

Population-based observational study of acute pancreatitis in southern England

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ABSTRACT

INTRODUCTION Acute pancreatitis is a common surgical emergency. Identifying variations in presentation, incidence and management may assist standardisation and optimisation of care. The objective of the study was to document the current incidence management and outcomes of acute pancreatitis against international guidelines, and to assess temporal trends over the past 20 years.

METHODS A prospective four-month audit of patients with acute pancreatitis was performed across the Wessex region. The Atlanta 2012 classifications were used to define cases, severity and complications. Outcomes were recorded using validated systems and correlated against guideline standards. Case ascertainment was validated with clinical coding and hospital episode statistics data.

RESULTS A total of 283 patient admissions with acute pancreatitis were identified. Aetiology included 153 gallstones (54%), 65 idiopathic (23%), 29 alcohol (10%), 9 endoscopic retrograde cholangiopancreatography (3%), 6 drug related (2%), 5 tumour (2%) and 16 other (6%). Compliance with guidelines had improved compared with our previous regional audit. Results were 6.5% mortality, 74% severity stratification, 23% idiopathic cases, 65% definitive treatment of gallstones within 2 weeks, 39% computed tomography within 6–10 days of severe pancreatitis presentation and 82% severe pancreatitis critical care admission. The Atlanta 2012 severity criteria significantly correlated with critical care stay, length of stay, development of complications and mortality (2% vs 6% vs 36%, $P < 0.0001$).

CONCLUSIONS The incidence of acute pancreatitis in southern England has risen substantially. The Atlanta 2012 classification identifies patients with severe pancreatitis who have a high risk of fatal outcome. Acute pancreatitis management is seen to have evolved in keeping with new evidence and updated clinical guidelines.

KEYWORDS

Acute pancreatitis – Audit – Epidemiology – Management

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Introduction

Acute pancreatitis is a common surgical emergency. The UK incidence is rising with 15–42 cases per 10⁵ per annum reported.¹ The spectrum of the disease varies from a mild self-limiting attack to severe illness resulting in significant local and systemic complications and even death.² To provide optimum care, the management of acute pancreatitis requires multidisciplinary cooperation between surgeons, radiologists, intensivists, gastroenterologists and dietitians.

Prospective audits have identified wide variations in practice across the UK,^{3–7} with varied compliance with contemporaneous practice guidelines.^{8,9} The Atlanta 2012 international definitions were proposed in an attempt to clarify discussions and descriptions of acute pancreatitis.¹⁰ These new definitions, particularly coupled with changes in recommendations for management, such as the increasing use of percutaneous drainage in infected necrotising pancreatitis, have rendered some established standards

