Anthracyclines and Bradycardia

Antrasiklinler ve Bradikardi

İrfan YAVAŞOĞLU, MD,[a]
Gürhan KADIKÖYLÜ, MD,[a]
Zahit BOLAMAN, MD[a]

[a]Division of Hematology,
Adnan Menderes University
Medical Faculty, AYDIN

Geliş Tarihi/*Received:* 21.08.2007
Kabul Tarihi/*Accepted:* 07.11.2007

Yazışma Adresi/*Correspondence:*
İrfan YAVAŞOĞLU, MD
Adnan Menderes University
Medical Faculty,
Division of Hematology, AYDIN
dr_yavas@yahoo.com

ABSTRACT The anthracyclines include doxorubicin, daunorubicin, epirubicin, and idarubicin. Mitoxantrone, an anthracenedione, is structurally related to the anthracyclines. Doxorubicin induced cardiotoxicity may occur in the form of acute, subacute, chronic or late onset. Acute and subacute cardiotoxicity may be observed by a single dose or under continuing therapy. Mitoxantrone-induced cardiotoxicity is rare when compared to doxorubicin. Clinically, heart failure may be seen either early or late. Early toxicity which is generally detected in the first month after therapy, mainly associates with arrhythmias, whereas cardiac failure and cardiomyopathy occur in late toxicity. Anthracycline-induced bradycardia is a rare form of acute cardiotoxicity of this drugs and seen within the early phase of the treatment. Although patients are asymptomatic and recover spontaneously, they should be monitored closely.

Key Words: Heart failure, congestive; cardiomegaly

ÖZET Antrasiklinler, doksorubisin, daunorubisin, epirubisin, idarubisinden oluşur. Mitoksantron antrasenediondur. Yapısal olarak antrasiklinlerle ilişkilidir. Doksorubisin ilişkili kardiyotoksisite akut, subakut, kronik ya da geç başlangıçlı olarak meydana gelebilir. Akut, subakut toksisite tek doz ya da tedavi altında oluşabilir. Doksorubisinle karşılaştırıldığında, mitoksantron daha az toksiktir. Klinik olarak kalp yetmezliği erken ya da geç olabilir. Erken toksisite tedaviden sonraki ilk ayda, genellikle aritmiler şeklinde, geç toksisite kalp yetmezliği ve kardiyomiyopati şeklinde görülür. Antrasiklinlerin yaptığı akut kardiyoksisite olarak bradikardi nadirdir. Tedavinin erken döneminde görülür. Semptomatik olmamasına, kendiliğinden düzelmesinde rağmen, monitorizasyon düşünülebilir.

Anahtar Kelimeler: Konjestif kalp yetmezliği; kardiyomegali

Turkiye Klinikleri J Cardiovasc Sci 2008, 20:30-31

The anthracyclines include doxorubicin, daunorubicin, epirubicin, and idarubicin. Mitoxantrone, an anthracenedione, is structurally related to the anthracyclines. Doxorubicin induced cardiotoxicity may occur in the form of acute, subacute, chronic or late onset. Acute and subacute cardiotoxicity may be observed by a single dose or under continuing therapy. Mitoxantrone-induced cardiotoxicity is more rare when compared to doxorubicin. It clinically presents as heart failure and it may be as early or late. Early toxicity which is generally detected in the first month

after therapy, mainly associates with arrhythmias, whereas cardiac failure and cardiomyopathy occur in late toxicity.[1] Anthracycline-induced cardiomyopathy has been reported in up to 85% of treated patients. Known risk factors are younger age, advanced age, female gender, preexisting cardiac illness, cardiac irradiation, and other concomitant cardiotoxic medications.[2] Myocardial adrenergic imbalance, increase in lipid peroxidation, free oxygen radicals, various cytokines and vasoactive amines have been suggested as the main pathogenetic factors in anthracycline-induced cardiotoxicity. Cardiotoxicity related to doxorubicin is more commonly associated with arrhythmias. Sinus tachycardia is the most common arrhythmia while bradycardia is rare.[1,3] Mitoxantrone-induced bradycardia was reported in 9 cases. They were all asymptomatic and bradycardia had occurred in-between day 2 and 5 of therapy.[4] Epirubicin-induced decrease in heart rate was reported.[5] Daunorubicin and idarubicin- induced bradicardia were not reported.

In conclusion, anthracycline-induced bradycardia is a rare form of acute cardiotoxicity of this drugs, seen within the early phase of the treatment. Although patients are asymptomatic and recover spontaneously, they should be monitored closely.

REFERENCES

1. Bethell H, Grace AA, Hall JA, Petch MC, Schofield PM. Bradycardia due to anthracyclines. Lancet 1992; 340: 858.
2. Paulides M, Wojnowski L. Chemotherapeutics-induced heart failure. Med Klin(Munich) 2007; 102:674-8.
3. van Dalen EC, van der Pal HJH, Bakker PJM, Caron HN, Kremer LCM. Cumulative incidence and risk factors of mitoxantrone-induced carditoxicity: a systematic review. Eur J Cancer 2004; 40: 643-652.
4. Yavasoglu I, Kadikoylu G, Bolaman Z. Mitoxantrone-induced bradycardia: Report of two cases. Haema 2005; 8: 698-700.
5. Usnarska-Zubkiewicz L, Sciborski R, Nowosad H, Grzelak H, Kotlarek-Haus S. Effect of epirubicin on the heart conduction system in patients with Hodgkin's disease. Pol Arch Med Wewn 1992;87:173-82.