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The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

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Retrospective Study

Hospital admissions from alcohol-related acute pancreatitis during the COVID-19 pandemic: A single-centre study

Wai Kin Mak, Davide Di Mauro, Eleanor Pearce, Laura Karran, Aye Myintmo, Jessica Duckworth, Amira Orabi, Rebekah Lane, Sophie Holloway, Antonio Manzelli, Somayyeh Mossadegh

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Abstract

BACKGROUND

The United Kingdom government introduced lockdown restrictions for the first time on 23 March 2020 due to coronavirus disease 2019 (COVID-19) pandemic. These were partially lifted on 15 June and further eased on 4 July. Changes in social behaviour, including increased alcohol consumption were described at the time. However, there were no data available to consider the impact of these changes on the number of alcohol-related disease admissions, specifically alcohol-related acute pancreatitis (AP). This study evaluated the trend of alcohol-related AP admissions at a single centre during the initial COVID-19 lockdown.

AIM

To evaluate the trend in alcohol-related AP admissions at a single centre during the initial COVID-19 lockdown in the United Kingdom.

METHODS

All patients admitted with alcohol-related AP from March to September 2016 to 2020 were considered in this study. Patient demographics, their initial presentation with AP, any recurrent admissions, disease severity and length of stay, were evaluated using ANOVA and χ^2 and Kruskal-Wallis tests.

RESULTS

One hundred and thirty-six patients were included in the study. The highest total number of AP admissions was seen in March–September 2019 and the highest single-month period was in March–May 2020. Admissions for first-time presentations of AP were highest in 2020 compared to other year groups and were significantly higher compared to previous years, for example, 2016 ($P < 0.05$). Furthermore, the rate of admissions decreased by 38.89% between March–May 2020 and June–September 2020 ($P < 0.05$), coinciding with the easing of lockdown restrictions. This significant decrease was not observed in the previous year groups during those same time periods. Admissions for recurrent AP were highest in 2019. The median length of hospital stay did not differ between patients from each of the year groups.

CONCLUSION

An increased number of admissions for alcohol-related AP were observed during months when lockdown restrictions were enforced; a fall in figures was noted when restrictions were eased.

Key Words: Alcohol abuse; Alcohol-related acute pancreatitis; COVID-19 pandemic

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Core tip: The coronavirus disease 2019 lockdowns have seen a shift in the population's social behaviour. Studies have shown an increase in alcohol consumption in the general population over the lockdown period. A retrospective study was performed and observed a rise in alcohol-related pancreatitis admissions during the pandemic. In this context we observed higher admission numbers for alcohol-related pancreatitis during the time when restrictions were in place, and numbers reduced once restrictions were eased.

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INTRODUCTION

Demography and emergent behaviour trends have always affected health and infectious as well as noncommunicable disease[1]. There is a strong link between patterns of alcohol consumption and various noninfectious diseases, including pancreatitis[2]. According to the National Institute for Health and Care Excellence, the incidence of pancreatitis associated with alcohol use is approximately 14 per 100000 per year and is a significant cause of morbidity and mortality in the United Kingdom[3]. In susceptible persons, there is a clear association between the volume and duration of alcohol consumed and the likelihood of developing acute pancreatitis (AP)[4].

The coronavirus disease 2019 (COVID-19) pandemic and subsequent introduction of restrictions on daily life had a profound impact worldwide. In the United Kingdom, lockdown restrictions were first enforced on 23 March 2020. In the months that followed, increased social isolation, psychological distress and a shift in social behaviour (including increased alcohol consumption), were described in medical journals, national surveys[5,6] and in the mainstream media. Although the link between alcohol abuse and AP is well known[2,4], there are no available data as to whether potential changes in alcohol consumption over the lockdown period in the United Kingdom had an impact on incidence of disease. This study evaluated the trend in admissions for alcohol-related AP in a single centre during the first round of lockdown restrictions.

MATERIALS AND METHODS

Ethics

The study was registered and approved by the Royal Devon and Exeter NHS Foundation Trust Governance Board (reference number 20-4628). All patient data were fully anonymised at the time of collection and therefore individual informed consent was not required.

Context

In order to reduce COVID-19 transmission, from 23 March 2020, the public were asked to not leave home except for exercise and essential travel. All nonessential retail sector businesses including pubs, bars and accommodation facilities were closed. Restrictions were partially lifted on 15 June and further eased on 4 July, when bars and restaurants reopened.