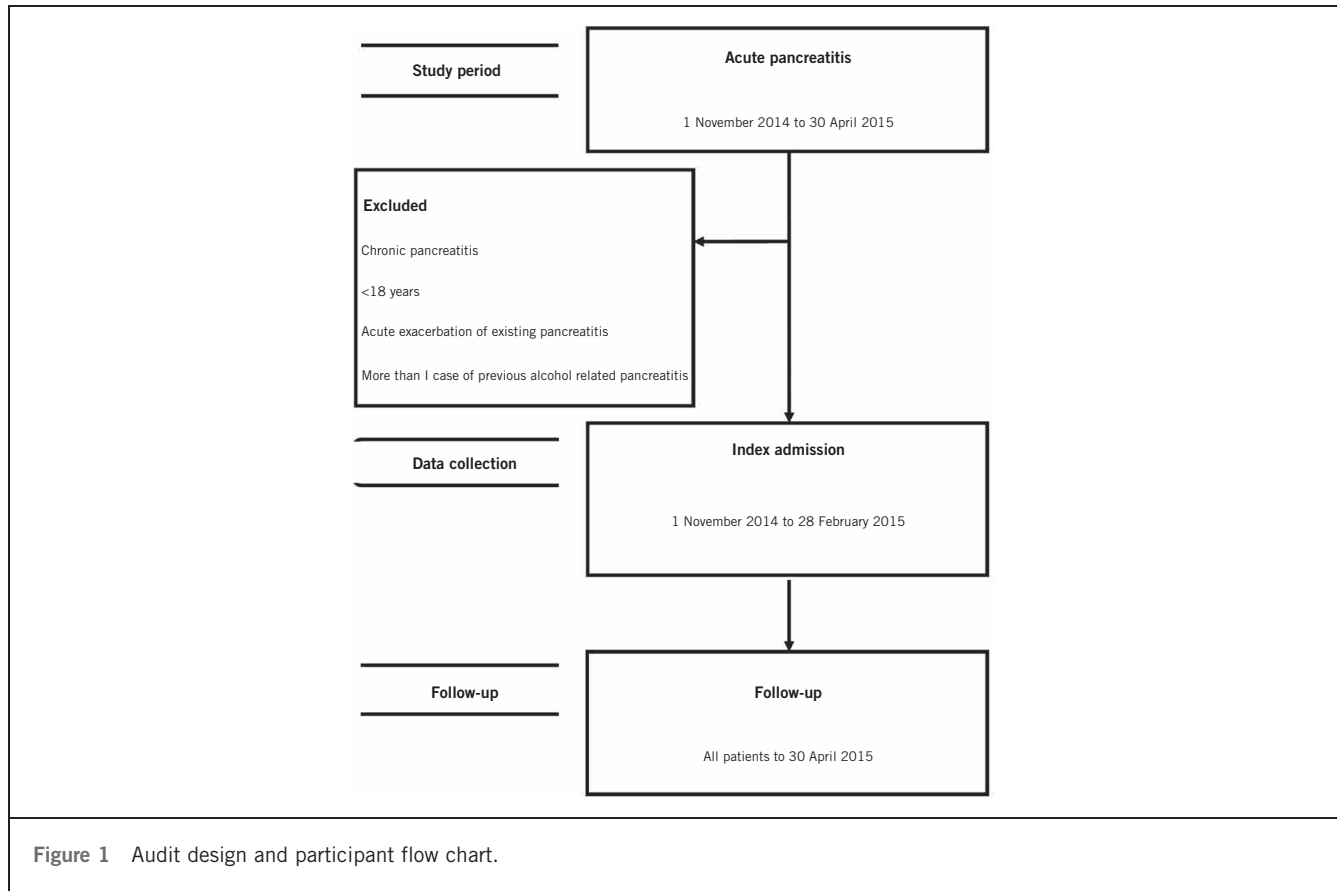
obsolete.^{6,11} Further, it is not known whether the Atlanta 2012 definitions have practical utility. A reassessment of current practice and compliance with up-to-date guidelines may be expected to identify areas for care improvement on a national level.

Therefore, the aims of this study were to prospectively evaluate the contemporary management of acute pancreatitis across a UK region and compare with guideline standards and findings of a similar audit 20 years ago, and to determine the value of modern definitions in the assessment and management of a population-based sample of patients with acute pancreatitis.

Materials and methods

Setting

All nine acute NHS trusts across the Health Education England Wessex Region contributed prospective data collection between the 1 November 2014 and 28 February 2015 (Fig 1).



The adult population of the Wessex region is estimated to be 2.8 million. This observational study was designed and reported using STROBE guidelines¹² and was approved by the local clinical governance and or research and development departments of all participating hospitals.

Patient eligibility

All patients aged 18 years and above who were admitted with acute pancreatitis in the participating centres were prospectively included. Diagnosis and onset of episode were defined using the 2012 Atlanta classification consensus.¹⁰ Patients who had previous gallstone pancreatitis and were admitted with a further attack of pancreatitis during the audit period were included. Patients were excluded if they were diagnosed with chronic pancreatitis, acute exacerbation of existing pancreatitis or more than one prior episode of acute pancreatitis due to alcohol.

