Diabetes, Metabolic Syndrome and Obesity

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LETTER

Establishment of a Risk Prediction Model for Metabolic Syndrome in High Altitude Areas in Qinghai Province, China: A Cross-Sectional Study [Letter]

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Dear editor

Metabolic syndrome (MS) is a group of complex metabolic disorders, whose prevalence is increasing year by year, which seriously endangers the physical and mental health of residents in high altitude areas. We recently read an article entitled "Establishment of a Risk Prediction Model for Metabolic Syndrome in High Altitude Areas in Qinghai Province, China: A Cross-Sectional Study", which was published in the journal of Diabetes, Metabolic Syndrome and Obesity.[1]

We are interested in the study by Yanting Ma et al team. Their study aimed to develop and validate a nomogram to predict MS risk in Qinghai Province, China, and it provides a methodological reference for MS prevention and control in Qinghai Province, China. The study selected total of 3061 participants living between 1900 and 3710 meters above sea level in Qinghai Province between March 2014 and March 2016. The least absolute shrinkage and selection operator (LASSO) regression analysis method was used for variable selection via running cyclic coordinate descent with 10-fold cross-validation. The receiver operating characteristic (ROC) curves was used for model evaluation, calibration plot and decision curve analysis (DCA) were used for model validation. They found that Of 24 variables studied,6 risk predictors were identified by LASSO regression analysis:hyperlipidaemia, hyperglycemia, abdominal obesity, systolic blood pressure(SBP), diastolic blood pressure (DBP), body mass index (BMI). A prediction model including these 6 risk factors was constructed and displayed good predictability.

However, some aspects deserve consideration.

First, it is recommended that altitude and the patient's underlying pulmonary disease, such as chronic obstructive pulmonary disease(COPD), obstructive sleep apnea-hypopnea syndrome(OSAHS), and basal oxygen partial pressure, be included in the independent variable analysis. It has been reported that altitude is a risk factor for the high incidence of metabolic syndrome in high altitude areas, and altitude is positively correlated with the prevalence of metabolic syndrome.[2] With the increase of altitude, the levels of blood pressure, blood lipids and blood viscosity increased significantly, which exceeded the reference range of normal values. Therefore, the incidence of cardiovascular diseases caused by high altitude is significantly increased.

Wang Z W et al found that residents living above 3500m were prone to dyslipidemia, and the altitude was positively correlated with the risk of dyslipidemia.[3] Other studies have shown that blood pressure levels and the prevalence of hypertension are also positively correlated with altitude.[4]

Secondly, studies have shown that family genetic factors have a significant impact on MS. Metabolic disorders can recur in families, and the possibility of inheritance is about 13% to 27%.[5] Therefore, it is suggested that family history should also be analyzed as a variable, the influence of genetic genes of different races in high altitude areas on MS needs further study and exploration.

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Due to the paucity of epidemiological data on metabolic syndrome at high altitude, long-term, large-sample cohort studies on MS at high altitude should be conducted.

To sum up, solving these problems will improve the reliability of research results and their clinical application prospects in routine clinical practice.

Abbreviations

MS, metabolic syndrome; LASSO, least absolute shrinkage and selection operator; ROC, receiver operating characteristic; DCA, decision curve analysis; SBP, systolic blood pressure; DBP, diastolic blood pressure; BMI, body mass index; COPD, chronic obstructive pulmonary disease; OSAHS, obstructive sleep apnea-hypopnea syndrome.

Disclosure

The author reports no conflicts of interest in this communication.

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