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Does the frequency of acute pancreatitis decrease in Ramadan?

Ramazan ayında akut pankreatit sıklığı azalıyor mu?

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Abstract

Purpose: Acute pancreatitis (AP) is one of the most common gastrointestinal diseases requiring acute hospitalization worldwide. During fasting, individuals are not supposed to eat and drink. In Islamic societies, even those with chronic alcohol consumption are known to have stopped this consumption within the month of Ramadan. Our study ultimately intends to reveal the variation of AP in two different time periods.

Material and methods: The patients over 18 years who were diagnosed with AP between January 2012 and December 2018 in the emergency department (ED) and subsequently hospitalized in the general surgery service of Pamukkale University were included in the study retrospectively. The patients were compared, based on their demographic characteristics, admittance times, white blood cell count, hemoglobin values, amylase, lipase, blood urea nitrogen (BUN), C reactive protein (CRP), alanina aminotransferase, aspartate aminotransferase, and triglyceride values.

Results: The total number of patients was 68, 66 (97.1%) of whom stayed in the general surgery service in non-Ramadan months, while 2 (2.9%) did so in the within-Ramadan group. Both patients in the within-Ramadan group were diagnosed with edamatous pancreatitis and were classified as mild. The CRP mean was 11.98 mg/dL (±13.24) in the non-Ramadan group and 0.95 mg/dL (±0.80) in-Ramadan group (normal reference value <0.5 mg/dL).

Conclusion: A clinically significant difference exists between 66 patients in the non-Ramadan group and 2 patients in the within-Ramadan group, even though the two groups could not be compared statistically. The scarcity of patients who admitted to the emergency department in Ramadan for 7 years is remarkable.

Key words: Pancreatitis, emergency medicine, abdominal pain.

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Özet

Amaç: Akut pankreatit dünya çapında akut hastaneye yatış gerektiren en sık görülen gastrointestinal hastalıklardan biridir. Ramazan ayında tutulan oruçta müslümanlar şafak doğumundan gün batımına kadarki süre içerisinde yemek yemekten ve içmekten kaçınılarak yerine getirilen bir ibadettir. Müslüman toplumlarda özellikle ramazan ayında kronik alkol tüketenlerin bile alkol tüketimine ara verdikleri bilinmektedir. Çalışmanın amacı akut pankreatit tanısı alan hastaların ramazan ve ramazan ayı dışındaki zamanda farkını ortaya koymaktı.

Gereç ve yöntem: Ocak 2012 ile Aralık 2018 tarihleri arasında acil serviste Akut pankreatit tanısı konulan ve daha sonra Pamukkale Üniversitesi genel cerrahi servisine yatırılan 18 yaş üstü hastalar retrospektif olarak çalışmaya dahil edildi. Hastalar demografik özellikleri, başvuru süreleri, beyaz kan hücresi sayısı, hemoglobin değerleri, amilaz, lipaz, kan üre azotu, C reaktif protein, alanina aminotransferaz, aspartat aminotransferaz ve trigliserit değerlerine göre karşılaştırıldı.

Bulgular: Acil serviste pankreatit tanısı alarak genel cerrahi servisine yatan hasta sayısı 68'ti. Hastaların 66'sı (%97,1) ramazan ayı dışında; 2'si (%2,9) ramazan ayı içerisinde başvurarak genel cerrahi servisine yatırıldı. Ramazan ayı içindeki her 2 hastaya da ödamatöz pankreatit tanısı konuldu ve hafif olarak sınıflandırıldı. CRP ortalaması Ramazan dışı grupta 11,98 mg/dL (±13,24) ve Ramazan grubunda 0,95 mg/dL (±0,80) idi (normal referans değeri <0,5 mg/dL).

Sonuç: İki grup istatistiksel olarak karşılaştırılamasa da, Ramazan ayı dışındaki gruptaki 66 hasta ile Ramazan ayı içerisindeki gruptaki 2 hasta arasında klinik olarak anlamlı bir fark vardır. Ramazan ayında 7 yıl acil servise başvuran hastaların azlığı dikkat çekicidir.

Anahtar kelimeler: Pankreatit, acil tıp, karın ağrısı.