Clinical data and outcome definitions

Clinical outcomes (mortality, interventions, critical care and hospital stay) were determined for patients in each category of severity. Patient data recorded included: demographics, characteristics, diagnosis on acute admission, prediction of severity (APACHE-II score, Glasgow Coma Score, GCS, and 72-hour C-reactive protein (CRP), assessment of severity (Atlanta 2012 definitions and the modified

Marshall scoring system),^{10,13} nutrition support, antimicrobial use, development and management of local complications, treatment of gallstones, tertiary referral rates and investigations for idiopathic pancreatitis. Complications were defined using the Atlanta criteria.¹⁰ Patients were followed for a minimum of two months. Idiopathic pancreatitis was defined as those without a cause identified at the end of follow-up. Patients who were still under investigation were sub-classified as 'cause currently unknown'.

A pre-study questionnaire was completed by each participating centre to identify the provision of services for management of acute pancreatitis as suggested by UK guidelines.⁸ Clinical outcomes and service provision were compared with the defined UK audit standards.⁸ Clinical outcomes for the defined grades of severity in the Atlanta 2012 classification were tabulated.

Case ascertainment was performed prospectively by clinical researchers at each centre who screened surgical acute admission and patient lists, laboratory and radiology results on a twice daily basis. Further validation was performed in two centres, one low-volume and one high-volume hospital, using clinical coding data used for UK national Hospital Episode Statistics and financial payment to the NHS trusts. An International Classification of Diseases Ninth Revision clinical modification code of 577.0 (acute pancreatitis, unspecified) was used.

Statistical analysis

Data are presented as descriptive with non-parametric comparative tests. A *P*-value less than 0.05 was considered significant. Statistical analysis was performed with SPSS® version 23.0.

Results

Incidence of clinically diagnosed acute pancreatitis

During the four-month data collection period, 281 patients were admitted with 283 episodes of acute pancreatitis, giving an estimated incidence of 40 per 10⁵ per annum. Case ascertainment correlated exactly with the number of identified cases at the two hospitals where validation was performed.

Demographics and aetiology

The median age of the patients was 61 years with a range of 19 to 99 years. There was a female preponderance (158 women and 125 men). Body weight was not recorded in 56 (20%) patients. In the remaining 225, 145 (64%) patients were overweight (body mass index, BMI, 26–30) or obese (BMI > 30). The underlying aetiology was gallstones in 153 (54%), alcohol 29 (10%), endoscopic retrograde cholangiopancreatography (ERCP) 9 (3%), drug related 6 (2%), tumour 5 (2%) and other 16 (6%). No aetiology was found at the end of a minimum two-month follow-up period in 65 (23%) patients (range 2–6 months).

Presentation and diagnosis

Overall, 153 (54%) patients presented to hospital within 24 hours of the onset of their pain; with only 28 (10%) presenting after 5 days (Fig 2). Following presentation, 271 (96%) of patients were diagnosed within 48 hours. Serum amylase was the basis for diagnosis in the majority of cases (*n* = 249, 88%) with computed tomography (CT; *n* = 10, 10%), urinary amylase (*n* = 1, 0.4%) and clinical diagnosis (*n* = 4, 1%) used in the remaining cases. Serum amylase was raised above the normal range in 262 patients (95%, median 1292 u/l, range 127–5811 u/l). Serum lipase was not available in any of the hospitals in this audit.

The majority of episodes of acute pancreatitis recorded were the patient's first (*n* = 250, 88%). Thirty-three patients had a previous diagnosis of pancreatitis with a median of one admission to hospital prior the audit period (range 1–7). The suspected aetiology of recurrent pancreatitis included gallstones (*n* = 14, 42%), idiopathic (*n* = 10, 30%), alcohol (*n* = 3, 9.1%; all had only one previous episode) and other (*n* = 6, 18%; hypercalcaemia, *n* = 2; hyperlipidaemia, *n* = 1; tumour, *n* = 1; previous Whipple's procedure, *n* = 1; and sphincter of Oddi dysfunction, *n* = 1). Two (1%) patients were readmitted during the audit period with a second episode of acute gallstone pancreatitis.