Eligibility criteria

All patients age ≥ 18 years with a confirmed diagnosis of alcohol-related AP during March–September in the five consecutive years (2016–2020) were considered for this study. Cases between October and February, patients aged < 18 years and non-alcohol-related AP were excluded.

Data collection

At our Institution, AP is diagnosed in the presence of at least two of the three following criteria[7]: Abdominal pain, serum amylase > 450 IU/L and radiological findings of AP. All pancreatitis cases were retrieved using the Trust's electronic patient record system. A total of 1905 patients with any type of pancreatitis were obtained in the initial search, of which 1769 were coded as other causes of AP and 136 were coded as alcohol related (Figure 1). Patients were divided into 5-year groups (2016–2020). Patients' demographic data, first presentations of AP, recurrent admissions, disease severity according to the revised Atlanta classification of AP[8] and length of hospital stay were assessed for each year. The period of March–May was of particular interest given that COVID-19 lockdown restrictions occurred during these months in 2020. We compared the number of first presentations and recurrent admissions in March–May and June–September for each year group.

Statistical analysis

Statistical analysis was performed using SPSS Statistics version 20 (IBM, Armonk, NY, USA). Continuous variables of a Gaussian distribution were described as mean $\pm$ SD. Those that were not normally distributed were given as median and interquartile range (IQR). Categorical data were defined as absolute numbers and percentages. Means were compared using one-way ANOVA. Differences in severity was evaluated with the χ^2 test. Medians and absolute number of admissions were analysed with the Kruskal–Wallis test. Statistical significance was assessed at the level of $P < 0.05$.

RESULTS

A total of 136 patients were included in the analysis across all 5-year groups. There were 79 male (58%) and 57 female (42%) patients respectively. Mean age was 48 ± 14 years. Age and gender did not differ between the observed year groups (Table 1). When reviewing admission laboratory tests, there were no patients with active severe acute respiratory syndrome coronavirus 2 infection. Analysis of serum biochemistry showed CRP as the only test with a significant difference during the study period ($P = 0.0002695$, Table 2); such a difference may have been coincidental as no correlation was found.

Eighty-nine (65.4%) patients were admitted with their first presentation of AP and 47 (34.6%) were recurrent admissions. The number of monthly (March–September) admissions per year was not consistent between years 2016 and 2020 ($P = 0.02215$, Table 1). Overall admissions per year was highest in 2019, however admissions for first-time disease onset were highest in 2020 (Table 1, Figure 2). During the lockdown period of March–June 2020, admissions were 38.5% higher than in the same period during 2019 ($P = 0.3758$), 157.1% higher than in 2018 ($P = 0.184$), 125% higher than in 2017 ($P = 0.07652$) and 200% higher than in 2016 ($P = 0.04953$).

After lockdown restrictions were eased (June–September 2020), there was a 38.89% decrease in first-time admissions compared to March–May 2020 ($P = 0.03231$). Such a significant decrease was not observed in previous year groups.

There were more cases of recurrent AP in 2019 compared to other year groups and significantly higher compared to 2016 ($P = 0.03142$, Table 1). Disease severity did not differ among groups ($P = 0.92622$, Table 1).

The overall median hospital stay was 4 d (IQR 2–6.25), with no significant difference between the years observed ($P = 0.540317$, Table 1). Median length of stay was 3 d in 2020, 4 in 2019, 3 in 2018, 4.5 in 2017, and 4.5 in 2016 ($P = 0.540317$, Table 1).

DISCUSSION

Since COVID-19 lockdown restrictions were first introduced in March 2020, both positive and negative behavioural changes related to alcohol consumption have been reported in the medical literature[6,9,10]. According to the results of one national survey, up to one-third of regular drinkers stated they had cut down or even stopped drinking altogether during the pandemic[11], while one in five had increased

