

LETTERS

Duration of organ failure impacts mortality in acute pancreatitis

We read with great interest the recent *Gut* publication by Schepers *et al*¹ reporting no association between the time of onset or duration of persistent organ failure (POF, >48 hours, distinguished from transient organ failure <48 hours) and mortality in a subset of patients (240/639) with acute pancreatitis (AP). Previously it has been proposed that there are two peaks of POF and mortality in patients with AP, namely the early phase (first week) accompanied by persistent systemic inflammatory response syndrome and late phase (>second week) caused by infected pancreatic necrosis (IPN).² Patients with early fulminant POF have been considered to have a higher mortality than those developing POF later,^{3–6} and those with POF in combination with IPN to have a higher mortality than those with POF alone.⁷ The findings from Schepers *et al*¹ have challenged these views but require confirmation. We have determined whether their findings are applicable to our AP patient populations.

We analysed 2145 and 939 patients with AP from retrospective (single centre) and prospective cohorts (multicentre), respectively, who were admitted ≤48 hours of symptoms onset (online supplementary table 1). There were 469 (21.9%) and 132 (14.1%) patients who had POF in these

Table 1 Unadjusted and adjusted OR and 95% CI in multivariate analysis of risk for mortality

Covariate	Unadjusted OR (95% CI)	P value	Adjusted OR (95% CI) *	P value
POF alone versus POF with IPN	1.522 (0.883 to 2.623)	0.131	1.721 (0.909 to 3.257)	0.095
Onset of POF	0.779 (0.603 to 1.005)	0.054	0.85 (0.668 to 1.082)	0.188
Duration of all organ failure	1.041 (1.026 to 1.057)	<0.001	1.034 (1.018 to 1.051)	<0.001



*Adjustment for age, sex, Charlson and modified CT severity index.
 †IPN, infected pancreatic necrosis.; POF, persistent organ failure.

two cohorts, respectively. Our data demonstrate that the prevalence of different types of POF (including respiratory, cardiovascular and renal failure) all peaked during the first week; the patterns were similar in the retrospective and prospective cohorts (online supplementary figure 1). Of 601 patients with POF, 370 (61.6%) had an onset ≤24 hours of admission, followed by 159 (26.5%) on day 2 and 40 (6.7%) on day 3 (online supplementary figure 2). Mortality was related to the number of organs that failed: 5.5% (25/453) for one, 44.9% (35/78) for two and 88.6% (62/70) for three (online supplementary table 2). Our data were in accord with Schepers *et al*¹ showing no biphasic pattern of mortality in the total 3084 patients, with a single peak ≤2 weeks followed by a steady decrease >2 weeks (figure 1). There was no significant increase in mortality among patients with POF and IPN compared with those with POF and no IPN (median 26.3% vs 19.4%, p=0.16) (online supplementary table 3).

In contrast with the Dutch data, however, we found a significant association between the duration of POF and mortality (table 1). The mortality of those

with POF for >2 weeks was significantly higher than those ≤2 weeks (online supplementary table 4). This was confirmed by multivariate logistic regression analyses with an adjusted OR 1.034 (95% CI 1.018 to 1.051, p<0.001) for duration of POF and mortality. There was no significant impact of POF onset or IPN in those that also had POF on mortality, consistent with the findings from Guo *et al*⁸ and Schepers *et al*.¹

Our large multicentre series confirms that there is a single peak in incidence of POF and mortality in AP but in contrast to the Dutch data, we found a relationship between the duration of POF and mortality. Recent improvements in the treatment of IPN have erased the second mortality peak and demotes IPN as a determinant of mortality.⁷ We maintain that shortening the duration of all organ failure is an important treatment target and should be routinely reported. This is illustrated by recent findings that early initiation of aggressive fluid therapy may be helpful, but if delayed 6–8 hours after admission the risk of POF and mortality may be increased.⁹ The frequent early onset of POF and impact of its duration underline the importance of door-to-needle time¹⁰ and the duration of POF as an outcome in clinical trials of new treatments for AP.