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Introduction

Acute pancreatitis (AP) is an inflammatory disease that includes various clinical features ranging from mild cases with only temporary abdominal symptoms to severe fatal cases [1]. AP is one of the most common gastrointestinal diseases requiring acute hospitalization worldwide, with an incidence of 13-45 cases per 100,000 people per year [2]. Furthermore, alcohol and gallstones are known as two of the most common etiological causes of AP. The patient's alcohol intake, drug intake, known hyperlipidemia, and trauma as well as his AP background and whether he had any known gallstone disease should be questioned at the time of admittance [3]. In addition, AP diagnosis requires the appearance of two out of three criteria: the first is the presence of abdominal pain overlapping AP, the second is the occurence of serum amylase and / or lipase three times as high as normal, and the third is AP imaging findings [3]. Being the 9th month in the Hijri Calendar, Ramadan month lasts 29-30 days, and how many days it will last is calculated according to the lunar calendar, in which one year consists of 354 days. Therefore, Ramadan month is celebrated 10 to 11 days before the previous year according to the Gregorian Calendar. Fasting in Ramadan is a type of religious cult in which Muslims avoid eating and drinking during the period from dawn to sunset. Therefore, fasting period, which usually spans 11 to 19 hours, differs based on geographical location and the type of calendar. Under the teachings of Islam, the ultimate aim in fasting is to achieve self-discipline and ensure self-control. To this end, every Muslim who reaches puberty, maintains mental health, is free from a chronic disease, and is not on a long-distance travel should be fasting. Among those prohibited from fasting are mothers giving birth recently, breastfeeding women, women with menstrual bleeding, and the elderly who are too unhealthy to fast. During fasting, individuals are not supposed to eat, smoke, be on oral-intramuscular or intravenous drug regimen, and engage in sexual acts [4]. In Islamic societies, even those with chronic alcohol consumption are known to have stopped this consumption within the month of Ramadan.

Based on the aforementioned information, the frequency and course of the AP in the month of Ramadan is estimated to differ from other months due to lifestyle changes in Muslims during this period. In this respect, our study ultimately intends to reveal the variation of AP in two different time periods.

Materials and methods

The approval for this study was granted from the Non-Interventional Ethics Committee of Pamukkale University with the decision number 60116787-020 / 34885 dated April 17, 2018 and numbered 2018/08. The patients over 18 years who were diagnosed with AP between January 2012 and December 2018 in the emergency department (ED) and subsequently hospitalized in the general surgery service of PAU were included in the study retrospectively. Thus, the end goal of the current study was to disclose the difference of patients diagnosed with AP during and except the month of Ramadan.

Data collection

The patients diagnosed with AP in the ED and then hospitalized in the general surgery service between 2012 and 2018 and included in the study retrospectively through the ICD (International Classification of Diseases) code were compared, based on their demographic characteristics, admittance times, white blood cell count, hemoglobin values, amylase, lipase, blood urea nitrogen, C reactive protein (CRP), alanina aminotransferase, aspartate aminotransferase, and triglyceride values. Within the scope of the study, the investigated areas were as follows: diagnosis classification, the variety and severity of pancreatitis according to the revised Atlanta classification, the number of hospitalization days, local and systemic complications, intensive care unit stay, test results, antibiotherapy, imaging instruments, Bedside Index of Severity In Acute Pancreatitis (BISAP) scoring, administration of ERCP (Endoscopic Retrograde Cholangio-Pancreatography), presence of malignancy, and Class-I drugs.

Statistical analysis

The statistical analysis of the data from this study was run on IBM SPSS Statistics 22 Documentation program. Even though the descriptive statistics (mean, standard deviation, minimum, maximum, percentage values) were calculated, the two groups could not be compared statistically, since only 2 patients were hospitalized during the month of Ramadan.

Results

534 patients were admitted to and hospitalized in the ED of Pamukkale University with the diagnosis of AP between 2012 and 2018, and 26 of them were hospitalized in the gastroenterology and general surgery services in the Ramadan month. The total number of patients diagnosed with pancreatitis in ED and admitted to the general surgery service was 68, 37 of whom were male (54.4%) and 31 female (45.6%). Moreover, 66 (97.1%) patients stayed in the general surgery service in non-Ramadan months, while 2 (2.9%) did so in the within-Ramadan group. Out of 468 patients hospitalized in the gastroenterology service after being diagnosed with AP, 24 (5.1%) were admitted to this service during the Ramadan month. As for the breakdown by year, the number of patients admitted during the Ramadan and non-Ramadan months is as follows: 2012: 1/10; 2013: 0/8; 2014: 0/10; 2015: 0/6; 2016: 1/11; 2017: 0/9; 2018: 0/12. On the other hand, the number of patients admitted to the gastroenterology service and hospitalized during the non- Ramadan months is as follows: 2012: 0/36; 2013: 2/42; 2014: 2/47; 2015: 3/52; 2016: 6/81; 2017: 4/83; 2018: 7/103.

