

Problem Decision Making in Healthcare: Human Decision or Artificial Intelligence Decision?

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Mini-Review

Artificial intelligence (AI) is almost ready to be used in both the outpatient and emergency settings. Right now the clinical use of AI is not spread out because machine learning is nowadays inaccurate and in debate (supervised versus unsupervised machine learning), based in actual neural networks; thus several pitfalls must be considered [1]. Related to some basic and conventional medical techniques like ECG, machine learning is developing and promising. For example, AI

enabled ECG will be routinely performed when prospective clinical studies (clinical trials) shown a clear beneficial over medical direct decision making in early detection of cardiac diseases [2]. However authors prevent from knowing pitfalls that could guide to unsafety and unethical decisions [3]. As an exemple of the following case we can discuss about the potential beneficial of decisions based on well-known patens in ECG like The Wellnes patern (Figure 1). Figure 2 shows the ECG patern of the patient one year before. The patient gave permission to use the ECGs.



Figure 1: ECG showing Wellnes pattern in an acute non-ST coronary syndrome.

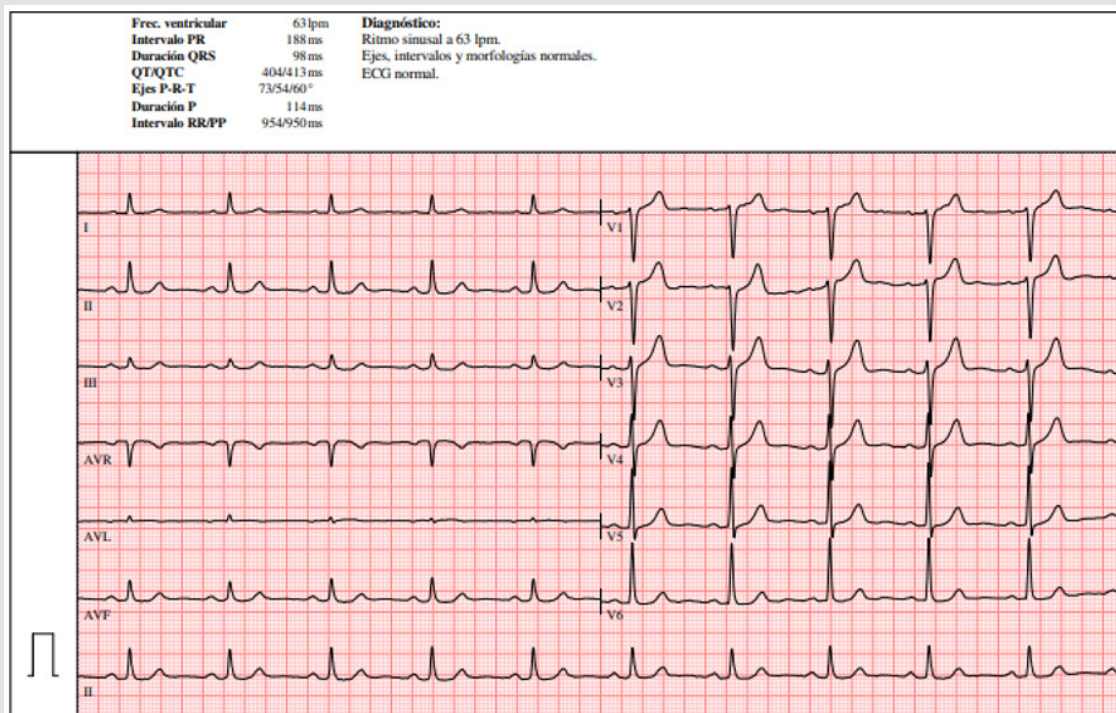


Figure 2: Patient's ECG showing his basal pattern.

78 years old, caucasian, male. He arrived at the emergency room with intermittent chest pain suffering from the last three weeks. The pain began when walking and subsided at rest. The ECGs showed negative T waves from V1 to V4 (Wellens pattern) (Figure 1) with negative troponins. An Acute non-ST coronary syndrome code was activated immediately and a radial coronary angiography was performed. A 3-vessel coronary artery disease, TCd 30-30%, DAp-m 90%, D1 80%, OM1 70%, OM2 90% CDm 70-90% was shown. He went to surgical revascularization and triple coronary bypass with extracorporeal circulation was performed. He recovered completely with a FE 45% and discharged with medical treatment and cardiology control. In this case the Wellnes ECG pattern was immediately recognized by the doctor when it confronted to the normal patient's ECG pattern, so he activated the emergency code to perform a haemodynamic procedure in the cardiologist unit. On the other hand, we think that a deep learning model ECG realised by AI (deep neural networks) performed in the case above mentioned would have made the same clinical decision

without confronting to the previously known pattern of the patient. Although ECG interpretability of the AI decision is the most probably guarantee, the complete explainability to the patient in this case would be a more complex decision if no patient preferences of managing are considered by deep neural networks. Intense debate about human decision making or AI decision making is currently undefined.

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