussels) The preoperative pictures you have shown us were of patients with long-standing rheumatoid arthritis. What would be the picture in patients with early synovial effusion?

MR. TAYLOR I think our earliest case was done after some 3 years of generalized rheumatoid arthritis with symptoms referable to the knees.

DR. SMITH (London) Postoperative management of synovectomy of the knees seems to differ between various surgeons. Could you give us your scheme of management?

MR. TAYLOR Our technique is relatively simple-compression bandage for 7 days, allowing as much movement within the compression bandage during that period as the patient can make, which is usually about 10 to 15°, removal of bandage at 7 days, sutures out at 10 days, and then a start on general mobilization. Very rarely does one have to manipulate.

DR. NUKI (*Glasgow*) I would challenge the statement that the synovium is probably normal after synovectomy in view of the data from xenon clearance studies.

MR. TAYLOR I agree, I am probably drawing assumptions. All I can say is that, in some cases, the arthrogram after synovectomy may revert to a more normal appearance.

DR. NUKI (*Glasgow*) How long after operation was the arthrography carried out?

MR. TAYLOR At varying intervals between one month and a year.

DR. GARDNER (*London*) You have raised one very interesting point. How did you differentiate between synovial thickening and fibrin deposition?

MR. TAYLOR Only that there is a good correlation between operative findings and arthrography. Synovial proliferation is seen as a smooth definite outline, the fibrine as a 'woolly' appearance.

DR. HILL (*Stoke Mandeville*) Was the fibrin present as loose bodies?

MR. TAYLOR The fibrin loose bodies are on the whole free in the joint cavity.

Closed-circuit Television in the Teaching of Rheumatology. By D. J. G. HOLROYDE, D. I. HASLOCK, and V. WRIGHT (*Leeds*)

The use of closed-circuit television, and indeed of other audio-visual techniques, is becoming increasingly recognized as an invaluable part of medical teaching at all levels. The increasing number of students, the changing curriculum, and the sheer visual nature of much of the evidence encourages the use of new media, especially in those cases where teaching staff have much repetitive information to impart and where so much case study work is involved. The use of these new resources for medical teaching is becoming an integral responsibility of the new central services in universities which have been set up in the last few years and which are designed to contribute, in terms of both quality and quantity, to the teaching of all subjects in the field of higher education. In medicine, the benefits to be obtained, in particular from television, seem to apply equally to preclinical, clinical and postgraduate education, and new facilities are becoming available whereby the distribution of videotaped learning material can be made more easily available at times and in places which suit the needs of learners who already have a very full schedule. The observation and use of patients as part of a series of structured television presentations, which can be pre-recorded at times convenient to the teachers and consultants involved, facilitates the building up of a library of case studies to which teachers and students alike can have easy access. The eye of the camera can often show up much more clearly the symptoms and diagnostic techniques in ways that research has shown to leave a clear impression with the learners. It also reduces repetitive teaching on patients with interesting signs.

Rheumatology is one of the clear areas where these new resources can be used to advantage.

Discussion

DR. TALAL (*Bethesda*) We are all well aware of McLuhan's ideas that television diminishes the participation of the observer and shortens the period of retention of such material. Have you compared the effectiveness of programmes presented on a television screen with live presentations?

DR. HOLROYDE There have been no tests of controlled groups in this particular case, but all the research that has been done shows that the results are better than if the material is presented live. The tape can be seen again and again, and the student can always see it again on demand.

DR. PALFREY (*London*) Can I ask whether you think colour television is necessary in the presentation of histological material, and if so whether you think the extra cost is justified?

DR. HOLROYDE Yes, I think that probably in the long run it is necessary, and then eventually the cost will not be so great and will be justified. The problem is not whether better results are going to be produced by better or more sophisticated equipment, but whether interested physicians will make the programmes. I think that given 5 more years' experience in colour in this country, it will become within the range of most medical teaching schools.

DR. BREWERTON (*London*) You pointed out that the great difficulty is time for preparation. How long did it take to prepare that film, and how long would it take to prepare a film or live discussion?

DR. HOLROYDE It did not take long to prepare once we had planned it. We did one or two recordings beforehand. Dr. Haslock was well aware of what he had to do. Given a little more assurance and experience I believe such a programme could be put together very quickly. Again we could justify this in terms of replay. Again, if you are manufacturing material for group showing, you are dependent on having the right type of patient available at the appropriate time.

DR. GLICK (*London*) What about using television in out-patient departments? How acceptable to out-patients would your apparatus be? Would patients be prepared to sit in front of one of these screens while being interviewed?

DR. HOLROYDE The patients seem to have less objection to appearing in front of a television screen than to being dragged in front of a lot of students.

DR. GLYN (*London*) I see that this is a film. What is the relative cost of film and video tape?

DR. HOLROYDE What we have just shown is on video tape, and it may be used again and again. It can be re-done with no extra cost, which is not possible with film; for example, the position of the hand with the over-head camera was not quite right. This could have been achieved better with a little practice, and the sequence repeated.