Is ethnicity a factor in the severity of acute appendicitis? – A retrospective comparison between Jews and Arabs in northern Israel

Eyal Meir, Nitzan Goldberg, Dror Karni, Ossama Abu-Hatoun, Doron Kopelman, Uri Kaplan

Emek Medical Center ,Afula , Israel , TECHNION – Israel Institute of Technology

Affiliated to the
Rappaport Faculty of Medicine
Technion-Haifa, Israel

INTRODUCTION

Acute appendicitis is one of the most common surgical emergencies. It is divided into complicated and simple disease. The two major ethnicities in Israel are Jews and Arabs. The purpose of this study is to determine the effect of social factors and ethnicity on the severity of acute appendicitis in northern Israel.

METHODS

This was a Retrospective study comparing all patients above the age of 18 who were admitted to our institution with the diagnosis of acute appendicitis between January 1st, 2010 and December 31th, 2020. Patient's demographics, social, pre-operative and peri-operative factors were collected and analyzed. Univariable and multivariable analysis was used to study the association between ethnicity and disease complexity while adjusting for significant background characteristics.

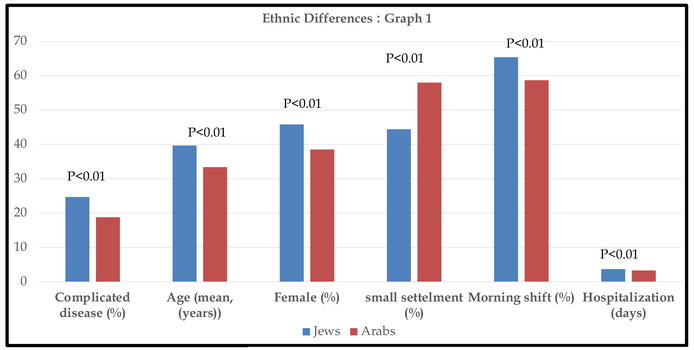


Table 1: Patients' and hospital characteristics

	Simple dis. N=2296 (78%)	Complicated dis. N= 647 (22%)	P value
Female (%)	970 (42.2)	279 (43.1)	0.691
Age (mean, SD)	34.08 ± 14.42	46.63 ± 19.17	<0.001
Arabs (%)	1096 (47.7)	254 (39.3)	<0.001
DM(%)	34 (1.5)	38 (5.9)	<0.001
HTN(%)	232 (10.1)	159 (24.6)	<0.001
Hyperlipidemia(%)	226 (9.8)	145 (22.4)	<0.001
IHD(%)	119 (5.2)	106 (16.4)	<0.001
OSA(%)	14 (0.6)	10 (1.5)	0.019
Town size (Citizens)			0.809
<5,000	533 (23.5)	158 (25.0)	
5K - 10K	619 (27.3)	163 (25.8)	
10 K - 100K	1063 (46.8)	296 (46.9)	
>100K	55 (2.4)	14 (2.2)	
Morning shift	1408 (61.3)	427 (66)	0.03
Night shift	888 (38.7)	220 (34)	
Length of stay (ER to surgery)	11.12 ± 10.58	19.41 ±33.03	<0.001
Hospitalization days	2.22 ± 0.95	8.01 ± 6.79	<0.001
Repeat hosp. in 6M(%)	101 (4.4)	122 (18.9)	<0.001

Dis.: Disease; SD: Standard deviation; DM: Diabetes mellitus; HTN: Hypertension; IHD: Ischemic heart disease; OSA: Obstructive sleep apnea; K:1000; ER: Emergency room; Hosp.: Hospitalization; M: Month.

Table 2 : Parameters by ethnicity

	Jews			Arabs		
	Simple	Complicated	P value	Simple	Complicated	P value
Age	36.42 ±15.7	49.93 ± 19.45	<0.01	31.52 ±12.28	41.54 ±17.6	<0.01
Morning shift (%)	772 (64.3)	270 (68.7)	0.114	636 (58)	157 (61.8)	0.27
Small size Town(%)	506 (43.1)	185 (49.1)	0.041	646 (59.0)	136 (53.5)	0.113
Time to Surgery	10.96 ± 5.64	20.61 ±38.37	<0.01	11.29 ±14.10	17.44 ±21.68	<0.01

Table 3 : Logistic regression analysis

	OR	CI lower	CI upper	P value
Ethnicity	0.939	0.774	1.139	0.523
Size of settlement	1.041	0.863	1.256	0.672
Shift	0.893	0.735	1.085	0.255

OR: Odds ratio; CI: Confidence interval

RESULTS

Results are presented in Tables 1-3 and Graph 1 There was no difference in settlement size and most patients arrived during morning shift (62.3%). In comparison to Arabs, Jews were significantly older, had more complicated disease, came from larger settlements and most patients arrived in the morning shift. Nevertheless, multivariate regression analysis did not find significant association between ethnicity and disease severity.

CONCLUSIONS

Jews had a more complicated disease most probably due to their older age. This difference could imply for possible genetic or cultural differences. Morning arrival to the emergency department (ER) signifies delay in arrival which contributes to disease severity. The lower availability of primary care physicians in smaller settlements shorten the interval between disease onset and ER arrival. Further research is needed.