Severity assessment

Acute pancreatitis severity was assessed using the Atlanta 2012 criteria in 279 (99%) patients (Table 1). Mild pancreatitis was seen in 211 (75%); moderate severe pancreatitis (*n* = 35, 12%); severe pancreatitis (*n* = 33, 12%;

Table 1). Nineteen (6.7%) included patients died during the audit period. The Atlanta 2012 criteria significantly correlated with critical care stay, length of stay, development of complications and mortality (2% vs 6% vs 36%, *P* < 0.0001; Table 1).

Severity prediction was recorded in 241 (85.2%) admissions (GCS, *n* = 110, 39%); APACHE-II, *n* = 99, 35%; 72-hour CRP, *n* = 178, 62.9%). The use of severity predictor scores varied between hospitals (GCS and 72-hour CRP all nine, hospitals, 100%; APACHE-II five hospitals, 56%). Twenty-five (8.8%) patients had a modified Marshall score of two or above. This was transient in 11 patients (4%) and persisted for greater than 48 hours in 14 patients (5%).

Prediction of severe outcome

Age, APACHE-II and 72-hour CRP were significantly associated with severity although the GCS was not significantly associated with severe outcome (Table 2). CRP at 72 hours (CRP > 200 mg/l: sensitivity 92%, specificity 53%, diagnostic accuracy 0.736, 95% confidence interval, CI, 0.639–0.832) was associated with the presence and/or development of local complications whereas APACHE-II and the GCS were not.

Prediction of fatal outcome

Age and all the scoring systems used by clinicians in this audit showed statistically significant association with survival (Table 3). Age (age over 55 years: sensitivity 84% specificity 61%, diagnostic accuracy 0.619; 95% CI 0.501–0.736, *P* = 0.84), APACHE-II score (APACHE-II score > 7: sensitivity 92%, specificity 69%, diagnostic accuracy 0.899; 95% CI 0.766–1.00, *P* < 0.0001) and GCS greater than three (sensitivity 100%, specificity 85%, diagnostic accuracy 0.924; 95% CI 0.865–0.982, *P* = 0.004) identified those at high risk of death during index admission. Serum amylase

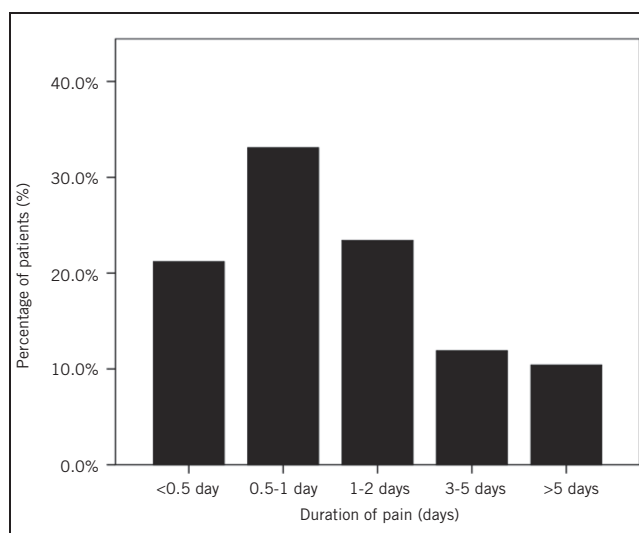


Figure 2 Time from onset of abdominal pain to hospital attendance.

Table 1 Patient outcomes categorised by severity grade as defined by the Atlanta 2012 classification.