As far as the causes of AP are concerned, among the patients hospitalized in non-Ramadan months, 58 (87.9%) suffered from biliary pancreatitis, 1 (1.5%) from alcoholic pancreatitis, 1 (1.5%) from trauma, 4 (6.1%) from malignancy, and 2 (2.9%) were undiagnosed. On the other hand, biliary pancreatitis was observed in both patients in the within-Ramadan group. Under the revised Atlanta criteria, 58 (84.9%) patients were morphologically diagnosed with edematous pancreatitis, whereas 8 (12.1%) patients with necrotizing pancreatitis, but both patients in the within-Ramadan group were also diagnosed with edamatous pancreatitis.

In terms of classification of the patients by AP severity, of all the patients in the non-Ramadan group, 50 (75.8%) were classified as mild, 8 (12.1%) as moderate and 8 (12.1%) as severe, while both patients in the other group were classified as mild. With respect to local complications, 33 (50%) patients in the non-Ramadan group did not develop such complications, whereas 17 (25.8%) had fluid collection, 8 (12.1%) patients developed necrosis, and 8 (12.1%) developed pseudocyst. By contrast, one of the patients hospitalized during Ramadan was observed to have fluid collection, though no complication occurred in the other patient.

No systemic complications were reported in 58 (87.9%) patients in non-Ramadan month group, while 8 (12.1%) developed complications, but systemic complications were observed solely in 1 patient admitted in the month of Ramadan.

Unlike 66 (97.1%) hospitalized patients who were followed up in the general surgery service, 2 (2.9%) patients presenting to the ED in a non-Ramadan month required intensive care.

While 38 (57.6%) hospitalized patients presenting in non-Ramadan months were followed up in the general surgery service, 22 (33.8%) required surgical intervention, and 6 (8.8%) were given referral for a range of reasons. In contrast, one of the patients in the within-Ramadan group was followed up in the service, while the other was reported to undergo a surgical operation.

In the non-Ramadan month group, 18 (27.3%) hospitalized patients were administered with cephalosporin, 1 (1.5%) with fluoroquinolone, and 47 with (72.1%) carbapenem as antibiotic treatment during their stay. On the other hand, antibiotics from the carbapenem group were administered to both patients in the other group.

While diagnosing AP, ultrasonography imaging was not performed for 27 patients (40.9%) in the non-Ramadan month group, and abdominal ultrasonography (USG) was not performed for the patients in the other group. 53 patients (80.3%) in the non-Ramadan month group as well as both patients in the other group underwent abdominal tomography (CT), whereas 26 (39.4%) patients in the

former group and 1 (50%) in the latter group were screened through abdominal magnetic resonance imaging (MRI). In addition, 6 (9.1%) hospitalized patients in the non-Ramadan group and 1 patient (50%) in the other group were subjected to other imaging techniques. Although 11 (16.2%) patients admitted during non-Ramadan months underwent endoscopic retrograde cholangiopancreatography (ERCP), no patient in the other group was screened through ERCP. Besides, 6 (9.1%) patients in the non-Ramadan group were followed up with the diagnosis of malignancy, yet no such diagnosis was given for the patients in the other group. Given the patients' history, 3 (4.5%) from the non-Ramadan group were reported to take Class-I medication, though no patient in the other group was on such medication.

The mean age of the patients in the non-Ramadan group was calculated as 57.06 (±18.95) (min. 20; max. 92), whereas that of the two within-Ramadan patients was 64 (±2.82) (min. 62; max. 66).

In terms of lab values, the mean white blood count was 12960 K/uL (±5608) and 12035 K/uL (±388.90) in the non-Ramadan and within-Ramadan group, respectively. While the hemoglobin average in the former group was 13.51 g/dL (±4.14), that of the latter group measured 13.60 g/dL (±0.14). Further, the average hematocrit was calculated as 39.69% (±5.15%) and 40.70% (±0) in the non-Ramadan and within-Ramadan group, respectively.

For the non-Ramadan and within-Ramadan group, the mean amylase value was 738.52 U/L (±712.64) and 566.50 U/L (±0.71), and that of lipase was 771.80 U/L (±817.33) and 991.5 U/L (±487.2), each respectively. On the other hand, the alanina aminotransferase mean was 128.56 U/L (±131.40) and 64 U/L (±48.08), and that of the aspartate aminotransferase was 111.50 U/L (±159.57) and 125 U/L (±107.48), each respectively.

