ASSOCIATION BETWEEN ATORVASTATIN TREATMENT AND ELEVATED PLASMA LACTATE LEVELS

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Background and importance

Elevated plasma lactate (LA) levels occur without apparent cause in a subgroup of patients, and in these cases, pharmacological induction should be considered.

Objectives and purpose

The objective was to evaluate the risk of such an increase in patients treated with atorvastatin (ATV).

Material and methods

A one-year retrospective observational study was conducted in patients admitted to the internal medicine service of a general hospital and treated with ATV 10-80 mg. Patients with prior or current pharmacological treatment and/or diseases altering plasma lactate levels were excluded.
The main variable was the number of treatment days for all the drugs included in each patient's therapy sample (day of treatment exposure (DTE)). Group I consisted of DTE with lactate >4 mmol/L, and Group II consisted of DTE with lactate <4 mmol/L. Finally, to measure the strength of the association, the odds ratio (OR) (ATV-exposed vs. non-exposed) was calculated for each group, and then the OR between both groups was computed.
Data were obtained from the hospital laboratory and electronic prescription record systems. To calculate the statistical significance of differences, the Chi-square test with Bonferroni correction was used, considering that the number of medications analyzed was 28 (n=28; $P<0.05/28=0.0017$).

Results

The number of patients in the sample was 640: age=87±6 years; body mass index=31.3±2.9kg/m²; women=47%.
Number of drugs=28; total number of DTE=5220; total number of DTE with lactate ≥4mmol/L=319; total number of DTE with lactate <4mmol/L=4901. OR=2.0 (95% CI: 1.52-2.63; Z=4.97; P<0.0001): Group I (ATV exposed/non-exposed): 73/632 vs. Group II (ATV exposed/non-exposed): 246/4269.
Based on the obtained ORs, the risk of LA appears to be moderate (2≤OR<3, according to Cohen's criteria). However, given that ATV is used in the pharmacological prophylaxis of various pathologies, where it is used in combination with other drugs that may also increase the risk of LA, the risk could be high and, in certain cases, even lead to lactic acidosis.

Conclusion and relevance

The risk of plasma lactate concentrations exceeding 4 mmol/L with the use of atorvastatin (10-80 mg) in its various indications appears to be moderate (OR=2). However, monitoring is recommended when it is used in combination with other drugs that share the same toxicity profile.