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Ventricular repolarization disturbances in high dose intravenous methylprednisolone therapy

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Backgrounds: Prolongation of the peak and the end of T wave (Tp-e) has been reported to be associated with ventricular arrhythmias. High dose pulse intravenous steroids (pulse therapy) are an accepted practice to treat severe manifestations of inflammatory, autoimmune and renal diseases. Sudden death, cardiac arrhythmias, circulatory collapse and cardiac arrest have been reported occasionally, usually following rapid administration of large doses of methylprednisolone.

Methods: We enrolled 50 consecutive various inflammatory and autoimmune diseases in patients with acute relapse to perform ECG 4 hours before, and 12 hours after infusion of 1000 mg intravenous (IV) methylprednisolone. Myocardial repolarization can be evaluated with QT interval (QT), corrected QT interval (QTc), QT dispersion, and transmural dispersion of repolarization. (Tp-e), which is the interval between the peak and the end of T wave on electrocardiogram (ECG), is accepted as an index of transmural dispersion of ventricular repolarization. JT dispersion (JTd), corrected JT (JTc), (Tp-e)/QT ratio, (Tp-e)/QTc ratio are also used as an electrocardiographic index of ventricular arrhythmogenesis. Our goal in these patients, we aimed to assess ventricular repolarization in patients with before and after high dose pulse intravenous steroids therapy in patients.

Results: The baseline characteristics of the patients before and after high dose pulse intravenous steroids therapy are presented in the table 1 and 2.

Conclusions: Our results show that after high dose pulse intravenous steroids therapy in patients is associated with prolonged Tp-e interval and increased Tp-e/QT and Tp-e/QTc ratio.

Table 1: Characteristics of the Study Population

	(N=50)
SEX(FEMALE/MALE)	36/14
AGE(YEARS)	36±13
BMI(KG/M2)	25,77±3,57

Table 2: Electrocardiographic Measurements of the Patients

	Before(n=50)	After(-)(n=50)	P(value)
RR(msn)	713,20±159,82	840,60±191,30	0,001
Heart Rate(beat/min)	87,16±17,45	73,86±17,45	0,001
PR(msn)	143,90±21,51	132,90±15,58	0,004
QRS(msn)	88,74±13,61	88,86±12,07	0,963
P wave dispersion (msn)	16,20±6,96	16,60±8,71	0,800
T wave (msn)	170±29,13	181,20±23,26	0,03
(Tp-e) (msn)	74,60±13,12	83,80±13,68	0,001
QT(msn)	361,0±29,91	388,20±42,84	0,001
QTd(msn)	18,80±10,62	17,60±7,70	0,520
QTI(%)	114,59±12,48	108,06±18,84	0,04
QTc(msn)	401,60±19,79	413,72±26,38	0,01
JT(msn)	273,0±28,73	299,60±45,66	0,001
JTd(msn)	20,20±9,36	22,80±9,26	0,166

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JTc(msn)	325,98±27,74	329,38±30,78	0,563
JTI(%)	118,18±17,54	110,56±13,92	0,01
(Tp-e)/QT(msn)	0,20±0,03	0,21±0,03	0,112
(Tp-e)/QTc(msn)	0,18±0,03	0,20±0,03	0,009

QTd: QT interval dispersion, QTI: QT interval index, QTc: Corrected QT interval, JTd: JT interval dispersion, JTc: Corrected JT, Values are presented as mean±SD, p<0.05.

Biography

Orhan Zengin is a fellow in the Rheumatology Fellowship Program at the Gaziantep University, School of Medicine Department of Rheumatology. He was born in Adiyaman, Turkey, in 1983. He completed his internship and graduated from Medical School of Firat University. Then, he worked as a physician and researcher at the Gaziantep University, School of Medicine Department of Internal Medicine.

His research is focused in four main areas:

1. Relationship between periodontal destruction and autoimmune diseases.
2. Systemic sclerosis, clinical features, treatment outcome and mortality factors.
3. Simple inflammatory markers in systemic auto inflammatory diseases.
4. Epidemiology of familial Mediterranean fever in Turkey.

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