Outcome	Severity Grade, Atlanta 2012 <i>n</i> (%)				All (<i>n</i> = 283)	<i>P</i> -value ^a
	Mild (<i>n</i> = 211)	Moderately severe (<i>n</i> = 35)	Severe (<i>n</i> = 33)	Unclassified (<i>n</i> = 4)		
Aetiology:						
Gallstones	114 (54)	19 (54)	18 (55)	2 (50)	153 (54)	0.325
Alcohol	24 (11)	3 (9)	2 (6)	0 (0)	29 (10)	
Idiopathic	45 (22)	8 (23)	13 (36)	0 (0)	65 (23)	
Other	28 (13)	5 (14)	1 (3)	2 (0)	36 (13)	
Complications:						
Local	na	19 (54)	9 (27)	1 (25)	29 (10)	<0.0001
Systemic	na	15 (43)	18 (54)	1 (25)	34 (12)	<0.0001
Nutritional support	3 (1)	4 (11)	9 (27)	1 (25)	17 (6)	<0.0001
Antibiotics:						
Prophylaxis	13 (6)	5 (14)	8 (24)	0 (0)	26 (9)	0.002
Treatment	20 (10)	10 (29)	11 (33)	3 (75)	44 (16)	<0.0001
Total length of stay ^b	4 (0–38)	11 (3–121)	9 (0–133)	12 (4–22)	5 (0–133)	<0.0001
Critical care stay:						
Level 2	0 (0)	4 (11)	7 (21)	0 (0)	11 (4)	<0.0001
Level 3	0 (0)	0 (0)	15 (46)	1 (25)	16 (7)	<0.0001
Death during audit period	5 (2)	2 (6)	12 (36)	0 (0)	19 (7)	<0.0001

^aKruskal-Wallis (mild v. moderate vs severe). Bold values are significant.
^bValues are medians and range in parentheses.

Table 2 Admission data and outcome categorised by the severity grade as defined by the Atlanta 2012 classification.

	Severity grade, Atlanta 2012 median (range)			<i>P</i> -value ^a
	Mild	Moderately severe	Severe	
Age (years)	60.0 (18.6–93.7)	59.0 (21.1–88.8)	68.5 (25.6–98.9)	0.027
Apache-II score	4 (0–11)	4 (0–19)	11 (0–17)	< 0.0001
CRP at 72 hours	157 (5–687)	244 (7–557)	313 (2–514)	< 0.0001
GCS score	1 (0–5)	2 (0–4)	2 (0–5)	0.185
Serum amylase (iu/l)	1177 (27–5811)	1419 (12–4878)	1585 (179–4800)	0.193

^a Kruskal–Wallis test. Bold values are significant.
CRP, C-reactive protein; GCS, Glasgow Coma Score.

and 72-hour CRP was not statistically associated with a fatal outcome (Table 3).

Management of pancreatitis

A total of 57 patients received critical care (11 in level 2 and 16 level 3). Of 33 patients classified as having severe acute pancreatitis, 27 (82%) were managed in a critical care setting. Eight (3%) patients were discussed with a specialist centre resulting in four (1%) patient transfers

(75 patients, 27%, were directly admitted to their local specialist centre). Overall, eight (3%) patients required radiological drainage. Of nine patients with severe gallstone pancreatitis, two received urgent ERCP and five (2%) underwent surgery.

Overall, 26 (9%) patients received antibiotics within 24 hours of admission, which were often curtailed (median duration 5 days range 1–28 days) and 44 patients (16%) received antibiotics during their admission. Indications

Table 3 Admission data categorised by survival. Data is displayed as medians with range in parentheses.

	Dead	Alive	P-value ^a
CRP value at 72 hours	223 (5–514)	208 (2–687)	0.452
GCS score	3.5 (3.0–4.0)	1.0 (0–5.0)	0.003
Apache-II score	14 (2–17)	4 (0–19)	< 0.0001
Serum amylase (iu/l)	1282 (339–4800)	1283 (12–5811)	0.895
Age at admission (years)	80.7 (27.8–98.9)	60.3 (18.6–93.7)	< 0.0001

^aMann–Whitney U.
CRP, C-reactive protein; GCS, Glasgow Coma Score.

included cholangitis/biliary sepsis ($n = 15$, 35%; unknown $n = 8$, 19%; other $n = 7$, 16%; pneumonia $n = 5$, 12%; pancreatic necrosis $n = 4$, 9%; urinary tract infection $n = 4$, 9%).