The CRP mean was 11.98 mg/dL (±13.24) and 0.95 mg/dL (±0.80) (normal reference value <0.5 mg/dl), and that of blood urea nitrogen was 20.51 mg/dL (±17.08) and 15 mg/dL (±1.41) in the non-Ramadan and within-Ramadan group, each respectively. While triglyceride mean was measured as 158.75 mg/dL (±121.70) in the non-Ramadan group, it turned out that this lipid was not checked in both patients in the within-Ramadan group.

Further to this, the patients in the non-Ramadan group stayed at hospital for 12.39 (±8.19) days on average (min. 1 day; max. 50 days), whereas those in the within-Ramadan group did so for 8 (±141) days on average (min. 7 days; max. 9 days).

Finally, the mean Bedside Index of Severity in Acute Pancreatitis (BISAP) score of the non-Ramadan group and the within-Ramadan group was established as 1.45 (±1.33) and 2 (±0), respectively (Table 1).

Certain characteristics of the participating patients are presented in Table 2.

Table 1. BISAP Score of the patients

BISAP Score	0	1	2	3	4	5
Patient n; %	21 (30.9%)	16 (23.5%)	15 (22.1%)	10 (14.7%)	6 (%8.8%)	0

Table 2. Certain characteristics of the participating patients

Patient	Age	Sex	Admission time	WBC (K/uL)	Amylase (U/L)	lipase (U/L)	Crp (mg/dl)	Alanin aminotransferase (U/L)	Aspartate aminotransferase (U/L)	Diagnosis
1	66	Male	within-Ramadan	11760	567	567	1,52	30	49	biliary pancreatitis
2	62	Female	within-Ramadan	12310	566	1256	0,385	98	201	biliary pancreatitis
3	72	Female	non-Ramadan	19880	735	-	8,7	20	25	biliary pancreatitis
4	41	Male	non-Ramadan	17540	751		0,6	18	11	biliary pancreatitis
5	30	Male	non-Ramadan	16360	1140		10,5	153	49	biliary pancreatitis
6	74	Male	non-Ramadan	14360	823		39	76	99	biliary pancreatitis
7	71	Male	non-Ramadan	13200	406		1,84	80	64	biliary pancreatitis
8	28	Male	non-Ramadan	14080	100		10,3	30	23	biliary pancreatitis
9	77	Male	non-Ramadan	9100	412		10,3	172	58	biliary pancreatitis
10	86	Male	non-Ramadan	13950	1370		2,82	153	112	biliary pancreatitis
11	31	Male	non-Ramadan	12630	970	649	12,4	14	4	trauma
12	54	Male	non-Ramadan	16120	2891		31,4	23	26	biliary pancreatitis
13	48	Female	non-Ramadan	12910	739	506	1,53	84	72	biliary pancreatitis
14	55	Male	non-Ramadan	24780	1359		4,67	151	142	biliary pancreatitis
15	29	Male	non-Ramadan	11960	431		13,89	452	115	biliary pancreatitis
16	56	Female	non-Ramadan	15670	858		4,75	358	481	biliary pancreatitis
17	76	Female	non-Ramadan	15810	1554		0,46	35	91	biliary pancreatitis
18	46	Male	non-Ramadan	6810	105		11,19	15	31	alcoholic pancreatitis
19	86	Male	non-Ramadan	6590	64	74	10,61	195	166	undiagnosed
20	53	Male	non-Ramadan	12950	217		0,88	108	49	malignency
21	82	Male	non-Ramadan	19020	175		19,32	162	198	biliary pancreatitis
22	92	Male	non-Ramadan	18150	222		15,2	55	82	biliary pancreatitis
23	89	Male	non-Ramadan	9830	730	3325	0,66	69	43	biliary pancreatitis
24	61	Female	non-Ramadan	4600	55		1,11	113	155	biliary pancreatitis
25	39	Male	non-Ramadan	11780	215		39,01	2	2	biliary pancreatitis
26	83	Male	non-Ramadan	13750	784		11,275	66	70	biliary pancreatitis
27	45	Female	non-Ramadan	10280	47		31,51	64	14	biliary pancreatitis
28	35	Female	non-Ramadan	7820	615		0,56	405	173	biliary pancreatitis

