

MAGNESIUM IN PLASMA AND ERYTHROCYTES OF ELDERLY PATIENTS WITH DEPRESSIVE EPISODES

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The present study covers a total of 13 elderly patients suffering from depressive episodes. They were treated in the Gerontopsychiatric Clinic of the Department of Psychiatry and Medical Psychology, Medical University of Varna. Magnesium levels in plasma and erythrocytes were estimated. In both compartments Magnesium was measured with atomic absorption "Perkin Elmer" spectrophotometer AAS-3030B. The results were compared with magnesium in age-matched healthy subjects. No significant changes of magnesium in plasma and erythrocytes of control persons and depressive elderly patients were found out.

Key-words: Magnesium, plasma, erythrocytes, atomic absorption spectrophotometry, depression, elderly

Magnesium (mg) is an intracellular ion with a great importance for the metabolism of carbohydrates, proteins, and lipids. Hypertension, atherosclerosis, osteoporosis and mental disorders progress under Mg deficiency. A possible participation of the Mg ion in the process of ageing is discussed (4,7). Elderly people are a risky group for a Mg deficiency determined by food insufficiency, lowered gastrointestinal absorption and the use of drugs as diuretics, laxatives, digitalis, and antibiotics. The low plasma Mg level leads to Mg extraction from bones and muscles.

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Brain, heart, and kidneys are affected under a severe hypomagnesiemia. The brain damages under Mg deficit cause weakening of memory, disturbances in concentration abilities, etc. (2,3,6,9). Mg balance and Mg needs of the elderly people are not systemically examined yet. Determination of Mg in the plasma is not an adequate criterion for Mg deficiency. Examination of Mg in bones, muscles, erythrocytes, lymphocytes, and leukocytes reflects more sufficiently Mg balance. Methodical difficulties restrict, however, the research in this field (7).

The aim of our study was to investigate Mg levels in the plasma and erythrocytes of elderly patients (> 65 years of age) with depressive episodes.

MATERIAL AND METHODS

The study covered 13 elderly patients with depressive episodes in the Gerontopsychiatric Clinic, Medical University of Varna. The patients had not taken any drugs, influencing the Mg metabolism and had not any clinical and paraclinical data of accompanying diseases leading to Mg deficiency. The results were compared to a group of clinically healthy and age-matched subjects. The blood for examination was taken before a treatment with antidepressive drugs in "Sarstedt" tubes. Mg levels in the plasma and erythrocytes were determined with a "Perkin Elmer" AAS-3030B spectrophotometer, by a flame method. The haemolysate for the examination of Mg in erythrocytes was prepared from erythrocytes trice washed with isotonic solution of NaCl, lysated with bidistilled water (1), and trice frozen at (-20°C).

RESULTS AND DISCUSSION

The results from our investigation show that Mg levels in the plasma and erythrocytes of the elderly patients with depressive episodes remain in reference limits without any significant difference compared to those in clinically healthy people (Fig. 1). Magnesium deficiency in elderly people usually occurs independently. That is why its symptoms are non-specific. The age with its polypathology predisposes to conditions accompanied by Mg deficiency such as hypertension, heart rhythm disturbances, psychic diseases, diabetes, hyperlipidemia, and insulin resistance (4,6,7). In many cases there is a subclinical Mg deficiency in clinically healthy people (5). It is known that a normal or even increased Mg level in the serum can be found with a total Mg deficiency. The examination of Mg at cellular and tissue level is not routine practice yet

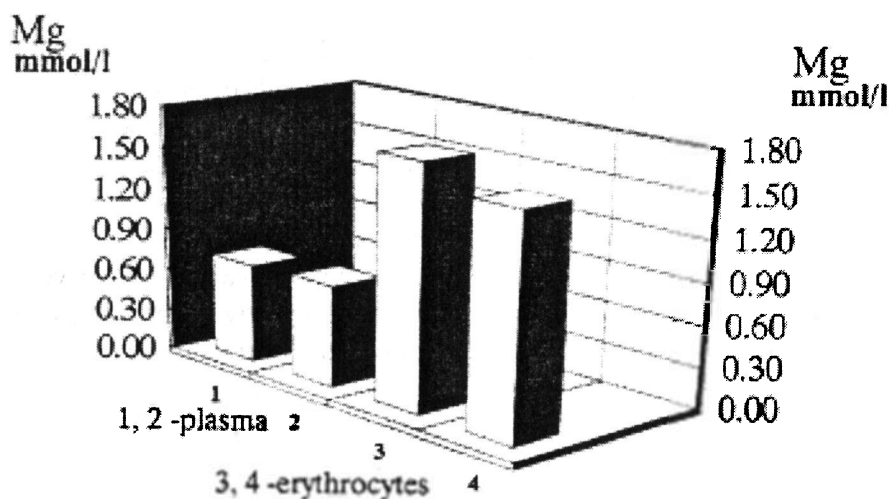


Fig. 1. Magnesium levels in plasma and erythrocytes

(6). There are no reports about examination of erythrocytic Mg levels in elderly as well as in elderly people with depressive episodes. In an experimental model with animals and with diabetics some authors (8) find normal erythrocytic and leukocytic Mg levels accompanied by hypomagnesiemia.

It is possible that Mg deficiency in patients with depressive episodes (6,7) can either be induced by drugs, or provoked by and expressed with accompanying diseases already excluded from our contingent of elderly patients. The physiologically lowered age-related renal clearance (6) as a cause for normal MG con-

centrations in the plasma and erythrocytes in depressive elderly patients prior to the intervention of provoking factors could be discussed, too.

CONCLUSION

The results obtained do not prove any significant differences of Mg levels in plasma and erythrocytes with the elderly patients suffering from depressive episodes as compared to healthy controls. It could be due to the physiological alterations in the renal function during ageing as well as to the absent diseases to unlock hypomagnesiemia.

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Магнезий в плазма и еритроцити при депресивно болни в напреднала и старческа възраст

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Резюме: В настоящото проучване са включени 13 депресивно болни в напреднала и старческа възраст, лекувани в клиниката по Геронтопсихиатрия на Катедрата по Психиатрия и медицинска психология при МУ-Варна. Определено е нивото на магнезия в плазмата и хемолизат от еритроцити на атомно-абсорбционен спектрофотометър ААС-3030-В "Perkin Elmer". Резултатите са сравнени с тези на клинично здрави лица. Нашите проучвания не доказват промени в нивото на магнезия в плазмата и еритроцитите на депресивно болни в напреднала и старческа възраст.