Table 1 Patients' data and admissions from March to September 2016–2020

Parameter	2016	2017	2018	2019	2020	P
M	9	18	19	21	14	0.037262
F	3	6	7	17	22	
Mean age $\pm$ SD (range)	52.0 $\pm$ 19.344 (30-87)	47.0 $\pm$ 14.794 (19-77)	45.0 $\pm$ 12.966 (25-67)	46.0 $\pm$ 13.440 (25-74)	52.0 $\pm$ 12.776 (26-85)	0.243556
Total admission	12	24	26	38	36	0.02215 ¹
First onset AP	11	22	15	26	29	0.09168 ¹
Recurrent AP	1	2	11	12	7	0.02079 ¹
Total admission	12	24	26	38	36	
March-May	6	8	14	15	21	0.1657 ¹
June-September	6	16	12	23	15	0.09608 ¹
First onset AP	11	22	15	26	29	
March-May	6	8	7	13	18	
June-September	5	14	8	13	11	
Disease severity (n)						0.92622
Mild	8	16	17	29	25	
Moderate	3	7	6	8	9	
Severe	1	1	3	1	2	
Median hospital stay (IQR)	4.5 (2.0; 7.0)	4.5 (3.0; 9.0)	3.00 (1.25; 5.75)	4 (2; 6)	3.00 (2.00; 5.25)	0.540317 ¹

¹Kruskal-Wallis test.

AP: Acute pancreatitis; IQR: Interquartile range.

Table 2 Serum biochemistry results 2016–2020

Median parameter (IQR) ¹	2016	2017	2018	2019	2020	Overall P
Creatinine	55.0 (50.5, 57.0)	61.5 (51.5, 72.5)	57.5 (54.0, 65.5)	62 (53, 82)	60.0 (54.0, 76.5)	0.6126 ¹
eGFR	90 (90, 90)	90 (90, 90)	90 (90, 90)	90 (90, 90)	90.0 (89.5, 90.0)	0.44705 ¹
CRP	45.5 (15.0, 185.0)	57.50 (19.0, 212.75)	65.0 (6.75, 93.00)	6.0 (1.0, 30.5)	6.50 (3.25, 13.75)	0.0002695 ¹
Hb	133 (125, 143)	132.5 (125.5, 146.5)	145.0 (136.0, 151.5)	149 (136, 159)	138.0 (127.5, 147.0)	0.08381 ¹
White cell count	7.00 (5.95, 11.70)	12.05 (9.35, 14.45)	10.30 (6.875, 15.35)	10.2 (6.2, 13.0)	10.7 (7.8, 12.4)	0.2183 ¹
Amylase	286.0 (112.25, 650.00)	158 (103, 520)	242.0 (204.0, 463.75)	254 (137, 433)	382.0 (102.5, 613.5)	0.8497 ¹

¹Kruskal-Wallis test.

IQR: Interquartile range; eGFR: Epidermal growth factor receptor; CRP: C-reactive protein.

their drinking to potentially more harmful levels[12]. Since the risk of misuse is higher in people previously or currently known to have abused alcohol[9,11,13], it has been hypothesised that psychological stress, social isolation and reduced access to addiction support services during lockdown may have contributed to this behaviour[9]. Moreover, national retail sales of alcohol for private consumption (when pubs and restaurants were closed) rose by £160 million in April 2020 compared to the same time period in 2019, indicating that alcohol consumption may have increased during this time[14].

To the best of our knowledge, there are no available data on the impact of alcohol abuse on the trend of hospital admissions for alcohol-related AP during the COVID-19 pandemic. In our study, the highest number of overall admissions (both first presentations and recurrent admissions) between March and September occurred in 2019; single-month figures and the number of first-presentations alone were highest during March–May 2020, corresponding with the beginning of lockdown restrictions. The number of admissions significantly decreased between June and September of the same year when lockdown restrictions eased. Comparing the same time periods (March–May and June–September) in 2016–2019, the number of overall AP admissions were more consistent between these two periods. None

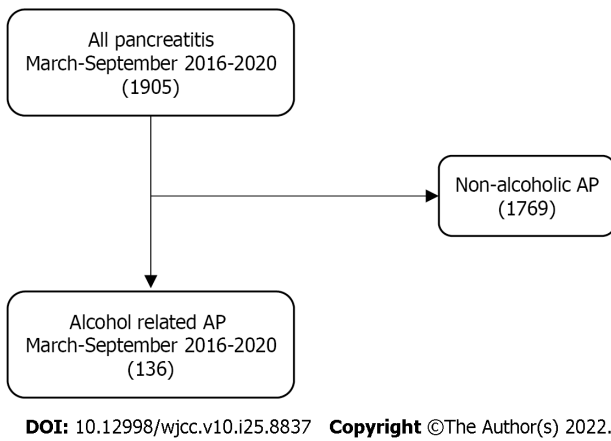


Figure 1 Flowchart of the patient selection process. AP: Acute pancreatitis.