29	65	Male	non-Ramadan	8700	120		0,43	56	34	biliary pancreatitis
30	27	Male	non-Ramadan	9840	1076		0,24	319	242	biliary pancreatitis
31	79	Male	non-Ramadan	12900	765		11,73	153	108	biliary pancreatitis
32	80	Male	non-Ramadan	14800	1576	1450	8,99	16	16	biliary pancreatitis
33	86	Female	non-Ramadan	19780	1265	730	35,49	48	45	biliary pancreatitis
34	34	Male	non-Ramadan	6180	19		22,35	20	20	biliary pancreatitis
35	67	Male	non-Ramadan	11320	1545	1407	4,12	290	195	malignency
36	20	Male	non-Ramadan	8780	170	177	22,1	54	60	biliary pancreatitis
37	72	Male	non-Ramadan	13860	42	21	19,34	25	45	biliary pancreatitis
38	55	Male	non-Ramadan	6540	561	562	1,98	39	34	biliary pancreatitis
39	50	Male	non-Ramadan	41760	1044		38	154	59	biliary pancreatitis
40	85	Female	non-Ramadan	13320	297	904	6,65	77	130	biliary pancreatitis
41	51	Male	non-Ramadan	19800	31	20	20,49	31	55	biliary pancreatitis
42	70	Female	non-Ramadan	16130	1419	3326	30,5	44	106	biliary pancreatitis
43	62	Male	non-Ramadan	8040	63	28	63	25	34	biliary pancreatitis
44	82	Female	non-Ramadan	19690	603		26,4	67	66	biliary pancreatitis
45	30	Female	non-Ramadan	13920	15	152	20,5	1	4	biliary pancreatitis
46	61	Female	non-Ramadan	14310	1442	1071	10,9	78	85	biliary pancreatitis
47	63	Male	non-Ramadan	10250	57	88	5,03	262	181	malignency
48	66	Female	non-Ramadan	16480	849	694	5,52	71	59	biliary pancreatitis
49	50	Female	non-Ramadan	9060	18	17,9	11,39	313	236	undiagnosed
50	30	Female	non-Ramadan	12440	259		4,95	292	81	biliary pancreatitis
51	84	Female	non-Ramadan	20400	2643	1417	2,98	419	1138	biliary pancreatitis
52	32	Female	non-Ramadan	13870	25	33,9	23,1	21	13	biliary pancreatitis
53	66	Female	non-Ramadan	7720	2767	1449	0,91	97	110	biliary pancreatitis
54	46	Male	non-Ramadan	12670	305	324	0,45	102	79	biliary pancreatitis
55	33	Female	non-Ramadan	8340	116	275	0,36	8	10	biliary pancreatitis
56	39	Female	non-Ramadan	10980	1410		1,46	394	304	biliary pancreatitis
57	52	Female	non-Ramadan	6870	1483	1522	0,08	13	13	biliary pancreatitis
58	46	Male	non-Ramadan	10610	1982	1184	0,405	301	211	biliary pancreatitis
59	33	Female	non-Ramadan	11360	690	1235	13,96	130	71	biliary pancreatitis

60	54	Female	non-Ramadan	8490	71	26	4,53	18	18	biliary pancreatitis
61	59	Female	non-Ramadan	11520	823	1145	8,69	17	20	biliary pancreatitis
62	70	Female	non-Ramadan	18930	472	265	21,2	18	27	biliary pancreatitis
63	43	Male	non-Ramadan	7670	193	109	40,44	437	206	biliary pancreatitis
64	70	Female	non-Ramadan	14910	411	348	4,8	19	29	biliary pancreatitis
65	56	Female	non-Ramadan	8090	1672	1100	1,58	403	325	biliary pancreatitis
66	51	Female	non-Ramadan	10180	444	440	0,11	26	28	biliary pancreatitis
67	52	Male	non-Ramadan	5750	111	276	0,425	298	141	malignency
68	56	Female	non-Ramadan	9190	2120	1434	0,455	256	366	biliary pancreatitis

Table 2. Certain characteristics of the participating patients

Patient	Revised atlanta criteria	Severity classifikasyon	Hospital stay days	Local complication	Systemik complications	İntensive care unit	Reslt	USG	CT	MRİ	BISAP score	ERCP	Malignancy
1	edematous pancreatitis	mild	7	fluid collection	yes	no	followed up	no	yes	yes	2	no	no
2	edematous pancreatitis	mild	9	not	no	no	surgical intervention	no	yes	no	2	no	no
3	necrotizing pancreatitis	moderate	7	necrosis	no	no	followed up	no	yes	yes	3	no	no
4	edematous pancreatitis	mild	2	not	no	no	followed up	yes	no	no	1	no	no
5	necrotizing pancreatitis	mild	7	necrosis	no	no	followed up	yes	no	yes	2	no	no
6	edematous pancreatitis	moderate	10	pseudocyst	no	no	followed up	no	yes	yes	3	no	no
7	edematous pancreatitis	moderate	13	fluid collection	no	no	surgical interventio	no	yes	yes	2	no	no
8	edematous pancreatitis	mild	4	fluid collection	no	no	followed up	yes	yes	no	0	no	no
9	edematous pancreatitis	severe	1	not	yes	yes	refer patient	yes	yes	no	4	yes	no
10	necrotizing pancreatitis	severe	16	necrosis	no	no	surgical interventio	yes	yes	no	2	yes	no
11	edematous pancreatitis	mild	7	pseudocyst	no	no	followed up	yes	yes	no	0	no	no

