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Meningiomas and Sex Hormones, Radiotherapy and Benign Brain Tumours

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I WELCOME the opportunity to widen this discussion prompted by Drs Costello and Rampling [1]. The use of conventional external beam radiotherapy for meningiomas has not convinced us neurosurgeons, despite the well-known enthusiasm of the late Professor Bloom [2]. I have never seen a meningioma shrink with conventional therapy and of course it is practically impossible to prove that selected, slow-growing tumours, particularly those occurring in the 50+ age group, have responded to this kind of treatment. There is anecdotal evidence that stereotactic radiotherapy has shrunk one or two meningiomas. Radiotherapy is not without side-effects and astute clinicians see from time to time stroke-like episodes occurring in patients with benign brain tumours who have had previous radiotherapy.

This controversy also extends to the juvenile cerebellar astrocytomas [3], where the only malignant late recurrences appear to have occurred in patients who had had radiotherapy, low grade ependymomas where the value of radiotherapy may be questioned [4] and of course the low-grade supratentorial astrocytomas where it was proven virtually impossible to select and recruit patients to prospective clinical trials.

As a neurosurgeon, conventional radiotherapy for these problem tumours has, I feel, on occasion been the refuge of the destitute rather than a therapy.

It is now over a 100 years since the founder of neurosurgery, MacEwan, removed the first meningioma in Glasgow and we hope that our radiotherapy colleagues will be able to improve the treatment of "benign" brain tumours.

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Comparison of Prostate-specific Antigen Assays

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TURKES *et al.* [1] compared their in-house prostate-specific antigen (PSA) with four other commercial kits and concluded that there were considerable discrepancies between the methods on the basis of values of correlation and linear regression coefficients. Their conclusion is certainly supported by the raw data, but correlation and regression coefficients are not an appropriate way of summarising agreement or discrepancies between methods.

A correlation coefficient used as a measure of agreement can be misleading [2–4], because high values can be obtained even when one method gives concentrations that are consistently different to those from another method, and particularly if the range of measurement is wide. This is illustrated by the high correlation but low agreement between chemiluminometric assay (CLIA) and ELSA-PSA found by Turkes *et al.* Warnings have also been given about the practice of comparing the regression slope with the value one and the intercept with zero [3–5]. This was done by Turkes *et al.*, when they stated that a regression slope of 0.91 predicting CLIA from TANDEM-R PSA did not differ significantly from 1. This would not be the case if they were referring to statistical significance, but may be their judgement of the practical significance of such disagreement.

Bland and Altman [2, 3] recommended that agreement between methods should be assessed by simple plots and descriptive statistics based on the differences between values for the same sample obtained by each of the methods being compared. The samples analysed by Turkes *et al.* cover a very wide range of PSA concentrations (2–200 000 ng/ml) and the differences between the results for any pair of assays increase sharply with the average concentration. In these circumstances, it is better to work on a logarithmic scale which will lead to summary plots or measures based on ratios, rather than differences, of values obtained from the same sample, when transformed back to the original scale. If the approach suggested by Bland and Altman is used to compare the results of the CLIA and TANDEM-R PSA assays, the agreement or discrepancy between the assays could be summarised by the estimate that the TANDEM-R concentration will be between 0.7 and 1.64 times that of the CLIA result in 95% of future samples. The practical importance of such discrepancies can then be assessed.

A recent article in this journal by Romain *et al.* [6] used a distribution-free linear structural model [7] to compare two oestradiol receptor assays. This circumvents some of the problems of least squares regression, but the method advocated by Altman and Bland is much simpler to apply.

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