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A VENTRICULAR TACHYCARDIA AND AV NODAL DOUBLE RESPONSE TACHYCARDIA IN A MODIFIED VAN DER POL EQUATION

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ABSTRACT

A modified van der Pol equation is a mathematical model used to recreate physiological behaviour in the conducting heart's system. The use of certain values for coupled terms allows to simulate circulating re-entry waves, which play an important role in generating a pathological heart rate. If we add to the system proposed by us sum of delays with feedback in order to reproduce the phenomena occurring in a conducting system, this will greatly influence the behaviour of the oscillator. It can lead to the extinction of oscillations, as well as non-periodic behaviour. The existence of re-entry may entail serious disorders, like auricular fibrillation or tachycardia. The second case originates from delays in coupled terms, when additional way appears in the electrical conduction system (e.g. junctional double response tachycardia). The van der Pol's system with feedback was analysed in this paper.

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