12	edematous pancreatitis	mild	22	fluid collection	no	no	surgical interventio	yes	yes	no	0	no	no
13	edematous pancreatitis	mild	10	fluid collection	no	no	surgical interventio	no	yes	yes	0	no	yes
14	edematous pancreatitis	mild	5	fluid collection	no	no	followed up	yes	no	yes	1	no	no
15	edematous pancreatitis	mild	20	fluid collection	no	no	followed up	yes	yes	yes	0	no	no
16	edematous pancreatitis	mild	10	fluid collection	no	no	followed up	no	yes	yes	0	no	no
17	edematous pancreatitis	mild	18	fluid collection	no	no	surgical interventio	yes	no	yes	2	no	no
18	edematous pancreatitis	mild	18	not	no	no	followed up	no	yes	no	0	no	no
19	edematous pancreatitis	mild	22	not	yes	no	patient	yes	yes	no	4	yes	no
20	edematous pancreatitis	mild	9	fluid collection	no	no	followed up	yes	yes	no	1	no	yes
21	edematous pancreatitis	mild	15	not	no	no	surgical interventio	yes	no	yes	4	yes	no
22	edematous pancreatitis	mild	13	not	no	no	followed up	no	yes	yes	3	no	no
23	edematous pancreatitis	mild	5	not	no	no	followed up	no	yes	no	1	no	no
24	edematous pancreatitis	mild	7	pseudocyst	no	no	patient	yes	no	yes	1	yes	no
25	edematous pancreatitis	moderate	15	pseudocyst	yes	no	followed up	no	yes	no	2	no	no
26	edematous pancreatitis	mild	11	fluid collection	no	no	surgical interventio	yes	no	yes	2	no	no
27	edematous pancreatitis	mild	5	fluid collection	no	no	followed up	yes	yes	no	0	no	no
28	edematous pancreatitis	mild	5	not	no	no	followed up	yes	yes	no	0	no	no
29	edematous pancreatitis	severe	29	not	no	no	surgical interventio	yes	no	no	2	no	no
30	edematous pancreatitis	mild	2	not	no	no	patient	yes	no	no	0	yes	no
31	edematous pancreatitis	severe	15	not	yes	no	followed up	yes	yes	yes	3	no	no

32	edematous pancreatitis	mild	13	fluid collection	no	no	followed up	no	yes	yes	3	no	no
33	edematous pancreatitis	severe	11	fluid collection	yes	no	followed up	yes	yes	yes	4	no	no
34	necrotizing pancreatitis	moderate	15	pseudocyst	no	no	followed up	no	yes	yes	0	no	no
35	edematous pancreatitis	severe	50	fluid collection	yes	no	surgical interventio	no	yes	yes	2	yes	yes
36	edematous pancreatitis	mild	20	fluid collection	no	no	followed up	no	yes	yes	1	no	no
37	edematous pancreatitis	moderate	6	not	no	no	followed up	no	yes	no	3	no	no
38	edematous pancreatitis	mild	11	necrosis	no	no	followed up	yes	yes	no	1	no	no
39	edematous pancreatitis	severe	23	necrosis	yes	no	followed up	no	yes	yes	3	no	no
40	edematous pancreatitis	mild	9	not	no	no	followed up	no	yes	no	4	no	no
41	edematous pancreatitis	mild	32	pseudocyst	no	no	surgical interventio	no	no	no	4	no	no
42	edematous pancreatitis	mild	14	not	no	no	followed up	no	yes	no	1	no	no
43	edematous pancreatitis	moderate	1	not	no	no	patient	no	yes	no	1	no	no
44	edematous pancreatitis	severe	14	not	yes	yes	surgical interventio	no	yes	no	3	no	no
45	edematous pancreatitis	mild	5	not	no	no	followed up	yes	no	yes	1	no	no
46	edematous pancreatitis	mild	14	not	no	no	followed up	no	yes	no	3	no	no
47	edematous pancreatitis	mild	26	not	no	no	surgical interventio	yes	no	no	3	yes	yes
48	necrotizing pancreatitis	mild	19	necrosis	no	no	followed up	no	yes	yes	2	no	no
49	edematous pancreatitis	mild	10	not	no	no	followed up	no	yes	no	1	no	no
50	edematous pancreatitis	mild	8	not	no	no	surgical interventio	yes	yes	no	1	no	no
51	edematous pancreatitis	mild	7	not	no	no	followed up	yes	no	yes	2	yes	no

