有代謝症候群危險因子者之動態血壓、主動脈硬化與自主神經功能

The Relationship Among Ambulatory Blood Pressure, Aortic Stiffness, and Autonomic Nervous System Function in Patients With Components of the Metabolic Syndrome.

中文摘要

本研究旨在探討有代謝症候群危險因子者之動態血壓、主動脈硬化及自主神經功能之關係，並以心率變異性作為自主神經功能之評估。

方法：本研究為橫斷性研究，採立意取樣，共收案 96 位具有代謝症候群危險因子之受試者。代謝症候群之界定係採用 NCEP ATPⅢ之診斷標準，而代謝症候群分數之計算採 Macchia 等學者提出之標準。本研究採用 SpaceLabs 血壓測量儀測量四十八小時之動態血壓，SphygmoCor pulse wave analysis system 測量主動脈波行傳導速率及 Augmentation index（AI），心率頻譜訊號擷取及分析儀測量心率變異性變項。

結果：1.代謝症候群得分與脈波傳導速率呈顯著正相關（r= .225, p= .048）；2.夜間血壓降幅正常、夜間血壓降幅減少與夜間血壓降幅過多三組間之代謝症候群得分無統計上之顯著差異（F=1.430, p= .249）；3.夜間血壓降幅正常、夜間血壓降幅減少與夜間血壓降幅過多三組間之脈波傳導速率及 AI 無統計上之顯著差異（F=1.469, p= .238; F=0.461, p= .633），而夜間血壓降幅減少者其動態動脈硬化指數（AASI）顯著高於夜間血壓降幅正常者及夜間血壓降幅過多者（p= .018; p< .001），夜間血壓降幅正常者之 AASI 顯著高於夜間血壓降幅過多者（p= .011）；4.標準化單位高頻功率對代謝症候群得分與晝夜血壓降幅之關係無調節效應；5. AI 不會因晝夜血壓降幅型態及低頻功率不同而有所差異。

結論：雖然本研究未證實自主神經功能對代謝症候群、晝夜血壓降幅與主動脈硬化三者間具有調節效應，但代謝症候群得分能反映整體代謝情形對動脈硬化程度的影響，且具有代謝症候群危險因子越多項者其副交感神經活性越低，交感神經與副交感神經活性也越不平衡。另外，AASI 會隨著晝夜血壓降幅減少而增加，表示夜間血壓降幅減少者其動脈硬化較嚴重，因此可證實夜間血壓降幅減少確實是種不好的現象，但對於夜間血壓降幅過多其 AASI 反而較小等現象仍需日後進一步研究。

英文摘要

Title of Thesis: The Relationship Among Ambulatory Blood Pressure, Aortic Stiffness, and Autonomic Nervous System Function in Patients With Components of the Metabolic Syndrome

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Aim: This study examined the relationship among ambulatory blood pressure, aortic stiffness, and autonomic nervous system (ANS) function in individuals with components of the metabolic syndrome (MS).
Method: This study used a cross-sectional and correlational design. MS was defined according to the criteria of the National Cholesterol Education Program's Adult Treatment Panel III. The MS score was also calculated. The SpaceLabs ambulatory blood pressure (ABP) monitor, SphygmoCor pulse wave analysis system, and power spectral analysis were used to measure 48-hour ABP, aortic pulse wave velocity (PWV) and augmentation index (AI), and heart rate variability (HRV), respectively in ninety-eight participants with components of the MS.
Results: The major findings of this study were as followed: 1) The MS score and PWV were significantly and positively correlated ($r= .225$, $p= .048$), 2) The average MS Score were not significantly different among nondippers, dippers, and extreme dippers ($F=1.430$, $p= .249$), 3) Neither PWV nor AI was significantly different among nondippers, dippers, and extreme dippers ($F=1.469$, $p= .238$; $F=0.461$, $p= .633$). However, the AASI was significantly higher in nondippers than in dippers and extreme dippers ($p= .018$; $p< .001$); AASI was significantly higher in dippers than in extreme dippers ($p= . 011$), 4) The high-frequency HRV in normalized units (n.u.) did not play a role in moderating the relationship between the MS Score and nocturnal blood pressure dipping, and 5) AI did not influence the relationship between nocturnal blood pressure dipping and low-frequency HRV.
Conclusion: Caculating the MS Score may be more useful than determining the numbers of the MS components judging from their impact on aortic stiffness. The more the components of the MS one has, not only the less active the parasympathetic nervous system is, but also the more unbalanced between the sympathetic and parasympathetic nervous system are. This study did not support the notion that the ANS affects the relationship between MS and nocturnal blood pressure dipping. The study showed that AASI increased with the decrease in the nocturnal blood pressure dipping, suggestively that nocturnal blood pressure dipping was related to the degree of aortic stiffness. It also supported the notion that blunted nocturnal blood pressure dipping is not a benign phenomenon.