Combined serum levels of multiple proteins in tPA-BDNF pathway may aid the diagnosis of five mental disorders

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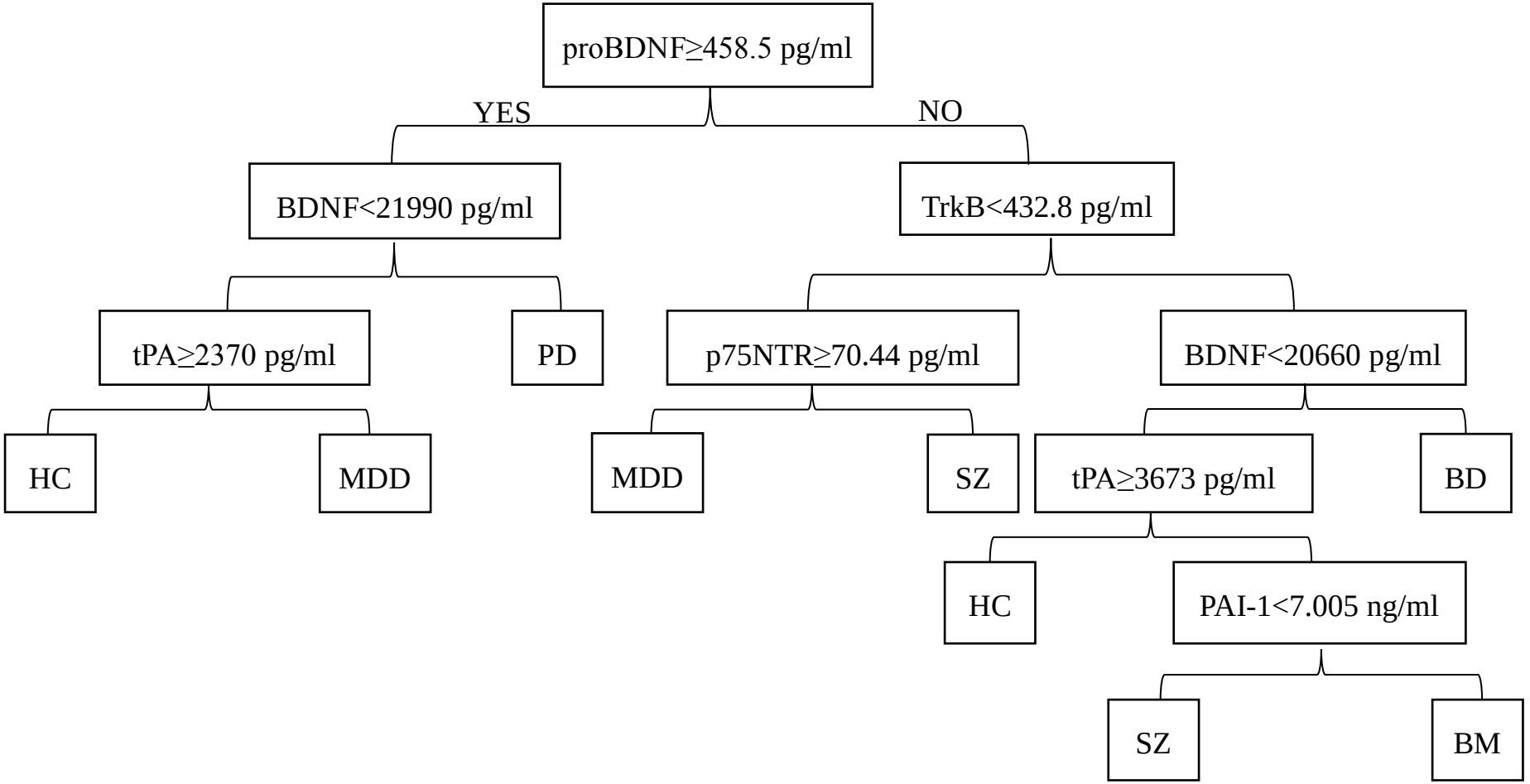
proBDNF≥458.5 pg/ml
YES
NO
BDNF<21990 pg/ml
TrkB<432.8 pg/ml
tPA≥2370 pg/ml
PD
p75NTR≥70.44 pg/ml
BDNF<20660 pg/ml
HC
MDD
MDD
SZ
tPA≥3673 pg/ml
BD
HC
PAI-1<7.005 ng/ml
SZ
BM

Supplementary Figure: The tree model for the diagnosis of various mental disorders.

Note: YES indicates the condition is satisfied; NO indicates the condition is not met.

Abbreviations: SZ, schizophrenia; MDD, major depressive disorder; BM, bipolar mania; BD, bipolar depression; PD, panic disorder; HCs, healthy controls; tPA, tissue plasminogen activator; PAI-1, plasminogen activator inhibitor-1; BDNF, brain-derived neurotrophic factor; proBDNF, precursor brain-derived neurotrophic factor; TrkB, tropomyosin-related kinase B; p75NTR, neurotrophin receptor p75.

The decision tree method is a powerful alternative to traditional linear models and has documented advantages for criteria generation. The decision tree model reveals the interactions between the variables and the outcomes, and the graphical outputs of the decision tree analyses could quantify and summarize the interactions visually. Thus, we used the rpart package in R to construct a tree model for the different diseases.

This model shows the decision tree with 7 internal nodes and 9 leaves. The divide criterion is indicated in each internal node. The proBDNF is the first factor to be observed, the index of proBNDF was defined as a cut-off value 458.5pg/ml. And then, the BNDF and TrkB assessment was placed at the second level, the tPA, p75NTR and BDNF at the third level, the tPA at the fourth level and the PAI-1 at the fifth level. Thus, the type of disease of the patients was assessed within 5 steps.