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Parameters of Calcium Metabolism Fluctuated during Initiation or Changing of Antipsychotic Drugs

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Objective Serum parameters of calcium homeostasis were measured based on previously published evidence linking osteoporotic fractures and/or bone/mineral loss with antipsychotics.

Methods Prospective, four-week, time-series trial was conducted and study population consisted of patients of both genders, aged 35-85 years, admitted within the routine practice, with acute psychotic symptoms, to whom an antipsychotic drug was either introduced or substituted. Serial measurements of serum calcium, phosphorous, magnesium, 25(OH)D, parathyroid hormone, calcitonin, osteocalcin and C-telopeptide were made from patient venous blood samples.

Results Calcium serum concentrations significantly decreased from baseline to the fourth week (2.42±0.12 vs. 2.33±0.16 mmol/L, p=0.022, n=25). The mean of all calcemia changes from the baseline was -2.6±5.7% (-24.1 to 7.7) with more decreases than increases (78 vs. 49, p=0.010) and more patents having negative sum of calcemia changes from baseline (n=28) than positive ones (n=10) (p=0.004). There were simultaneous falls of calcium and magnesium from baseline (63/15 vs. 23/26, p<0.001; OR=4.75, 95% CI 2.14−10.51), phosphorous (45/33 vs. 9/40, p<0.001; 6.06, 2.59−14.20) and 25(OH)D concentrations (57/21 vs. 13/35, p<0.001; 7.31, 3.25−16.42), respectively. Calcemia positively correlated with magnesemia, phosphatemia and 25(OH)D values. Parathyroid hormone and C-telopeptide showed only subtle oscillations of their absolute concentrations or changes from baseline; calcitonin and osteocalcin did not change. Adjustment of final calcemia trend (depletion/accumulation) for relevant risk factors, generally, did not change the results.

Conclusion In patients with psychotic disorders and several risks for bone metabolism disturbances antipsychotic treatment was associated with the decrease of calcemia and changes in levels of the associated ions. **Psychiatry Investig 2016;13(1):89-101**

Key Words Antipsychotic agents, Bone and bones, Calcium, Minerals, Blood chemical analysis.

INTRODUCTION

Two disorders which increase fracture risk, osteoporosis, a state of impaired bone quality and quantity, and osteomalacia, a syndrome of bone mineral depletions, surely represent important medical problems all over the world today.[1,2] This constitutes one of the reasons why there is growing interest in the medical community for various aspects of long-lasting and insidious bone mineral disturbances, including chronic hypocalcemia.[3] Several previous studies have described the epidemiological evidence connected osteoporotic fractures, low bone mineral density and antipsychotic medications, from adolescent to elderly populations, usually, but not obligatory, with multiple predisposing risks.[4-8] Hyperprolactinemia, well-known adverse effect of some neuroleptic agents, was has been blamed to be the main affecter of bone homeostasis,

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