There were 153 episodes of pancreatitis due to suspected gallstones. Two patients were readmitted prior to cholecystectomy. For these 151 patients, 131 were diagnosed after the onset of acute pancreatitis with 20 (13%) known to have gallstones; 95 patients (65%) had definitive treatment of the gallstones within the audit period; 94 (62%) underwent cholecystectomy during the audit period at a median time of 4.4 weeks from date of admission (range 0.7–20.4 weeks) with 62 (41%) having a cholecystectomy performed during their index admission.

ERCP was attempted in 37 patients and was successful in 36. This was followed by a laparoscopic cholecystectomy in all but one patient (where sphincterotomy was planned as definitive treatment). Of the successful procedures, two (6%) were performed as an emergency; a further 17 (47%) were performed during the index admission and 17 (47%) were performed electively. Stones were identified in 21 (58%) common bile ducts. Sphincterotomy was performed in 35 of the 36 procedures.

Reasons for not providing definitive treatment of gallstones during the audit period included being unfit for surgery ($n = 17$, 11%) or previous cholecystectomy ($n = 8$, 5%). Other reasons ($n = 12$, 8%) given for not performing cholecystectomy included pregnancy, patient choice, patient living out of area, and awaiting local complications of pancreatitis to subside. Twenty (13%) patients remained on the elective waiting list for cholecystectomy at the close of the observation period.

The cholecystectomies were performed by general surgeons with a variety of subspecialty interests (upper gastrointestinal 70%, hepatopancreatobiliary 13%, colorectal 6%, transplant 4%, general surgery 2%, and vascular 1%). The preferred approach was laparoscopic (96%, $n = 80$). One patient required conversion to open surgery and two patients proceeded directly to an open operation (data not available for 11). On-table cholangiogram was performed in 70% and 10% of all cases underwent bile duct exploration. One of the 94 operated patients sustained a common bile duct injury.

Nutritional support was given to 17 (6%) patients. This was enteral for 11 and parenteral for 10 patients. Only

seven patients received enteral nutrition alone when nutritional support was required.

Peripancreatic complications were diagnosed in 29 (10%) patients (acute peripancreatic fluid collection, $n = 17$ (6%); walled-off necrosis ($n = 4$, 1%); infected necrosis ($n = 2$, 1%), acute necrotic collection ($n = 2$, 1%) other local complication ($n = 2$, 1%); haemorrhagic pancreatitis/pseudoaneurysm ($n = 1$, 0.4%); hepatic/portal/splenic vein thrombosis ($n = 1$, 0.4%). Thirty five (12%) patients had systemic complications typically multi organ dysfunction. The management of all patients is compared with the recommendations from the UK guidelines in Table 4.

Investigation of idiopathic pancreatitis

Of 65 patients with idiopathic pancreatitis, 39 (60%) were still under investigation at study closure and were classified as cause currently unknown. Thus, 26 (40%) of these patients (9% of all patients) were classified as definitive idiopathic pancreatitis. All 65 patients with definitive or provisional idiopathic pancreatitis had imaging (ultrasound and/or CT) and 27 (42%) had a second ultrasound and/or magnetic resonance cholangiopancreatography (MRCP); 29 (49%) had lipid analysis, 45 (76%) had calcium levels, 6 (10%) had viral titres and 4 (7.5%) had endoscopic ultrasound.

Discussion

We performed a regional audit of acute pancreatitis practice as significant room for improvement in areas of UK care has been identified.¹⁴ Guideline compliance can assist the delivery of evidence-based practice with reduced variation. This study demonstrates the variations in care which exist even across a moderately sized region and highlights the potential for further education and care improvement.

