Letters to the Editor

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Predicting survival with good neurologic recovery at hospital admission after successful resuscitation of out-of-hospital cardiac arrest: the OHCA score

We read with interest the article by Adrie et al.1 about outcome prediction, but we strongly disagree with the conclusion that outcome can be adequately predicted on hospital or ICU admission. Any diagnostic test should have significantly increased post-test probability with a positive test based on the prevalence in the population studied. The overall prevalence of poor outcome in this study was 259/340. Thus, a blank statement that all patients have poor outcome has a positive predictive value of 76% (95% CI 71–81). According to Table 5, an OHCA score cut-off point of 32.5 increases the positive predictive value to 94% (95% CI 89–97), but the corresponding specificity of 85% is not acceptable.1 We have to ensure that virtually all patients with the potential for good outcome are treated. The positive predictive value for poor outcome and the specificity should therefore be 0.99–1 or false-positive rate (1 – specificity) close to zero, all with a tight 95% CI.

A clinically useful test should still identify a large fraction of patients that would not benefit from time-consuming, costly, and emotionally exhausting intensive care treatment (reasonably high sensitivity). The test proposed in the paper does not have this perspective, and the sensitivity at the required specificity level is not provided. Figure 2 indicates a 0.88 cut-off value for 50 of 0.99–1.0 specificity, and an area under the receiver operator characteristic curve value of 0.88 indicates that the sensitivity will be much too low for OHCA 50 to make this test useful.1 In two recent, systematic reviews, false-positive rates for predicting poor outcome from multiple factors were not acceptably low enough until 24–72 h post-arrest.2,3 Survival rate to hospital discharge with good outcome for patients admitted to the ICU varies significantly between hospitals, independent of pre-hospital factors,4,5 and is much higher in some hospitals than the reported 22 and 25% in the development and validation cohort in the present study. In Oslo, favourable survival has almost doubled (up to 56%) after implementation of standardised post-resuscitation care including therapeutic hypothermia, with no differences in prognostic or metabolic factors on admission compared with previous data.6 Similar improved results have recently been documented from Lausanne7 and Stavanger.8

Accurate prediction of final outcome of out-of-hospital cardiac arrest patients at hospital admission is presently not possible, and only ethical considerations should limit active treatment at that stage. Decision making as recommended in the present study1 may be detrimental to the overall goal of more intact survivors after cardiac arrest. Unless ethically inadvisable, all resuscitated patients should at present receive optimal post-resuscitation care treatment including PCI (if indicated), therapeutic hypothermia, mechanical ventilation, and goal-directed intensive care treatment the first 24–48 h post-arrest.6 Correct treatment and correct decision making can save good lives. Withholding treatment on the basis of wrong prediction may take lives.

References


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The main concern raised by Sunde et al. is a very important one and points to a need for bearing in mind the message of our manuscript.1 Under no circumstances should any scoring system (including the OHCA score) be used to help predict survival in the individual patient. As stated in our discussion (page 2844), ‘The probability predicted by our score is the probability in the average patient, not the individual patient’. Decisions to withdraw life support are never taken after 24 h only on the basis of the SAPS or APACHE score,2,3 which are widely used in ICU patients; similarly, such decisions should never be taken on the

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