The Journal of Bone and Joint Surgery

EDITORIAL

ART – OR SCIENCE?

In this Issue we publish a paper by Richard Morris, the medical statistician to whom we send some papers for an opinion. The Editor asked him to review all the papers we published in 1984; he and some colleagues have responded with some cogent and just criticisms.

An early surprise was that the main thrust of his criticisms was not narrowly statistical: we were not attacked with p-values, complex calculations or esoteric formulae; we were told gently but firmly that some of the work was quite simply unscientific. Some of our authors had failed to define their aims, the “populations” they were studying, or the way in which they selected their “samples”. There was doubt about the logic of their conclusions. We had published anecdotal accounts of clinical experience; they lacked hard evidence.

In statistical terms such series are usually a sample of the total clinical experience of the consultant or unit concerned, and even the total experience can be regarded as a sample of the whole population of patients with the same condition. If the results or “outcome variables” are to be useful for critical comparison then all these parameters must be considered and defined.

So what? A long-standing tradition of orthopaedic surgery has been the personal, almost instinctive, selection of treatment. Papers on clinical series have often concluded with little more hard information than that results seemed acceptable. When patients were duly grateful, an acid test had been passed. But the more intriguing and interesting the new procedure, the more likely was the surgeon’s personal interest to encourage the gratitude of patients – and the more likely were others to “try Smith’s operation”.

Should we indeed plan to use control series, when we *know* that our treatment is good? In some situations the answer must be “no”: it would be unethical to leave patients in pain for 10 years without hip replacement, or to fail to make an accurate reduction of an articular fracture. The conscientious review of past experience has

great value, and will continue; but is it the most efficient way to answer every question?

Should we not, as exhorted, discover the most important questions, and then follow-up well-defined samples from known populations in which only one or two parameters are different. And, having done this, surely we should also be following enough cases to enable us to make statistically verifiable conclusions. It can be argued that this type of study has often failed to produce clear answers; or that the infinite variation of human response, surgical skill and standards of reporting must confuse the issue; but, as yet there is no better way of seeking truth.

This point is well made by Richard Morris; we do need to undertake more meticulously organised multi-centre trials. Only these can resolve some of the controversies which divide (and entertain) our specialty. This could be done; the means, the material, the statisticians and the computer time are all available – and we have many professors of orthopaedics to lead us. The challenge is not just to apply statistics to our standard reviews, though that will help; but, in the correct fields, to replace pseudo-science with strict and often uncomfortable objectivity. The Journal will, of course, continue to publish many “clinical”, non-numerical papers; these have a quality of their own and are valuable in spreading ideas and methods. Indeed there is a need for research which generates hypotheses, which may then be tested under experimental conditions. But when the aim is to be scientific, then tougher standards must prevail.

Caring medicine is an art – concern and placebos are both very effective; surgery is a craft – operative skill is important; but real and rapid advance comes best from real and rigorous science. The Journal will continue to ask for statistical review of some submitted papers, and we shall be using the deceptively simple check list to be found on page 243. We hope that some authors will do the same. The science of orthopaedic surgery will benefit, and so, ultimately, will the art and the craft – and the patient.

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