Severe acute pancreatitis: impact of organ failure on mortality
Santhi Swaroop Vege, Suresh T Chari
Mayo Clinic, 200 First Street SW, Rochester, MN 55905, USA

Severe acute pancreatitis, as defined by the Atlanta criteria, is heterogeneous in terms of outcomes, such as organ failure, morbidity and mortality. A group of patients will have early organ dysfunction within the first 7-10 days after onset of symptoms. If the dysfunction resolves within 48 hours it is associated with low mortality. However, if it is unresolved or progresses it carries a mortality of up to 50%. Yet others will have pancreatic/peri-pancreatic necrosis with no or reversible organ failure. Such patients do not die from the disease, but have prolonged hospital stay and increased morbidity. Early aggressive hydration, a simple but often overlooked intervention, could be key to preventing organ dysfunction in acute pancreatitis. 

A bout 15% to 20% of subjects with acute pancreatitis will develop a severe course characterized by high morbidity and mortality, prolonged hospital stay, and need for intensive care. However, even this subgroup with severe acute pancreatitis (SAP), as defined by the Atlanta criteria, appears heterogeneous and some recent concepts help understand why this is so.

SAP with early organ failure and concept of early SAP
Two recent studies have defined early SAP (ESAP) as SAP with at least one organ failure (OF) at admission. Isenmann et al\textsuperscript{1} reported that of 158 patients with SAP admitted within 72 hours of onset of abdominal pain, 47 (30\%) had ESAP. In this study, once OF was noted on admission, in nearly 80\% multiple OF developed or progressed during hospitalization despite intensive care treatment. The mortality in this group was 42\% compared to 12\% in the patients with SAP without OF within 72 h of onset of pain. Using the same definition of ESAP, Tao \textit{et al}\textsuperscript{2} reported that 69/297 (23\%) patients with SAP had ESAP, and 53\% of them died within a week after admission. These studies suggest that OF on admission in SAP is usually progressive and a predictor of high mortality.

SAP with reversible organ failure and its impact on mortality
Patients with predicted SAP may have organ failure that resolves with conservative treatment. Buter \textit{et al}\textsuperscript{3} observed that 62\% of early OF was reversible. In the study by Johnson \textit{et al}\textsuperscript{4} 71/174 (41\%) had reversible early organ dysfunction. In this group, there were no deaths in the Buter study and only one death in the Johnson study. Thus, reversible early organ dysfunction carries a low mortality, similar to that of SAP without OF.

SAP with no organ failure and concept of moderately severe AP
Mortality in patients classified as SAP may vary considerably. Patients without OF appear to have low mortality (similar to that of mild AP) whereas those with multi-organ failure have very high mortality. However, though patients with pancreatic necrosis without OF have very low mortality, they have high morbidity and prolonged hospital stay. This suggests that subjects with SAP without OF should be labeled as moderately severe AP.

Does early aggressive fluid resuscitation alter the course of SAP?
OF is the principal cause of mortality in AP. Third spacing leads to marked decrease in intravascular volume as evidenced by high hematocrit, which predisposes to ischemia and OF. In a recent analysis it was observed that patients with inadequate fluid resuscitation as evidenced by persistently elevated hematocrit at 24 h developed necrotizing pancreatitis.\textsuperscript{5}

References

Correspondence to: Dr Chari