# Platelet count and other haematological measurements in septic shock

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Most patients with septic shock now survive the first few days, but a substantial number succumb at a later stage. Evidence of continued sepsis is usually present in these late deaths, but failure of one or more organs, particularly lung and kidney, to recover normal function may also be a major factor. It is possible that leucocyte sequestration, platelet aggregation, or fibrin formation may contribute to these late deaths. This study was undertaken to determine whether the haematological changes encountered in the first five days of clinical septic shock could be used to predict the ultimate outcome.

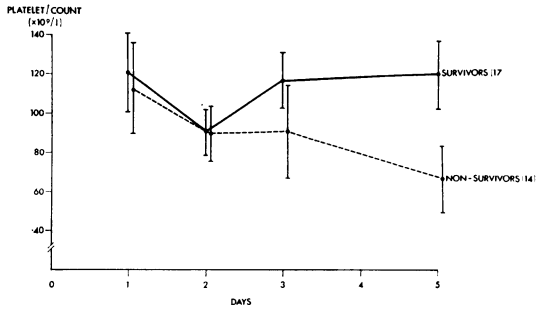
Forty-four patients, in whom sepsis was considered the predominant factor in the production of shock, were studied. In most patients, the gastrointestinal tract was the origin of sepsis. The sequential changes in the white cell count, platelet count, and some coagulation tests during the first five days after onset of shock were compared in those who ultimately survived and in those who died (deaths in first five days omitted). The Figure shows the mean platelet count of survivors and non-survivors. Although severe thrombocytopenia is not unusual in the first three days, survivors and non-survivors have similar counts. However, by day 5 the mean count has risen in ultimate survivors to 120 $\times$ $10^9$/l compared to 60 $\times$ $10^9$/l ($P = 0.037$). If, at day 5, account is taken of the actual platelet count as well as the trend, a further separation can be achieved. Only one of seven patients survived whose counts fell between day 2 and day 5 and reached a level of less than 80 $\times$ $10^9$/l, while all 10 patients survived whose counts rose above this level ($P = 0.004$).

The total white count is similar in both groups for the first three days, but on the fifth day the mean count is slightly higher in survivors (13·9 $\times$ $10^9$/l compared to 11·4 $\times$ $10^9$/l). Sixteen of 23 of those with white blood counts greater than 10 $\times$ $10^9$/l at day 5 survived, compared with 3 out of 10 whose count had not reached this figure ($P = 0.039$).

Abnormalities in the prothrombin time and kaolin cephalin clotting times were less marked than the severity of the thrombocytopenia, and most measurements were within the accepted normal range. However, ultimate survivors had paradoxically slightly longer times in the first two days, falling to normal by the third day. Similarly, ultimate survivors had longer kaolin cephalin clotting times on day 1.

Fibrin degradation products proved to be of little prognostic help. Abnormal bleeding, however, whether in the first five days or later, proved to be a reliable prognostic guide, although bleeding itself rarely led to major clinical problems. All four patients died who bled in the first five days, and 9 of 10 who bled at any stage, compared with only 4 of 20 who did not bleed ($P = 0.001$).

These observations show that useful prognostic information can be obtained from simple haematological measurements during the early stages of septic shock. It is possible that platelet aggregation, leucocyte sequestration, or activated coagulation occurring in early stages of septic shock may have a direct bearing on later, often lethal, complications. Alternatively, the severity of the abnormalities may simply reflect the severity of the septic insult, and this study does not separate the two possibilities.




*Platelet count (+SE) in 31 patients with septic shock who survived at least five days.*

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