This study supports trends in acute pancreatitis including increasing incidence,^{15,16} changes in aetiology^{1,17,18} and reduced use of antibiotics (despite lack of international consensus).¹⁹ In 2000, we reported an incidence of acute pancreatitis of 20.5 per 10⁵. The present data show that this figure has approximately doubled in our region, which is in keeping with European trends.¹⁶

The application of the Atlanta 2012 definitions confirmed expected differences in outcomes in the three

Table 4 Regional management of acute pancreatitis compared with UK national audit standards.

Audit categories	Audit recommendations (%)	Evidence grade of recommendation	Audit findings 1995 ⁶ (%)	Audit findings 2015
Mortality	< 10	C	9.1% (17)	6.5% (19)
Diagnosis within 48 hours	100	C	98.4%	96.1% (272)
Severity stratification within 48 hours	100	B	19 % (35)	74% (209)
Percentage of idiopathic cases	≤ 20	B	32 % (60)	23% (65)
Lipase used for diagnosis when available	100	A	0%	0%
Purely enteral nutrition given rather than TPN if nutritional support required	80	A	na	41% 7/17
HDU or ITU for severe acute pancreatitis	100	B	67% (40/60)	82% (27/33)
FNA for necrosis and sepsis or persistent symptoms and > 30% necrosis	100	B	na	0%
Definitive treatment of gallstones during index admission or within 2 weeks for gallstone pancreatitis	100	C	33% (15/45)	65% (74/114)
Single clinical team to manage all patients with acute pancreatitis	100	C	na	33% (3/9)
Radiology availability (ultrasound within 24 hours)	100	B	100%	100%
CT within 6–10 days of presentation in severe pancreatitis	100	B	33% 20/60	39% (13/33)
ERCP available 24 hours a day	100	B	na	22% (2/9)
Urgent ERCP in severe gallstone pancreatitis	100	B	41% (7/17)	17% (3/18)
Specialist centre CT and angiography and interventional radiology available 24/7	100	B	0%	100% (2/2)

CT, computed tomography; ERCP, endoscopic retrograde cholangiopancreatography; HDU, high dependency unit; ICU, intensive care unit; TPN, total parenteral nutrition

grades of severity and we have demonstrated the value of current cut-offs for prediction of outcomes using age, APACHE-II within 24 hours of admission and 72-hour CRP. Much has been written about severity prediction in acute pancreatitis, partly because final assessment of severity can only be made when the patient is discharged from hospital. In the early stages of the illness, identification of patients at risk may allow intervention to prevent progression. The Atlanta 2012 definitions suggest a shift to dynamic evaluation of severity, with reliance on direct clinical observation to categorise patients in real time. Thus, the presence of organ failure identifies a patient who does not have mild pancreatitis, and further observation demonstrates if this is 'severe pancreatitis' (persistent organ failure) or 'moderately severe pancreatitis' (transient organ failure). Nevertheless, we note in our study useful associations between early markers of severity and some categories of severe pancreatitis: age and raised APACHE-II score were associated with severe pancreatitis and fatal outcome, whereas raised CRP was a marker of local complications.

There was less inappropriate variation in practice than in a previous audit of our region,⁸ although our results identified areas where there is still poor compliance with UK guidelines. We used the 2005 British Society of Gastroenterology (BSG) guidelines,⁹ as they were in use at participating centres during the study period. More recent International Association of Pancreatology (IAP) guidelines have now been adopted and may be better focused on some aspects of care.²⁰ Our observed disparity with some of the BSG guidelines reflects early adoption of new evidence-based practices that were also subsequently incorporated into the newer IAP acute pancreatitis guidelines. The most notable discrepancy with BSG guidelines was the absence of any recorded fine-needle aspiration for diagnosis of infection in patients with necrosis and sepsis or persistent symptoms and 30% necrosis. This reflects change in practice, with the use of percutaneous drainage as a treatment option in these patients. Drainage as part of a step-up approach to surgery now fills the role of diagnostic fine-needle aspiration identified in the guidelines.²¹ Of particular relevance, fine-needle aspiration is now outdated,

as the 2015 IAP guidelines state that routine fine-needle aspiration is not indicated to detect bacteria within peri-pancreatic collections (grade 1C, strong agreement).²⁰

