Visual analog scale: Verify appropriate statistics

Sir,

This is in reference to the letter criticizing the use of repeated measures ANOVA for measuring pain by visual analog scale (VAS).[1] The author argues that the data on VAS in the original study[2] was unpaired and ordinal scale so should have ideally used Kruskal–Wallis-H test. We would like to bring to the notice that in the original study, the intensity of pain was measured at the intervals of 6, 12, 24, 36 and 48 h following the intervention on the study participants. Hence, the data is paired. Furthermore, for the analysis of VAS the appropriateness of statistical tests is controversial. Some authors have used nonparametric tests considering the ordinal nature of the data.[3] However, studies have also shown that VAS possess interval and ratio properties and so can be treated as numerical data.[4] In addition, Dexter and Chestnut[5] has evaluated both nonparametric (Mann–Whitney and Kruskal–Wallis-H tests) and parametric (*t*-test and ANOVA test) for the same set of data and found that all the statistical tests performed similarly in case of absence of any difference in the VAS between the groups but when minimal difference existed, only parametric tests were able to detect the same. Hence, the use of repeated measures ANOVA by Akhavanakbari *et al.*[2] shall not be considered inappropriate, provided they are normally distributed. There was no information in the article pertaining to the normality check of the data that should have been performed before choosing a parametric test. Furthermore, by looking at the VAS scores at each of the time points from Table 1, there are no indications on the data being nonparametric. Hence, without the original data it cannot be argued that the authors have misused statistics.

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