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LETTER

Association of Nondiabetic Glucometabolic Status and Aortic Stiffness in Community Hypertension Patients [Letter]

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Dear editor

The study by Dan et al[1] highlights the importance of nondiabetic glucometabolic status and its association with aortic stiffness. The research revealed the impact of SBP, and elevated FBG on aortic stiffness in hypertensive patients. There are few apprehensions observed in the chosen statistical methods which are discussed here.

Analytical results were generated based on a cohort of 1065 hypertensive patients who were recruited continuously from May 2015 to Dec 2016. Although it is an acceptable methodology, an inadequate sample size (large/small) may lead to incorrect inferential results and misleading conclusions. Here the study includes comparatively a larger sample and therefore weak correlation coefficients were identified as statistically significant (table-2). The factors "AP, SBP, eGFR and Age" were found to be significantly correlated with cfPWV, but correlation coefficients were close to zero (weak, $0.07<r<0.22$). It is the result of larger sample which may have a significant impact on the research conclusion. Results of Table 1 also strengthen the doubt of large sample fallacy; mean age (and SD) is almost same in different MS risk groups, but inferential results identified with a lesser pvalue (0.001). Smaller p values and related statistical significance are obvious in larger samples, but the difference may not be clinically significant. The same is the concern related to the inferential results presented in tables 3,5 and 6. Since sample size has an important effect on the efficiency of the ROC model and AUC test results,[4] the significance of AUC is also questionable. Hence it is recommended to calculate the adequate sample size according to the design of the study and type of statistical method, especially when inferential techniques are used.[2,3] Moreover, it is a singlecentered study that used entire patients of a healthcare center, therefore generalization is not plausible and the application of statistical tests on a population-based study is meaningless.

Another concern was about the choice of statistical testing procedures in the study. Properties of normality distribution needs to be verified prior to the choice of descriptive statistics and statistical tests. Mean & SD was calculated to compare the average of the parameters among 5 MS risk factor groups, and then ANOVA was performed to identify the significance of the difference (Table-1). But there is no indication in the article regarding normality distribution of the quantitative variables.

Variable distribution is a fundamental criterion for the choice of testing procedures. There are some parameters for which continuity assumption is violated, but researchers have applied parametric tests instead of non-parametric methods. Relationship between cfPWV and other parameters were identified (table-2), but not stated the status of normality to verify the appropriateness of Pearson's correlation. Findings in Table-1 shows the use of Pearson's chi-square test, but there are variable categories with small samples with expected frequency <5. It is an indication of a violation of test assumption and therefore the conclusion based on the association test may not be reliable. Overall, this letter intended to emphasize the results with statistical significance in larger samples does not imply the real significance, and the models developed give a poor prediction.

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Ethical Concerns

It is a letter to the Editor and hence it is exempted from the ethical approval.

Disclosure

All authors declare no conflicts of interests in this communication.

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