

COMPARATIVE PHARMACOKINETICS OF PROPRANOLOL AND ATENOLOL IN PRIMARY HYPERLIPIDEMIA

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The study was aimed to examine the effects of different types of hyperlipidemia on the pharmacokinetics of lipophilic propranolol and hydrophilic atenolol. Thirty subjects were divided into four study groups: normolipemics, hypercholesterolemics, hypertriglyceridemics, and patients with mixed form of hyperlipidemia. The drugs were administered orally at a single dose of 80 mg for propranolol and 100 mg for atenolol, using a cross-over study design. Pharmacokinetic parameters of the drugs were calculated using a noncompartmental open model. The results of the present study demonstrated a possible influence of dyslipidemia on pharmacokinetics of both the lipophilic and hydrophilic drugs. As for the lipophilic drug propranolol, a significant decrease in elimination rate constant was found (from $0.24 \pm 0.08 \text{ h}^{-1}$ to $0.16 \pm 0.04 \text{ h}^{-1}$, $p < 0.03$) in comparison to normolipemic subjects. In the case of the hydrophilic atenolol, the most marked alterations were also seen in subjects with mixed form of hyperlipidemia, especially significantly lower values of area under the concentration-time curve ($8950.8 \pm 2060.5 \text{ ng/ml}\cdot\text{h}$ and $6715.4 \pm 1813.8 \text{ ng/ml}\cdot\text{h}$, $p < 0.05$) as well as higher elimination rate constant ($0.08 \pm 0.03 \text{ h}^{-1}$ and $0.13 \pm 0.05 \text{ h}^{-1}$, $p < 0.05$) in comparison with the controls, respectively. Total body clearance per kg of body weight of propranolol as well as atenolol was not influenced by dyslipidemias. The results of the study indicate that lipid metabolism disturbances might to some extent influence the pharmacokinetics of propranolol and atenolol, with the most significant alterations seen in the patients with mixed form of hyperlipidemia.

Key words: *propranolol, atenolol, pharmacokinetics, hyperlipidemia*

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