Reliability (precision) is an important methodological issue in the field of radiology. Reliability (repeatability or reproducibility) is being assessed by different statistical tests such as Pearson r, least square and paired t-test which all of them are among common mistakes in reliability analysis (Figures 1 and 2) and is being published by high impact radiology journals.

Briefly, for quantitative variable Intra Class Correlation Coefficient (ICC) and for qualitative variables weighted kappa should be used; however, Bland-Altman as well as coefficient of variance (CV) is also being considered.

It is important to know that simple kappa has its own limitation too. There is no value of kappa that can be regarded universally as indication good agreement. Two important weaknesses of k value to assess agreement of a qualitative variable are as follow: It depends upon the prevalence in each category which means it can be possible to have different kappa value having the same percentage for both concordant and discordant cells! Table 1 shows that in both (a) and (b) situations the prevalence of discordant cells are 20% and discordant cells are 20%, however, we get different kappa value (0.38 as fair and 0.60 as moderate - good) respectively.

Regarding reliability or agreement, it is crucial to know that an individual based approach instead of group based should be
considered[2-3]. The reason is in reliability assessment; we should consider individual results and not global average. Therefore, ICCC single measure instead of average measure should be reported to correctly assess the reliability. In other words, possibility of getting exactly the same average of a variable between two methods or observers with no reliability at all is high. The same reasoning is also true for CV[7-9,14].

As a take home message, for reliability analysis, appropriate tests should be applied by radiologists. Otherwise, misdiagnosis and mismanagement of the patients cannot be avoided.

CONFLICT OF INTERESTS
There are no conflicts of interest with regard to the present study.

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