An extremely rare side effect of ranitidine: junctional rhythm

雷尼替丁一個極罕見的副作用：交界性心律

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Ranitidine is a H2 receptor blocker and rarely cause bradycardia. A 28 years old male patient attended the emergency department for urticaria. He was given 45 mg of phenyramine and 50 mg of ranitidine intravenously. He then complained of dizziness and developed bradycardia and hypotension. Electrocardiogram detected junctional bradycardia rhythm. He was given 0.5 mg atropine intravenously and his rhythm then returned to normal. His symptoms subsided and the blood pressure improved. Ranitidine is a frequently used medication and this case illustrated a rare but serious side-effect of the medication. (Hong Kong J Emerg Med. 2011;18:232-234)

Keywords: Bradycardia, histamine, histamine H2 antagonists, ranitidine hydrochloride

關鍵詞：心動過緩、組胺、組胺 H2 受體拮抗藥、鹽酸雷尼替丁

Introduction

H2 receptor blocker are frequently prescribed medications in clinics or emergency departments (EDs). Ranitidine, as one of the H2 receptor blockers, is commonly used for the treatment of gastric and duodenal ulcers and urticaria. We presented this case to emphasize a rare but serious cardiovascular side effect of ranitidine.

Case

A 28-year-old male patient presented to the ED for skin eruptions, pruritis and erythema. There was no suspicious allergic substances that the patient had exposed. His vital findings were blood pressure (BP) 110/70 mmHg, heart rate (HR) 80 beats per minute (bpm), body temperature 36.7°C, breathing count 16/min, saturation of oxygen 98%. On physical examination his general condition was good. He was fully conscious, cooperated and oriented. There were widespread urticarial plaques over his whole body. Physical examination of other systems was unremarkable and there were no features of anaphylaxis. He was given 45 mg of phenyramine and 50 mg of ranitidine in 100 ml isotonic sodium chloride via intravenous route. After 2 minutes of...
infusion with approximately 10 ml of the medication, he complained of dizziness and developed bradycardia and hypotension (BP=70/50 mmHg). The electrocardiogram (ECG) showed junctional rhythm with HR of 38 bpm (Figure 1). He was given 0.5 mg atropine intravenously, intravenous fluid resuscitation and oxygen. One minute after the atropine administration, his rhythm returned to sinus rhythm with HR of 80 bpm and BP increased to 120/80 mmHg, after that his complaints improved and BP was 120/80 mmHg (Figure 2). He had no abnormalities in his biochemical tests and was discharged from the hospital 4 hours later.

**Discussion**

Urticaria is a lesion that affects the upper layer of the dermis and clinically characterised by red, itchy, clear bordered plaques. H1 antihistamine are commonly

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**Figure 1.** The electrocardiogram when the patient had bradycardia (junctional rhythm).

**Figure 2.** Returning ECG from junctional rhythm into sinus rhythm after atropine as shown by arrows.
used in the treatment of urticaria. The side effects of H1 antihistamine include sedation, tachycardia, dry mouth, urinary retention and constipation.\textsuperscript{1} H2 antihistamines which are sometimes used synergistically with H1 antihistamines have commonly reported side effects including headache, diarrhoea, constipation, nausea, vomiting, gynecomastia, and rash.\textsuperscript{1,2} When administered intravenously, ranitidine has been reported to cause severe bradycardia, and atrioventricular block.\textsuperscript{3,6} The underlying mechanism involves the action on the H2 receptors at the sinus node and atrial tissue in the heart.\textsuperscript{7,8} Through these receptors, they exert positive chronotropic and inotropic effects on the heart.

Cases of bradycardia developed after ranitidine administration are rarely reported in literature. In a case reported by Camarri et al, re-challenge with ranitidine was followed by significant drop in HR down to 40 bpm.\textsuperscript{3}

In our case, bradycardia rhythm is evaluated as AV junctional rhythm. Junctional rhythm occurs as a result of the stimulus formed by AV junction when extraction areas in the atriums and especially sinoatrial node is insufficient as dominant pacemaker. Cardiomyopathy, myocarditis, electrolyte imbalance, hypoxia, increased parasympathetic tone, sick sinus syndrome, valve diseases, beta blockers, calcium channel blockers or situations that disrupts the normal sinoatrial node function or stimulus transmission may cause junctional rhythm and should be considered before arriving at any single cause.

**Conclusion**

Ranitidine is often used and prescribed in EDs. Bradyarrhythmia is rarely reported side effect. When ranitidine is used the patient should be taken into the safety circle and this side effect should be projected.

**References**