52	edematous pancreatitis	mild	7	not	no	no	patient	no	yes	no	1	no	yes
53	edematous pancreatitis	mild	11	not	no	no	surgical interventio	no	yes	no	1	no	no
54	edematous pancreatitis	mild	9	not	no	no	surgical interventio	no	yes	yes	1	no	no
55	edematous pancreatitis	mild	5	not	no	no	surgical interventio	no	yes	no	0	no	no
56	edematous pancreatitis	mild	11	not	no	no	surgical interventio	no	yes	no	0	no	no
57	edematous pancreatitis	mild	23	fluid collection	no	no	surgical interventio	no	yes	no	0	no	no
58	necrotizing pancreatitis	mild	12	necrosis	no	no	followed up	no	yes	no	1	no	no
59	edematous pancreatitis	mild	8	fluid collection	no	no	surgical interventio	no	yes	yes	0	no	no
60	edematous pancreatitis	mild	8	not	no	no	followed up	yes	yes	no	0	no	no
61	necrotizing pancreatitis	mild	10	necrosis	no	no	followed up	no	yes	no	0	no	no
62	necrotizing pancreatitis	mild	10	pseudocyst	no	no	followed up	no	yes	no	2	no	no
63	edematous pancreatitis	mild	20	not	no	no	followed up	no	yes	no	2	no	no
64	edematous pancreatitis	mild	6	pseudocyst	no	no	followed up	no	yes	no	2	no	no
65	edematous pancreatitis	mild	7	not	no	no	followed up	no	yes	no	0	yes	no
66	edematous pancreatitis	mild	8	not	no	no	surgical interventio	no	yes	no	0	no	no
67	edematous pancreatitis	moderate	19	not	no	no	surgical interventio	no	yes	yes	0	yes	yes
68	edematous pancreatitis	mild	13	not	no	no	surgical interventio	no	yes	no	0	no	no

Discussion

According to the American College of Gastroenterology Guideline, the major culprits of AP are cited as gallstones (40-70%) and alcohol (25-35%), and AP associated with malignancy occurs at a rate of 1-4% [5]. Our analysis clearly reveals that 88.2% of the patients suffered from biliary pancreatitis, 1.5% from alcoholic pancreatitis, and 5.9% from malignancy, and that the rate of biliary pancreatitis turned out to be substantially higher, while that of alcoholic pancreatitis remained highly low. The relatively low consumption of alcohol, notably in XXXX, whose population is predominantly Muslim, reduces the rate of alcoholic pancreatitis. Even those with chronic alcohol consumption halt their alcohol intake, especially during Ramadan, due to their respect for religious and social values, which, we believe, may account for no alcohol-induced pancreatitis occurence in this month.

Under the revised Atlanta classification, AP is morphologically divided into two sub-categories, such as acute interstitial edematous pancreatitis and acute necrotizing pancreatitis [6]. The general incidence of necrotizing pancreatitis ranges between around 5 to 10%, which seems similar to the rate of 11.8% reported in our study. However, note that necrotizing pancreatitis did not develop in the patients hospitalized during the month of Ramadan.

Approximately 15% to 25% of the cases with AP progress to a severe form. A large-scale epidemiological study revealed that the rate of mortality which was 12% in 1988 degraded to 2% in 2003 [7]. While the rate of the patients diagnosed with severe pancretitis was measured as 11.2% in our study, we had no record of death of the patients admitted with the pancreatitis diagnosis. In addition, both patients admitted during Ramadan were hospitalized as having a mild score.

Previous research has reported that about 5-10% of the patients suffer from pancreatic necrosis, and similarly, necrotizing pancreatitis was detected in 11.8% of the patients in our study [6].

Under the American College of Gastroenterology Guideline, patients with organ failure are recommended to be followed up in the intensive care unit, if possible [5]. In our study, one of the two patients hospitalized in the intensive care unit developed systemic complications, was at the “severe” level according to AP severity categorization, but nevertheless was referred to another hospital. The other patient, on the other hand, also developed systemic complications, was at the “severe” level in compliance with AP severity classification, and underwent a surgical intervention. Neither of the patients in the within-Ramadan group showed symptoms necessitating intensive care admittance, and thus they were followed up at the general surgery service. In accordance with this guideline, which suggests that ERCP should be performed for patients with AP and concomitant acute cholangitis within 24 hours after admittance, 16.2% of patients were exposed to ERCP in our study.

