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• 中文摘要

本研究爲個案控制研究(case-control study)，探討不同種類失智症維生素 B12 的營養狀況。本來將受試者分爲四組：1.健康老人控制組; 2, 輕度智能受損組(mild cognitive impairment, MCI 組)；3. 阿茲海默(退化型)失智症組；4. 血管性失智症。利用迷你心智狀態量表(Mini Mental Status Examination, MMSE)評估智能狀況。經醫師診斷以及 MMSE 的結果，MMSE 得分介於 2-30。30 分者屬於智能正常；26 至 29 分屬於智能輕微受損；26 分以下爲失智症。共有 47 位有效受試者參與。47 位當中，健康老人控制組 17 位；輕度智能受損組 13 位；阿茲海默(退化型)失智症 9 位以及血管性失智症 8 位。之後，兩類型的失智症合併爲一組，以下會說明原因。47 位受試者中，不吃肉的有 5 位、不吃蛋或不喝牛奶的各有 2 位。不吃魚類或海鮮的有 6 位，不吃動物內臟的有 12 位；共有 45 位爲葷食者及 2 位素食者：一位爲奶素，另一位爲蛋奶素。教育程度方面：大都爲高中或以下，共 41 位。大學或專科程度者各有 3 位。共 44 位與家人同住，2 位獨居。受試者被醫生診斷疾病的情況：無疾病者 13 位、患有心血管疾病者 6 位、患有胃部疾病者有 8 位，胃切除者有 2 位，中風者有 8 位，癌症、肝病、腎臟病、骨質疏鬆症各 1 人。經抽血檢驗，利用放射線免疫法分析血清維生素 B12，經由 Abbot IMXassay 分析血漿 tHcy。初步分析血清維生素 B12、同半胱胺酸時，因爲阿茲海默(退化型)失智症與血管性失智症兩組沒有差異，因此將之合併爲失智症組。因此原先的四組[1.健康老人控制組; 2, MCI 組；3. 阿茲海默(退化型)失智症組；4. 血管性失智症] 變爲三組[1.健康老人控制組; 2, MCI 組;3.失智症組]。經統計分析，控制組、MCI 組與失智症組的 MMSE 平均分數分別爲 30.0±0、27.2±1.5(範圍爲 26-29)與 17.6±7.5 (範圍 2-25)。這三組的血清維生素 B12 濃度分別爲 586 ± 393 pg/ml (範圍 129-1467 pg/ml)、549±317 (範圍 286-1183 pg/ml)與 1745±3741 pg/ml (299-14348 pg/ml)。失智症組的血清維生素 B12 濃度顯著高於輕度智能受損組與健康組老人。健康老人組當

中，有 2 位血清維生素 B12 濃度低於參考值，且有高同半胱胺酸血症，因此推論這兩位有維生素 B12 缺乏症。輕度智能受損組或失智症組至少有 10%有維生素 B12 過高血症 (hypercobalaminemia)的問題。控制組、MCI 組與失智症組的血漿 tHcy 分別爲 9.81±5.52μmol/L(範圍 5.0-27.0μmol/L)、14.11 ± 6.42μmol/L (範圍 6.0-26.0μmol/L)與 11.15 ±4.37μmol/L(範圍 5.0-19.0μmol/L)。輕度智能受損組的血漿 tHcy 高於健康組與失智症組。本研究的結論：就健康、輕度智能受損組、退化型失智症組或血管性失智症的老人來比較，健康組中反而有部分受試者有缺乏維生素 B12 的問題，而輕度智能受損組或失智症組至少有 10%有維生素 B12 過高血症 (hypervitaminemia B12)的問題。而輕度智能受損組的平均血漿 tHcy 濃度甚至高於參考值(reference value)的上限(血漿 tHcy 參考值：4.45~12.42μmol/L)。在健康組、輕度智能受損組、失智症組(退化型或血管性)的老人當中，高同半胱胺酸血症者分別佔了 29%, 35%與 24%。其原因除了健康組的 4.25%的高同半胱胺酸血症是因爲缺乏維生素 B12 以外， 因爲本研究爲台灣失智症的維生素 B12 營養相關研究的第一個，本研究的結論需要更多的樣本數重複相同的研究方法而得到的結果來確定。 中文關鍵詞：失智症、老人、維生素 B12、同半胱胺酸

- 英文摘要

This case control study was to compare the vitamin B12 nutritional status in groups of healthy elderly (HE), patients with mild cognitive impairment (MCI), Alzheimer？？s dementia (AD) and vascular dementia (VD). Fifty-one subjects were recruited but 4 did not complete in the study. Mini Mental Status Examination (MMSE) was used to evaluate cognitive function. Diagnosis of dementia was done by doctors. MMSE scores of 30 are classified as normal; 26~29 as mild cognitive impairment and 25 or lower as dementia. Of 47 subjects, 17 HE served as control, 13 were MCI, 9 had AD and 8 had VD. After fast blood withdrawal, serum vitamin B12 was determined by radioisotope assay, and total homocysteine concentration (tHcy) were analyzed by Abbot IMXassay. Due to no differences of serum vitamin B12 and total homocysteine concentration (tHcy) between AD and VD, the subjects in these two groups were combined for further analyses. Among 47 subjects, 45 were nonvegetarians and 2 were vegetarians: one was lactovegetarian and the other was ovalactogetatarian; 6 were college or university graduates while others were senior, junior high or elementary school graduates. Forty-four subjects lived with family members and 2 lived alone. When MMSE, serum vitamin B12 and tHcy were compared among 3 groups of subjects, HE (n=17), MCI (n=13) and D (n=17), the means with standard deviations (SD) of each were 30.0？？0？B27.2？？1.5 (range:26-29) and 17.6？？7.5 (range: 2-25); 586 ？？ 393 pg/mL (range 129-1467 pg/mL)？B549？？317 pg/mL (range: 286-1183 pg/mL) and 1745？？3741 pg/mL (299-14348 pg/mL)？F9.81？？5.52？gmol/L(range:.0-27.0？gmol/L)？B14.11 ？？ 6.42？gmol/L (range 6.0-26.0？gmol/L) and 11.15 ？？4.37？gmol/L(range 5.0-19.0？gmol/L)？CD had higher serum than HD or MCI. Four out of 17 in HE had serum vitamin B12 out of the reference values including 2 were too high (1065 and 1467 pg/mL) and 2 were low (129 and 148 pg/m) while 10% at least were hypervitaminemia of B12 in MCI or D (The reference values of vitamin B12: 200~950 pg/mL). The serum vitamin B12 in D tended to be higher than that in HE or MIC. MCI had higher tHcy than HE or D. The percentage of hyperhomocyteinemia in HE, MCI and D were 29%, 35% and 24%, respectively. In conclusion, 1. There was no vitamin B12 deficiency in patients with MCI or dementia. Patients with dementia had higher serum vitamin B12 than healthy elderly or patients with MCI. Those had hypervitaminemia B12 need to identify further for the reason 2. A

small portion of healthy elderly had low or too high serum vitamin B 12 . 3. Hyperhomocysteinemia was common than expected. The overall percentage of total subjects who were hyperhomocysteinemia in the study was 32%, and only . Since this is the first study on vitamin B12 nutritional status of the elderly with dementia in Taiwan, the results of the study need to confirm based on larger sample size in the future. Keywords: dementia, mild cognitive impairment, elderly, vitamin B12 ? Bhomocysteine