

Commentary

Do not be alarmed, the patient is monitored

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Published online: 28 August 2003

Critical Care 2003, **7**:349-350 (DOI 10.1186/cc2368)

This article is online at <http://ccforum.com/content/7/5/349>

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Abstract

Many patients are believed to be at risk of dysrhythmias and are felt to require cardiac monitoring. These patients may not be deemed ill enough to occupy a high dependency or critical care bed and are monitored on general wards. Monitoring policies vary widely not only between institutions, but also between individual medical staff. These variations occur due to differing availability of resources and due to the lack of consensus regarding the risk for an individual patient. There is no clear evidence that monitoring patients outside high dependency areas is of benefit; inappropriate use of monitoring may actually increase patient risk.

Keywords electrocardiogram (ECG), dysrhythmias, monitoring, risk

Presentation to the emergency department after an overdose of drugs with serious cardiac side effects is common. The American Association of Poison Control Centers reports antidepressants as second only to analgesics as a cause of death from overdose. In the present issue of *Critical Care*, Buckley and colleagues evaluate electrocardiogram (ECG) abnormalities that may be helpful in risk-stratifying patients after tricyclic antidepressant and thioridazine overdose [1]. This is with particular reference to which patients should have continuous ECG monitoring.

Despite the availability of continuous cardiac monitoring for nearly 50 years, there are remarkably few publications examining the benefits and limitations of continuous ECG monitoring in patients with a noncardiac primary diagnosis. Few would doubt the benefits of continuous ECG recording in intensive care, high dependency and coronary care units. The patients in these units are perceived to be at high risk of serious cardiac dysrhythmias, and there is an appropriately high staffing level to detect and act upon the information obtained.

Uncertainty arises in the lower intensity, general medical/surgical wards. Patients perceived to be at low to moderate risk are frequently attached to continuous ECG

monitoring. However, evidence to support a benefit for patients that are monitored, or to justify the lack of monitoring for patients perceived to be at lower risk, is lacking. In addition, it is not always clear that available staff are adequately qualified to detect, to interpret and to act appropriately on the information derived from such systems.

Guidelines suggesting an appropriate strategy for the monitoring of patients are limited because of the lack of diagnostic clarity encompassed within many admissions [2,3]. This may be compounded by multiple diagnoses or physiological abnormalities resulting in a lack of consensus regarding the overall level of risk to an individual patient. Didactic approaches tend to be applicable only to the most well-defined conditions.

Evidence evaluating tools that may help stratify patients in terms of their risk of dysrhythmia is therefore very much welcomed. The question of which patients should be monitored, however, needs to be broadened; not just who, but how and why. Clearly the act of monitoring *per se* is of no value, there must be a clear plan allowing interpretation of the data and useful treatment. In the case of tricyclic overdose, the detection of serious dysrhythmias may prompt treatment with, for example, systemic alkalinisation [4]. A strategy

employing continuous monitoring to direct this therapy is unlikely to be helpful unless there is a high chance of detection of significant dysrhythmias. Evidence supporting this strategy in the noncritical care scenario is lacking. Application of continuous monitoring in these settings may simply give patients and staff a false sense of security.

Previous studies have used ECG criteria, notably the QRS duration, the QT interval and the QRS axis, to risk-stratify patients who have overdosed on tricyclic antidepressants [5–7]. In the current study, as with previous studies, the authors find definite associations of these criteria with dysrhythmia risk, but note that none is in itself a completely reliable predictor [1,8]. As with previous studies, it is not possible to say how much of the apparent failure of these tools is due to the failure of the tool *per se*, or to failures of the patient monitoring processes within the study. We do not know, for example, how many of the patients with 'no dysrhythmia' had asymptomatic tachycardias unnoticed by the monitoring process.

The authors make the observation that the available ECG tools might be employed in directing the use of prophylactic therapies. This argument is attractive as it has a clear potential to improve patient outcome, rather than merely directing the application of continuous monitoring. The authors' data support the observation that patients with the extremes of ECG abnormality are at high risk of dysrhythmia; for example, those with a QRS width greater than 160 ms after a tricyclic overdose. An argument can be made for prophylactic treatment of such patients. As ever, it is the low-risk to moderate-risk patients that are difficult to stratify. As the authors suggest, studies addressing the use of prophylactic treatments at different levels of perceived risk from ECG criteria would be desirable, the ECG criteria remaining useful, although imperfect, tools.

As technology advances and monitoring systems become more sophisticated, the accuracy of rhythm detection may be assumed to improve. Automatic alarms can clearly be beneficial, although it is a common observation that highly sensitive alarms are frequently ignored due to their relatively low specificity [9]. It is probable that the human interface will always remain key.

High-risk patients require monitoring in a well-staffed unit. Monitoring performed outside these environments is of questionable value. Tools denoting high risk should be used not only to direct the application of monitoring, but to promote monitoring within an appropriate environment and the consideration of preventative treatments.

Inappropriate monitoring appears likely to persist due to financial considerations in the immediate future, but it has elements of self-deceit. Individual hospital units should subject their monitoring policies to audit and continuous evaluation.

Competing interests

None declared.

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