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Case Report

Hydrocortisone induce bradyarrhythmias: a case report

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ABSTRACT

Steroids are common drugs used in various disorders and are also known to have adverse effects on all systems. In cardiovascular system, it can cause various conduction abnormalities in the heart. In this report we describe recurrence of bradycardia in a patient of urosepsis after using hydrocortisone.

Keywords: Hydrocortisone, Bradyarrythmias

INTRODUCTION

Steroids are common drugs used in various disorders like immune mediated diseases, severe sepsis, skin related diseases and endocrine disorders. Steroids are known to have adverse effects on all systems. In cardiovascular system steroids can cause hypertension, arrhythmias (tachy or brady-arrhythmias) and even cardiac arrest.[1,2] In arrhythmias, predominantly bradyarrhythmias are reported. Effect is independent of the age and route of administration. However, bradyarrhythmias are found to be more common with intravenous methylprednisolone specifically with the pulse therapy.[3] In this report, we describe recurrence of bradycardia in a patient of urosepsis after adminstration of intravenous hydrocortisone.

CASE REPORT

32 years old paraplegic patient on permanent urinary catheter developed recurrent urinary tract infection. He went into urosepsis with BP of 80/42 mm Hg, Pulse was 104/min, SPO2 was 88% at room air and temperature was 99.6 ^{o}F. He was managed with injectable antibiotics, and I.V. fluids but later on noradrenalin was started to overcome hypotension. Inj Hydrocortisone was given in view of refractory shock. After 12 hours of hydrocortisone administration, he developed bradycardia with heart rate of 36/min (which is less than 50% of basal heart rate of the individual). Blood pressure was 140/70 mm of Hg. ECG showed dynamic inversion of T waves in II, III, aVF, and V1 toV4. CKMB was 16 IU/land Trop T was negative. Echo cardiogram was normal. Serum Na^{+}- 139 mmol/L, K^{+} – 4.5 mmol/L and Ca^{++} – 9.6 meq/L. No complaints of chest pain, dyspnoea or palpitations, presyncope. Hydrocortisone was stopped and he was nebulized with levosalbutamol 6 hourly. Bradycardia resolved within 12 hours of stopping hydrocrtisone administration.

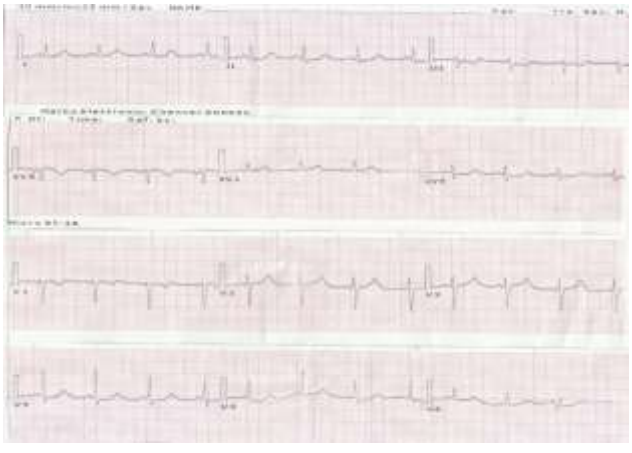

Figure 1: Normal ECG at the time of hospitalization.

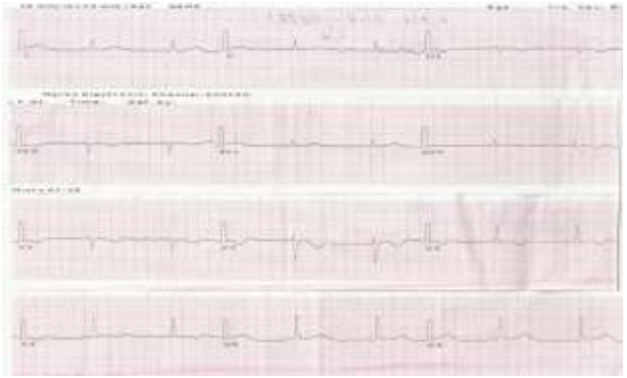

Figure 2: ECG showing bradycardia after hydrocortisone.

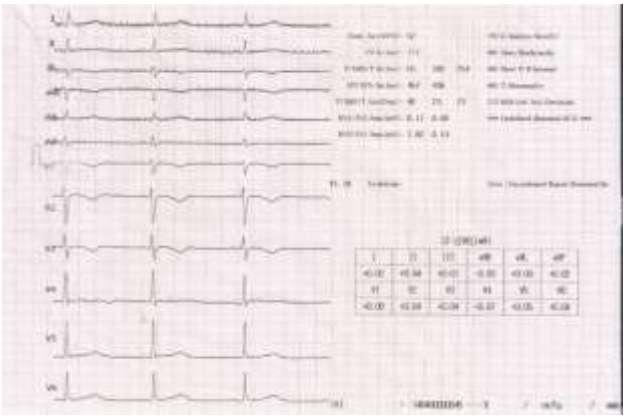

Figure 3: ECG showing bradycardia after reintroduction of hydrocortisone.

Patient recovered from urosepsis after 10 days of injectable antibiotics. Following recovery of the event he again developed an episode of Urinary tract infection, permanent urinary catheter being the risk factor. He was again started on parental antibiotics. However, his condition deteriorated and he devloped septic shock, which required administration of hydrocortisone in addition to noradrenalin and vasopressin. After 1 day of hydrocortisone readministration, he again developed severe bradycardia with inversion of T waves. Hydrocortisone was stopped and heart rate reverted to normal.

DISCUSSION

Injectable steroids are important drugs which are commonly used in the treatment of severe refractory septic shock. All types of arrhythmias are reported in literature as side effects of steroid therapy. Before steroids are attributed as causative agent for bradycardia, a thorough cardiac evaluation is must. Although mechanism of such arrhythmia is unknown but postulated mechanisms are altered sensitivity of SA node to catecholamine or altered threshold of myocytes due to electrolyte shift across cell membrane.[4,5] Reflex bradycardia due to increased blood pressure and plasma volume expansion or any reaction to steroid preparations are some other proposed mechanisms for steroid induced bradycardia.[6] In our patient, complete cardiac evaluation was normal and all the changes were reverted once hydrocortisone was stopped. There were no electrolyte abnormalities. There was recurrence of same clinical, biochemical and ECG changes on reintroduction of hydrocortisone in our patient. Though our patient recovered to sinus rhythm after nebulisation with levosalbutamol, but in severe cases patient might require chronotropic, antiarrhythmic agents or temporary cardiac pacing.[7] Simple use of short acting beta agonist can also improve recovery due to its direct action on SA node.

CONCLUSION

Bradycardia can occur with hydrocortisone. Reintroduction of steroids in patient who had prior episodes of arrthymia with steroids is not advocated and in many cases may be detrimental. Low dose of inhaled beta agonist can help in early recovery form bradycardia.

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