

Višestruki uzroci stečene QT prolongacije i torsades de pointes: prikaz slučaja

Concomitant risk factors for acquired QT prolongation and torsades de pointes: a case report

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Uvod: Stečena QT prolongacija može biti prouzročena lijekovima i precipitirana elektrolitskim poremećajem, no pojavljuje se i uz povišeni intrakranijski tlak. QT prolongacija je povezana s *torsades de pointes* (TdP), po život opasnom polimorfnom ventrikulskom tahikardijom.

Prikaz slučaja: 36-godišnji muškarac, ovisnik o opijatu, koji je na zamjenskoj terapiji metadonom (100 mg dnevno), dovezen je u hitnu službu nakon epileptičkog napadaja. Na dan prijema uzeo je i dodatnu nepoznatu dozu metadona. Na CT-u mozga je nađen ekspanzivni intrakranijski proces s vazogenim edemom. Na EKG-u je verificirana sinusna bradikardija i produženi QT interval (**slika 1**). Zabilježene su i ponavljajuće epizode TdP, od čega su neke zahtijevale defibrilaciju (**slika 2**). Odmah je primijenjen intravenozni magnezij, a kako su kalij i kalcij bili blago sniženi, ispravljen je i elektrolitski poremećaj. Također, započeta je antiedematозна terapija glukokortikoidima. Metadon se nije mogao ukinuti zbog opasnosti od apstinencijskog sindroma, no smanjena je njegova doza. Akutni koronarni sindrom i strukturalna bolest srca su isključeni. Unatoč primijenjenoj terapiji, TdP su se i dalje pojavljivale te je implantiran transjugularni privre-

Introduction: Acquired QT prolongation can be caused by drug therapy and electrolyte abnormalities but can also occur as a result of raised intracranial pressure (ICP). QT prolongation is associated with torsades de pointes (TdP), a life-threatening form of polymorphic ventricular tachycardia.

Case report: 36-year-old man with a known opioid addiction and receiving methadone maintenance therapy (100 mg/day), came to emergency room after an epileptic seizure. On the admission day he took additional unknown dose of methadone. An expansive intracranial process with cerebral edema was found on CT scan. The ECG showed sinus bradycardia and prolonged QT interval, he had recurrent episodes of TdP, some requiring defibrillation (**Figure 1** and **Figure 2**). Intravenous magnesium was immediately applied. Serum potassium and calcium were mildly decreased and therefore adequately corrected. Antiedematous therapy with glucocorticoids was also initiated. Methadone could not be discontinued because of abstinence syndrome, but the dose was reduced. Acute coronary syndrome was excluded, and no structural heart disease was found. Despite the medicamentous

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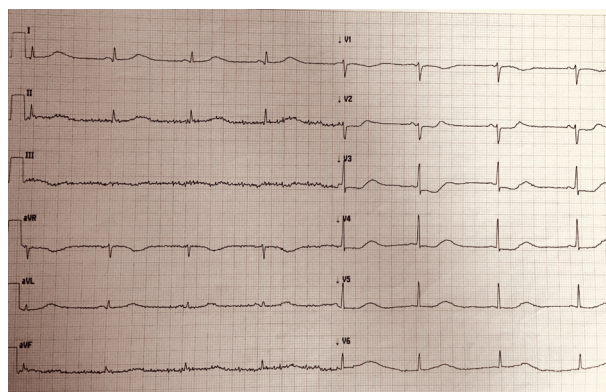


FIGURE 1. ECG on admission showing QT prolongation and sinus bradycardia.

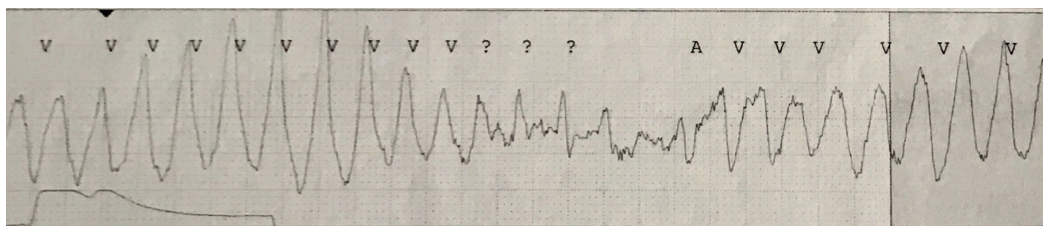


FIGURE 2. Telemetry strip demonstrating polymorphic ventricular tachycardia consistent with torsades de pointes.

meni elektrostimulator, uz frekvenciju stimulacije 90/min, nakon čega je došlo do povlačenja ektopije i TdP te je pacijent transportiran na neurokirurgiju u drugu ustanovu.

Zaključak: Nepravilnosti u EKG-u se mogu pojavljivati uz razne lezije središnjeg živčanog sustava i povezane su s promjenama intrakranijskog tlaka¹. Metadon je sintetski opijat čija je nuspojava QT prolongacija. Veće doze metadona (>100 mg na dan) su snažan rizični čimbenik za induciranje produljenja QT intervala, no najniža doza pri kojoj isti nastaje, nije jasno definirana². Navedeni uzroci, uz elektrolitske nepravilnosti, mogući su čimbenici koji su doprinijeli produljenju QT intervala i TdP u bolesnika. S obzirom da se radilo o ovisniku o opijatima, nismo mogli prekinuti terapiju metadonom, niti odgovarajuće kontrolirati intrakranijski tlak do neurokirurške intervencije. Elektrostimulacija je bila razuman i učinkovit pristup, budući da skraćuje QT interval, sprječava daljnju pojavu TdP i osobito je korisna u slučajevima otpornima na magnezij i kada je TdP precipitirana bradikardijom³.

therapy, he continued to have TdP so a transjugular temporary pacemaker was placed and the patient was paced at a rate of 90 bpm with successful resolution of ectopy and TdP. Subsequently the patient was transferred to neurosurgical clinic.

Conclusion: ECG abnormalities can occur in a variety of central nervous system lesions and are related to ICP fluctuation¹. Methadone is a synthetic opioid and QT prolongation is its side effect. Higher doses of methadone (>100 mg/day) are a strong risk factor of inducing QT prolongation, but the lowest dose at which it occurs, has not been clearly established². The above-mentioned causes combined with electrolyte abnormalities could contribute to QT prolongation and TdP in our patient. Even though we couldn't completely discontinue methadone because the patient was opioid addicted, and we couldn't control ICP until neurosurgical intervention, pacing was a reasonable and effective approach since it shortens QT interval, prevents TdP recurrence and it is especially useful in cases refractory to magnesium or when TdP is precipitated by bradycardia³.

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