Overall, identified practice mirrored that seen in the 2016 UK National Confidential Enquiry into Peri-Operative Deaths (NCEPOD) report on the quality of acute pancreatitis care.¹⁴ Prophylactic antibiotics are now used less often in severe acute pancreatitis. This reflects the increasing consensus that this approach is questionable and may indeed be detrimental by encouraging subsequent infection with multi-resistant organisms. Although prophylactic antibiotics were still used in up to 25% of patients with acute severe pancreatitis, they were frequently stopped soon after admission.

While the value of biliary drainage in patients with cholangitis or biliary obstruction due to gallstones is clear,^{22–24} the use of ERCP and sphincterotomy in all patients with suspected or proven gallstone pancreatitis for predicted or acute severe pancreatitis has been largely abandoned and our data suggests these patients are currently not undergoing ERCP. This strategy appears justified, given that there was no increased mortality when compared with our previous audit,⁶ when the use of ERCP was more liberal. The more selective use of ERCP has also been noted by others.⁴

There remains considerable debate on some areas of acute pancreatitis management.²⁵ Some of the standards set out in the guidelines may require modification to reflect safe changes in practice. Sixty-five per cent of appropriate patients with gallstone pancreatitis had definitive management of gallstones within the audit standard. Many centres advocate this management,²⁶ with the ability to achieve this in all appropriate cases.²⁷ However, this standard is not clearcut as, although recurrence of pancreatitis is reduced,²⁸ some but not all reports show an increased risk of surgical complications with early cholecystectomy.^{26,29} Our data support the recommendation and audit standard for early definitive treatment,¹⁴ as 5% of patients with gallstone pancreatitis who did not receive definitive management were readmitted. Delay in provision of cholecystectomy is likely to reflect resource allocation, as all 40 remaining patients were either on a waiting list or had their gallbladder removed outside the recommended two week timeframe.

Our study has a number of strengths. We used the Atlanta 2012 classification to define cases, severity and complications allowing meaningful data synthesis from multiple centres. The cohort is moderately large with prospectively collected data and is likely to be generalisable as our data is highly comparable with other UK series.¹⁴ The inclusion and exclusion criteria were designed so that only acute pancreatitis was studied and case ascertainment appears reliable following validation. Overall outcomes are satisfactory and comparable with data from previous series published in the UK.³⁰ This regional audit did not focus on tertiary centres but included all low- and high-volume centres within the region with a population base close to three million. In addition, we had a previous audit from the same area available for comparison.⁶

Limitations

Our study included clinically diagnosed cases which may slightly underestimate the true incidence. Cases diagnosed outside surgical units and fulminant, rapidly fatal pancreatitis may not be diagnosed in life and may have been missed. We are also aware that there are seasonal variations in the incidence of pancreatitis, which may have introduced some inaccuracy.^{31,32} However, these inaccuracies are small compared with the overall numbers, and this observed rise in incidence has been noted by others.^{16,33} Direct comparison with our regions previous audit is limited by the differing guidelines and changes in multidisciplinary practices between the two periods. As participating hospitals were using the 2005 BSG guidelines during the study timeframe, comparison of our data with current practice, now based on the 2015 IAP guidelines, should be made with caution.

Conclusions

In conclusion, the incidence of acute pancreatitis in the South of England has risen substantially since 1995. The Atlanta 2012 classification is useful for identifying patients with severe pancreatitis who have high-risk of fatal outcome. Acute pancreatitis management is seen to have evolved in keeping with new evidence and updated clinical guidelines.

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