Na Shi,¹ Tingting Liu,^{1,2}
 Daniel de la Iglesia-Garcia,³ Lihui Deng,¹
 Tao Jin,¹ Lan Lan,⁴ Ping Zhu,¹ Weiming Hu,⁵
 Zongguang Zhou,⁶ Vikesh Singh,⁷
 J Enrique Dominguez-Munoz,³ John Windsor,⁸
 Wei Huang ,^{1,2} Qing Xia,¹ Robert Sutton ²

¹Department and Laboratory of Integrated Traditional Chinese and Western Medicine, Sichuan Provincial Pancreatitis Centre and West China-Liverpool Biomedical Research Centre, West China Hospital, Sichuan University, Chengdu, China

²Liverpool Pancreatitis Study Group, Royal Liverpool University Hospital and Institute of Translational Medicine, University of Liverpool, Liverpool, UK

³Department of Gastroenterology and Hepatology, University Hospital of Santiago de Compostela, Spain

⁴West China Biomedical Big Data Centre, West China Hospital, Sichuan University, Chengdu, China

⁵Department of Pancreatic Surgery, West China Hospital, Sichuan University, Chengdu, China

⁶Institute of Digestive Surgery, West China Hospital, Sichuan University, Chengdu, China

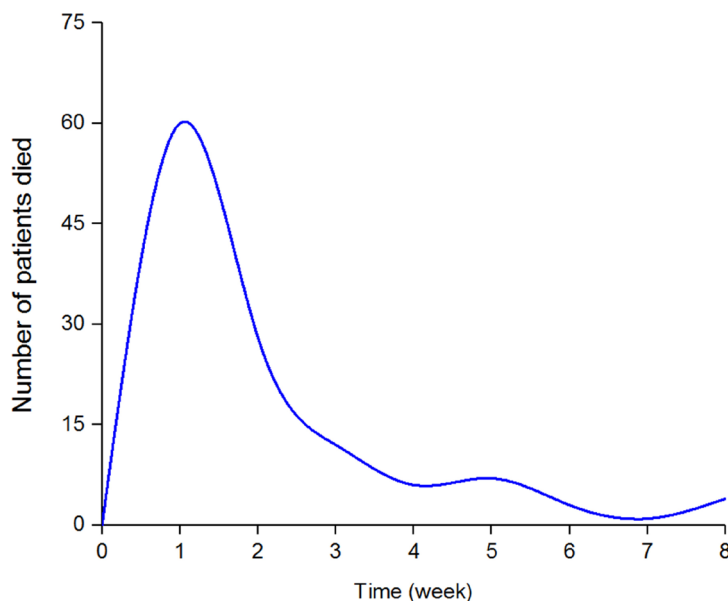


Figure 1 Pattern of mortality over time in patients with acute pancreatitis, showing the number of patients who died on a weekly basis for a total of 123 deceased out of 3084 patients.

⁷Pancreatitis Centre, Division of Gastroenterology, Johns Hopkins Medical Institutions, Baltimore, USA
⁸Surgical and Translational Research Centre, Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand

Correspondence to Dr Wei Huang, Department of Integrated Traditional Chinese and Western Medicine, Sichuan Provincial Pancreatitis Centre and West China-Liverpool Biomedical Research Centre, West China Hospital, Sichuan University, 5B Floor 2nd Building, Tianfu Life Science Park of Hi-Tech Industrial Development Zone, No 88 Keyuan South Road, Chengdu 610041, China; dr_wei_huang@scu.edu.cn and Dr Qing Xia, Department of Integrated Traditional Chinese and Western Medicine, West China Hospital, Sichuan University, No 37 Wannan Guoxue Alley, Chengdu 610041, China; xiaqing@medmail.com.cn

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NS and TL contributed equally.



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ORCID iDs

Wei Huang <http://orcid.org/0000-0001-8659-322X>
 Robert Sutton <http://orcid.org/0000-0001-6600-562X>

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