Letter to the Editor

A rare entity: Recurrent cisplatin-induced bradycardia

Sir,

Cisplatin is commonly used in many chemotherapy protocols. Depending on the use of cisplatin, arrhythmia, myocarditis, pericarditis, diastolic disorders, cardiac ischemia, acute myocardial infarction, thromboembolic events, and chronic heart failure have been reported. Bradycardia is a rare side effect of cisplatin. According to the Food and Drug Administration reports, cisplatin-induced bradycardia accounted for 0.39% of all cisplatin side effects.[1]

A 17-year-old boy was diagnosed with Stage III nasopharyngeal carcinoma. Chemotherapy protocol consisting of intravenous cisplatin (75 mg/m^2) was administered over 6 h on the 1st day of treatment; fluorouracil (1000 mg/m^2) was given for 5-day continuous infusion.

Pre- and postcisplatin hydration contained magnesium sulfate, potassium chloride, and calcium gluconate, and there was also mannitol in the fluid during cisplatin infusion. Urine density was less than 1010 before infusion. As an antiemetic, granisetron was administered daily throughout the treatment. While receiving cisplatin, he was incidentally detected to have a heart rate of 41 bpm during routine vital parameter examination. There were no signs of parasympathetic hyperactivity, and the physical examination including blood pressure (125/80 mmHg) was within normal limits. Serum electrolytes were within normal limits. Electrocardiogram showed sinus bradycardia with heart rate of 34 bpm and QTc was 422 ms (normal value <440 ms) [Figure 1].

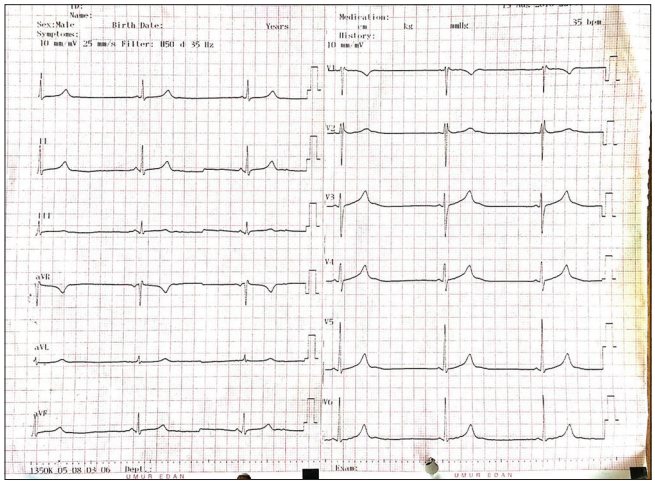

Figure 1: Electrocardiogram with heart rate of 35 bpm during cisplatin infusion

Echocardiography showed only patent foramen ovale. Since the patient was asymptomatic, he was observed with continuous cardiac monitoring. Minimum heart rate recorded was 38 bpm. The bradycardia that was detected in the patient recovered 30 min after the end of the cisplatin infusion without any intervention [Table 1]. In other days of treatment, bradycardia was not seen during fluorouracil and granisetron treatment. Recurrent bradycardia attacks were detected only during cisplatin infusion throughout the subsequent four cycles of chemotherapy.

Cardiac toxicity is a well-known side effect of many antineoplastic drugs and most commonly seen with anthracyclines. Toxic effects ranging from myocardial damage to dysrhythmias in a wide spectrum has been described. Rhythm disorders that caused by antineoplastic drugs may occur during or shortly after administration with possible mechanisms such as direct effects of the drug on the heart, coronary artery spasm, electrolyte imbalance, and autonomic cardioneuropathy.[2] Dysrhythmias including bradycardia have rarely been defined by cisplatin infusion. The mechanism of cisplatin-induced bradycardia is presumed to be that the sinoatrial node effect that causes the disruption of the heart's electrical conduction system.[2-4]

Cisplatin is commonly associated with electrolyte imbalances such as hypokalemia, hypomagnesemia, hypophosphatemia, hypocalcemia, and hyponatremia, which cause dysrhythmias. Bradycardia has been reported to occur during or shortly after cisplatin infusion, without any abnormalities of serum electrolyte concentrations or blood pressure or other physical examination findings.[2-5] In our patient, no electrolyte disturbance was detected during recurrent bradycardia attacks.

In most of the cases, bradycardia improved without any treatment as in our case. Bradycardia has been rarely reported

Table 1: Characteristics of Bradycardia Episodes in Consecutive Chemotherapy Cycles

Cycle	Lowest Heart Rate (beats/min)	Mean Time to Bradycardia After the Start of Cisplatin Infusion (min)	Mean Duration of Bradycardia (min)
1	34	35	355
2	42	40	365
3	32	38	382
4	35	43	377
5	40	51	324
6	38	45	360

to develop during each chemotherapy cycle treated with cisplatin like our case.[2,5] Cisplatin-induced bradycardia is a rare condition and should be taken into account that it may develop during treatment.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initial will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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