

## EDITORIAL

## Age and pancreaticoduodenectomy: is it really about mortality?

Saxon Connor<sup>1</sup> & Magdalena Sakowska<sup>2</sup>Departments of <sup>1</sup>Surgery and <sup>2</sup>General Surgery, Christchurch Hospital, Christchurch, New Zealand

### Correspondence

Saxon Connor, Department of Surgery, Christchurch Hospital, Private bag 4710, Christchurch, New Zealand. Tel: 0064 3 3640640. Fax: 0064 3 3640352. E-mail: Saxon.Connor@cdbh.govt.nz

In this issue of *HPB*, Sukharamwala *et al.*<sup>1</sup> have performed a systematic review and meta-analysis of the literature with the aim of analysing the efficacy of major pancreatic surgery among the elderly population. The data were analysed in two ways by defining elderly as those over 75 years and a further subgroup of those over 80 years of age. The search period ranged from 1990 to 2012. Eleven studies were identified and included 5186 patients. The primary endpoints were defined as peri-operative morbidity and mortality. Secondary endpoints included specific complications and length of hospital stay. Perhaps not surprisingly those who were older were found to have a greater mortality but not overall morbidity although those in older age groups did have a higher risk of post-operative pneumonia. Of the 161 patients who were >75 years, the overall morbidity was 54% and mortality 6.8% compared with 57% and 1.5%, respectively, in the 461 patients younger than 75 years. In those 333 patients over 80 years of age, the mortality and morbidity was 3.6% and 53% compared with 1.8% and 41%, respectively, for those 4226 patients less than 80 years of age. Overall, there was no difference in hospital stay.

So how should these data be interpreted? These figures suggest that a pancreaticoduodenectomy can be performed safely in an elderly cohort of patients but should they be applied to the population in general. First, it is highly likely that a significant selection bias exists within these data. Those that have been operated on are likely to represent the 'cream of the crop' of those elderly patients presenting with peri-ampullary malignancy. In addition and judging by the mortality rates in the younger cohort, it is highly likely that these results have been published by high-volume centres of excellence.<sup>2</sup> Therefore, these data may not be able to be extrapolated to the population in general.<sup>3,4</sup>

Perhaps what is most concerning are the endpoints that were not included for analysis (presumably because they were not available from the data analysed). It is known that resectional surgery alone for pancreatic adenocarcinoma offers little in terms of survival benefit over palliation.<sup>5</sup> Therefore to get any meaningful benefit from radical surgery, this needs to be combined with adjuvant chemotherapy.<sup>6</sup> Given the toxicity associated with adjuvant

chemotherapy<sup>7</sup> any primary endpoint when looking at outcomes for elderly patients after a pancreaticoduodenectomy should include morbidity and mortality from chemotherapy. In addition, it should be analysed on an intention-to-treat basis so that drop out from treatment arms (surgery or chemotherapy) are identified. However, data on elderly patients undergoing chemotherapy after a pancreaticoduodenectomy are hard to find. In the ESPAC-3 trial<sup>7</sup>, the 75<sup>th</sup> percentile for age was 69 years suggesting that few patients in their 8<sup>th</sup> and 9<sup>th</sup> decade were actually enrolled.

One must also consider what the ultimate goal is for these elderly patients. Is it 5-year survival figures or should outcome actually represent the more holistic approach to the patient in terms of quality of life. Two population-based studies<sup>3,4</sup> have shown that up to 27%–38% of patients over 80 years undergoing a pancreatic resection are discharged to nursing care facilities rather than directly home. Of those discharged home, 31% required help within the home.<sup>3</sup> In addition, the 5-year survival figures (11%) are lower than that achieved for younger patients.<sup>4</sup> The importance of informed consent for these patients should not be underestimated. How many fully informed octogenarians, when faced with a median survival of 9–12 months with palliation and a minimal risk to their immediate quality of life, would rather opt for a possible median survival of 10–14 months<sup>4</sup> with radical intervention which carries a 50% morbidity<sup>1</sup> and a significant chance of not returning home irrespective of whether it is followed by 6 months of chemotherapy.

From a health economic perspective, Riall *et al.*<sup>3</sup> have shown that over the last decade the mortality in the elderly has fallen but rates for transfer to nursing level care have increased. In times of financial austerity, health care providers will have to face up to these issues and ask 'Is this the best use of a scarce health dollar?'

The current paper by Sukharamwala *et al.*<sup>1</sup> highlights the importance of good quality data from which to inform patients about the right treatment for them as individuals. No doubt there will be some physiologically fit octogenarians who will present with neoplasms with a more favourable prognosis. On occasion, a radical approach will be appropriate but for the majority what is

technically possible may not necessarily be the best option. Given the increasing prevalence of octogenarians with technically resectable peri-ampullary tumours studies measuring appropriate end points are urgently needed.

#### Conflicts of interest

None declared.

#### References

1. Sukhramwala P, Thoens J, Szuchmacher M, Smith J, DeVito P. (2012) Advanced age is a risk factor for post-operative complications and mortality following pancreaticoduodenectomy: a meta-analysis and systematic review. *HPB* 14:649–657.
2. Birkmeyer JD, Siewers AE, Finlayson EV, Stukel TA, Lucas FL, Batista I *et al.* (2002) Hospital volume and surgical mortality in the United States. *N Engl J Med* 346:1128–1137.
3. Riall TS, Reddy DM, Nealon WH, Goodwin JS. (2008) The effect of age on short-term outcomes after pancreatic resection: a population-based study. *Ann Surg* 248:459–467.
4. Finlayson EV, Fan Z, Birkmeyer JD. (2007) Outcomes in octogenarians undergoing high-risk cancer operation: a National Study. *J Am Coll Surg* 205:729–734.
5. Imamura M, Doi R, Imaizumi T, Funakoshi A, Wakasugi H, Sunamura M *et al.* (2004) A randomised multicentre trial comparing resection vs. radio-chemotherapy for resectable locally invasive pancreatic cancer. *Surgery* 136:1003–1011.
6. Neoptolemos JP, Stocken DD, Tudur Smith C, Bassi C, Ghaneh P, Owen E *et al.* (2009) Adjuvant 5-fluorouracil and folinic acid vs observation for pancreatic cancer: composite data from the ESPAC-1 and -3(v1) trials. *Br J Cancer* 100:246–250.
7. Neoptolemos JP, Stocken DD, Bassi C, Ghaneh P, Cunningham D, Goldstein D *et al.* (2010) Adjuvant chemotherapy with fluorouracil plus folinic acid vs gemcitabine following pancreatic cancer resection: a randomized controlled trial. *JAMA* 304:1073–1081.