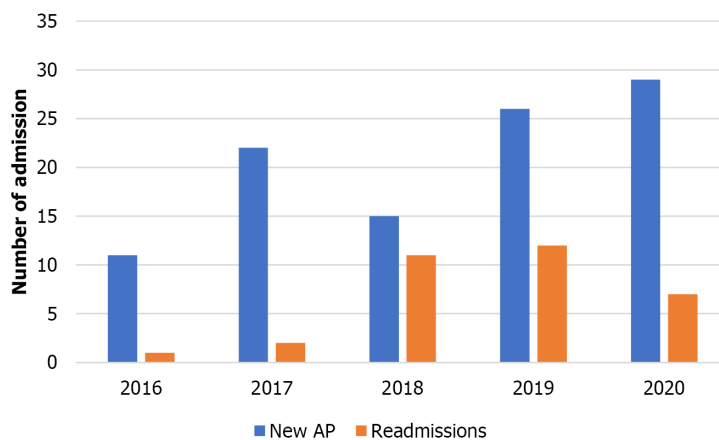


Figure 2 Distribution of new alcohol-related acute pancreatitis (AP) and readmission cases between March and September 2016–2020.

of the patients admitted in 2020 had COVID-19, therefore it was not possible to speculate on the possible role of the infection on the onset of AP and admission rates. Nevertheless, it could be hypothesised that this corresponded with a decrease in alcohol consumption, as social isolation lessened and access to specialist services once again became more readily available.

Admissions for recurrent AP followed a different pattern, as overall figures were highest in 2019 and no difference in monthly admissions was observed throughout the 5-year study period. The analysis of our data could not explain such a result. There were a greater number of first presentations of AP in 2020 compared to 2019, while overall recurrent cases were higher in 2019. When examining March–May (lockdown period), the overall admissions and first presentations of AP in 2020 outweighed those of 2019.

This study was potentially limited by the short timeframe of data collection and a small cohort of patients. Moreover, assumptions have been made about alcohol consumption among a local population based on national statistics; this may have resulted in ecological fallacy. If this research were to be expanded nationally, this may allow data collection from a larger group of individuals and would avoid bias based on the behaviour of one local population.

CONCLUSION

An increased number of admissions for alcohol-related AP was observed at our centre during the months when COVID-19 lockdown restrictions were enforced, and the numbers decreased in correlation with the easing of restrictions. Follow-up studies looking at the epidemiology of postpandemic drinking habits and alcohol-related AP admission rates would allow better understanding of the effects of COVID-19 on alcohol-related AP. This could also potentially inform how community support could be improved for this group of patients.

ARTICLE HIGHLIGHTS

Research background

In order to combat the coronavirus disease 2019 (COVID-19) pandemic, one strategy was the introduction of social isolation also known as lockdown restrictions. In the United Kingdom, the first set of restrictions was put in place in March and partially lifted in June 2020.

Research motivation

There are currently no data on the impact of alcohol abuse on the trend of hospital admissions for alcohol-related acute pancreatitis (AP) during the COVID-19 pandemic.

Research objectives

To evaluate the trend in alcohol-related AP admissions during the first COVID-19 lockdown period.

Research methods

Review of case notes and discharge summaries of March–September 2016–2020.

Research results

During the lockdown period of March–June 2020, admissions were 38.5% higher than in 2019. A 38.89% reduction was observed following the easing of restrictions.

Research conclusions

An increased number of admissions for alcohol-related AP was observed during lockdown, with cases falling following the easing of restrictions. Follow-up studies are required to better understand the effects of COVID-19 on alcohol-related AP.

Research perspectives

Follow-up studies looking at the epidemiology of postpandemic drinking habits and alcohol-related AP admission rates would allow better understanding of the effects of COVID-19 on alcohol-related AP. This could also potentially inform how community support could be improved for this group of patients.

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FOOTNOTES

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Institutional review board statement: The study has been registered and approved by the Royal Devon and Exeter NHS Foundation Trust Governance Board-reference number 20-4628.

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Data sharing statement: The dataset analysed during the current study is not publicly available, in accordance with the Confidentiality Policy in force at the Royal Devon and Exeter NHS Foundation Trust; this is a legal requirement under the Data Protection Act 2018 (United Kingdom). Data are available from the corresponding author on reasonable request.

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