



## CASE REPORT

### ECG lead misplacement: A brief review of limb lead misplacement



#### *Le mauvais positionnement des électrodes de l'ECG: Un cas inhabituel de mauvais positionnement faussant les 12 dérivations de l'ECG et évaluation de dérivations frontales faussées par un mauvais positionnement*

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**Introduction:** The electrocardiogram (ECG) is essential for the diagnosis of some potentially life-threatening and time sensitive conditions, such as ST-elevation in myocardial infarction (MI). It is therefore imperative that healthcare professionals responsible for performing and interpreting ECGs are alert to the features of lead misplacement, as these can alter the ECG appearance dramatically, resulting in unnecessary investigations, admission to hospital, and treatment. ECG lead misplacement can result in significant harm to the patient if essential treatment is withheld or if the incorrect treatment is delivered solely on the basis of ECG findings.

**Case report:** An unusual and previously unreported case of misplacement of all 12 ECG leads is presented, which would have resulted in significant harm to the patient had it not been identified so early.

**Conclusion:** The ECG is one of the most important and most frequently requested investigations in the management of the acutely ill patient. A review of ECG lead misplacement is presented.

**Introduction:** L'électrocardiogramme (ECG) est essentiel au diagnostic de certaines maladies susceptibles d'être mortelles dans les états de santé où le facteur temps est primordial, tels que les infarctus du myocarde avec surélévation du segment ST (STEMI). Par conséquent, il est essentiel que les professionnels de la santé chargés de l'exécution et de l'interprétation des ECG soient conscients des facteurs de mauvais positionnement des électrodes, ceci pouvant altérer dans une large mesure l'apparence de l'ECG, résultant sur des examens, des hospitalisations, et un traitement inutiles. Le mauvais positionnement des électrodes de l'ECG peut s'avérer très préjudiciable pour le patient si l'administration d'un traitement essentiel est suspendu ou si un mauvais traitement est administré sur la seule base des résultats de l'ECG.

**Étude de cas:** Un cas inhabituel et encore jamais rapporté de mauvais positionnement faussant la totalité des 12 dérivations de l'ECG est présenté, qui aurait pu porter gravement préjudice au patient si ce problème n'avait pas été identifié aussi rapidement.

**Conclusion:** L'ECG est l'un des examens les plus importants et le plus souvent demandé dans la gestion des patients souffrant de maladies aiguës. L'étude d'un cas de mauvais positionnement des dérivations de l'ECG est présentée ici.

#### African relevance

- ECG availability in sub-Saharan Africa will increase dramatically in the coming years.
- ECG lead misplacement, if undetected, can be associated with significant adverse outcomes.
- Limited resources should not be a deterrent to repeating ECGs if lead misplacement.

#### Introduction

The electrocardiogram (ECG) is one of the most important and most frequently requested investigations in the management of the acutely ill patient. Indeed, it is essential for the diagnosis of some potentially life-threatening and time sensitive conditions, such as ST-elevation myocardial infarction (MI). It is therefore imperative that healthcare professionals responsible for performing and interpreting ECGs are alert to the features of lead misplacement, as these can alter the ECG appearance dramatically, resulting in unnecessary investigations, admission to hospital, and treatment. ECG lead misplacement can result in significant harm to the patient if essential treatment is withheld or if the incorrect treatment is delivered solely on the basis of ECG findings.<sup>1–6</sup> An unusual and previously unreported case of misplacement of all 12 ECG leads is presented, which would have resulted in significant harm to the patient had it not been identified so early.

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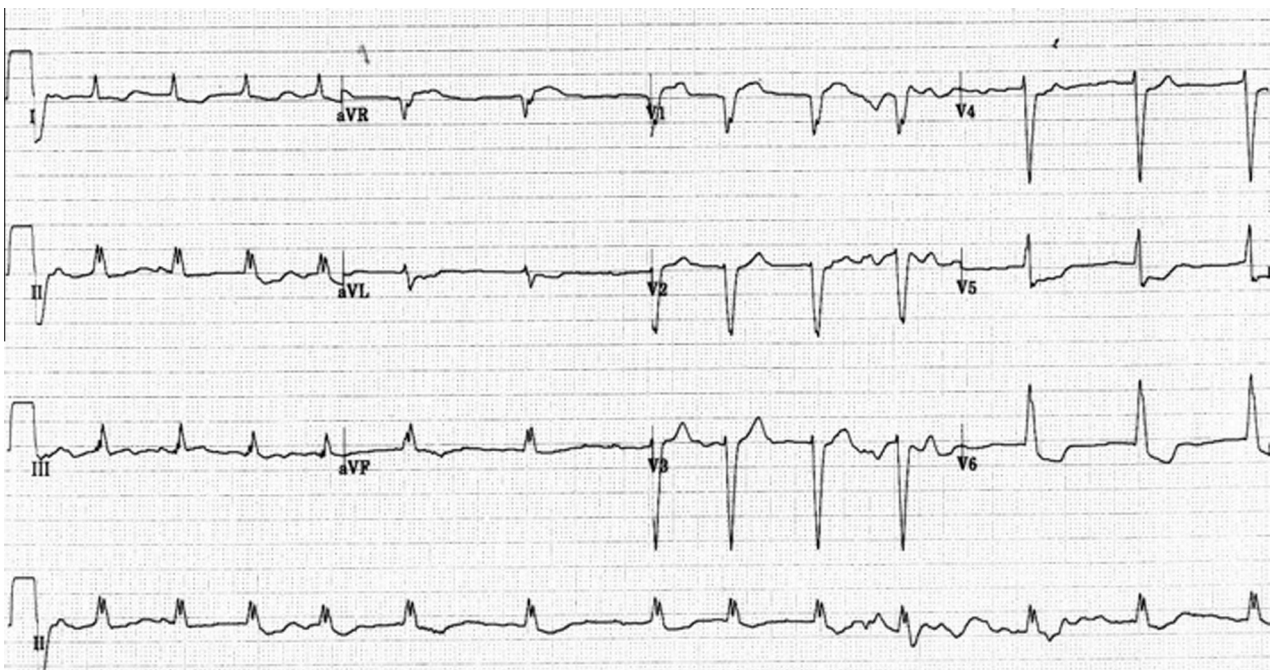
**Case report**

An 88 year old gentleman presented to the emergency centre complaining of central chest tightness for four hours in addition to feeling generally unwell for a few days. He had been discharged from the hospital five days earlier after being treated for pneumonia and heart failure.

Following discharge, he had been unsteady on his feet and had sustained a number of falls. A background history of atrial fibrillation, hypertension, diabetes mellitus, and heart failure was noted. His medications included warfarin 5 mg, digoxin 0.125 mg, furosemide 60 mg, perindopril 10 mg (ACE inhibitor), and lercanidipine 20 mg (calcium channel blocker).



**Figure 1** The 12-lead ECG on arrival.



**Figure 2** The second ECG was recorded using a different ECG machine.

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