Surgical debridement may be required in patients with pancreatitis with infected necrosis. Results may prove better if surgery is delayed until necrosis heals, usually about 4 weeks after the onset of the disease [5]. When it comes to our study, surgerical operation was essential for 22 (33.8%) patients, only one of whom was hospitalized in Ramadan. A clinically significant difference exists between 21 patients in the non-Ramadan group and 1 patient in the within-Ramadan group, even if their surgical requirements could not be compared statistically.

With five parameters that can be done in the ED, scoring is a new and valuable tool in predicting not only the severity of AP but also the prognosis of the given patient [8]. In BISAP scoring, such criteria as BUN> 25 mg / dL, impaired mental functioning, SIRS- positive, age> 60 and pleural effusion are assessed within the first 24 hours, and 1 point is assigned for each criterion. Talukdar and Vege. [9] reported that, given the BISAP scoring of 17922 patients with AP, if the score was 0, <1% of mortality occured, and if the score was 5, then 22% of mortality was observed [8]. On the other hand, the mean BISAP score of the patients included in our study was calculated as 1.47 (±1.30), and the BISAP scores of the patients in the non-Ramadan and within-Ramadan groups were identified as 1.45 (±1.32) and 2 (±0), respectively. As seen Table 1, BISAP score of 5 was assigned to none of the patients, nor was any case resulting in death observed in the current study. A close look at all 6 patients with a BISAP score of 4 reveals that

their ages range between 51 and 86, that they were diagnosed with edematous pancreatitis, and that 2 of them were classified as “severe” according to the revised Atlanta scoring. All these 6 patients were hospitalized for 1-9-11-15-22-32 days, respectively, and 1 patient developed pseudocyst, while 1 patient was admitted to the intensive care unit. In addition, it should not go unnoticed that 2 patients were followed up, while 2 underwent a surgery and 2 were referred to other healthcare institutions.

Overall, 5 to 14% of patients with benign or malignant pancreatobiliary tumors are estimated to suffer from marked pancreatitis [5]. When our study is assessed on this aspect, the symptoms of 8.8% of our patients were observed to be characterized by malignancy, which seems to be a value compatible with the overall average.

Previous research has indicated that MR imaging is not superior to CT in specifying the severity of acute pancretitis, but MR boasts similar effectiveness to CT in identifying the prevalence of pancreatic necrosis and fluid collections [10]. In terms of the standart modus operandi of the ED and the diagnosis of abdominal pain, USG apprears to have been a more frequent reason for preference in our study with a rate of 60.3%, followed by MRI with 39.7% and abdominal tomography with 19.1%. It is also worth noting that endoscopic ultrasound may be feasible for identifying undetected malignancies of tiny stones [2].

As far as the practical guide of Slawinski is concerned, prophylactic antibiotics do not bring about a significant decrease in infected necrosis or mortality of necrotic pancreatitis, and thus antibiotic prophylaxis is not recommended in AP [2]. Nonetheless, antibiotherapy was administered to all of the patients in our study.

There are some limitations in this study. Our primary limitation is that the patients hospitalized in gastroenterology service are not included in this study since our research design encompasses the patients admitted to general surgery service. As the number of cases with the disease at issue seems to be substantially low during Ramadan, comparative statistical analyses could not be carried out. Since the month of Ramadan is celebrated 10 to 11 days before the previous year according to the Gregorian Calendar, future studies to be conducted on this issue should be planned in different time periods and can be repeated every 36 years, if possible. Finally, note that fasting times in different regions are different, and hence potential limitations can be eliminated through the coordination of multicentric and long-term studies.

Conclusion

A clinically significant difference exists between 66 patients in the non-Ramadan group and 2 patients in the within-Ramadan group, even though the two groups could not be compared statistically. The scarcity of patients who admitted to the emergency department in Ramadan for 7 years is remarkable. It is believed that the frequency of acute pancreatitis decreases due to decreased alcohol consumption and decreased over feeding in Ramadan.

Conflict of interest: We have declared that we have no conflict of interest.

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Ethics committee approval

Pamukkale University Non-Interventional Clinical Research approved by the Ethics Committee (date: 17/04/2018, number: 60116787-020/34885).

Contributions of the authors to the article

M.S. and M.R.A. designed the main idea and hypothesis of the study M.S. and A.Y. developed the theory and organized the material and method section. M.S., M.R.A. and M.O. performed the evaluation of the data in the results section. The discussion section of the article was written by M.S., A.Y., M.R.A., M.O. and M.S. reviewed the article, made the necessary corrections and approved. In addition, all authors discussed the entire study and confirmed its final version.