

ABSTRACT

Candidate: Nikola Juríková¹

Supervisor: prof. RNDr. Jiří Vlček, CSc.¹

Consultant: doc. MUDr. Tomáš Soukup, PhD.²

¹ Department of Social and Clinical Pharmacy, Faculty of Pharmacy in Hradec Králové, Charles University

² 2nd Department of Internal Medicine – Gastroenterology, University Hospital in Hradec Králové

Title of the master thesis: Effect of pulse glucocorticoid therapy on ECG

Glucocorticoid pulse therapy (PT) is used to terminate acute exacerbations of immunologically mediated diseases. The aim of this thesis was to analyze the influence of methylprednisolone (MP) PT on ECG changes, mainly on QT interval, as prolonged QT interval may induce ventricular arrhythmias and to identify other risk factors (RF) for QT prolongation.

Data were gained retrospectively from medical records of patients hospitalized at II. Internal Gastroenterology Clinic of University Hospital Hradec Králové. QT was corrected to QTc using Bazget (QTcB) and Fridericia (QTcF) formula, QTc >450 ms (men) and QTc >460 ms (women) was considered prolonged. QTc changes before and after pulse therapy were determined as Δ QTc.

325 pulses of MP were administered to 277 patients (66,0 % women), ECG was available in 94,2 % (n=306 from 325). After PT there was significant Δ QTcF 14,6 ms ($p < 0,001$) and Δ QTcB 5,6 ms ($p < 0,001$). Prolongation of QTcF was observed in 75,2 % (n=230 from 306) and QTcB in 57,5 % (n=176 from 306) courses of PT. QTcF above borderlines was found in 7,7 % (n=8 from 104) men and 4,5 % (n=9 from 202) women. QTcB above borderline was found in 16,3 % (n=17 from 104) men and 10,4 % (n=21 from 202) women. Significant impact of atrial fibrillation on Δ QTcF (26,0 vs 13,9 ms; $p < 0,05$) and arterial hypertension on Δ QTcB (9,8 vs 2,2 ms; $p < 0,05$) and Δ QTcF (17,6 vs 12,2 ms; $p < 0,05$) was found. Significant differences were found between Δ QTcF in men and women (18,5 ms vs 12,6 ms; $p < 0,05$). The influence of other RF was not significant. QTc above borderline was found also in patients without risk factors. 19 cardiac adverse events occurred in 5,9 % (n= 18 from 306) courses of PT, 2,9 % (n=9 from 306) lead to premature cessation of PT. Ventricular arrhythmias were not observed.

These results show the occurrence of QTc prolongation and cardiac adverse events during MP PT and the need of cardiac risk minimalization in patients receiving pulse therapy by monitoring ECG (corrected QT interval), serum electrolytes, heart and inflammatory disease and by the revision of pharmacotherapy (K^+ substitution).