

Table 1 Features of patients undergoing cholecystectomy (n=360)

Underlying comorbid conditions	n	%
Hypertension	80	22.2
Diabetes mellitus	55	15.2
Ischemic heart disease	17	4.7
Chronic obstructive pulmonary disease	13	3.6
Hypothyroidism	11	3.1
Malignancy	9	2.5
Heart rhythm disorder	9	2.5
Congestive heart failure	6	1.6
Chronic hepatitis B	5	1.3
Autoimmune disease	5	1.3
Chronic renal failure	3	0.8
Hyperlipidemia	3	0.8
Peripheral vascular disease	2	0.5
Symptoms and signs of the patients		
Abdominal pain	329	91.3
Nausea-vomiting	195	54.1
Pain in the right shoulder	94	26.1
Murphy sign	36	10.0
Fever	33	9.1
Back pain	31	8.6
Dyspeptic complaints	17	4.7

Tablo 2 The factors affecting culture positivity in the patients undergoing cholecystectomy

		Culture Negative		Culture Positive		TOTAL	P
		n	%	n	%	n	
>60 Age	No	216	80.0	54	20.0	270	0.010
	Yes	60	66.7	30	33.3	90	
Gender	Male	73	64.6	40	35.4	113	0.001
	Female	203	82.2	44	17.8	247	
BMI	<19	2	100.0	0	0.0	2	0.039
	19-24	62	66.7	31	33.3	93	
	25-30	149	78.4	41	21.6	190	
	>30	63	84.0	12	16.0	75	
Comorbidity	No	152	77.9	43	22.1	195	0.532
	Yes	124	75.2	41	24.8	165	
Symptom	No	13	86.7	2	13.3	15	0.350
	Yes	263	76.2	82	23.8	345	
History of hospitalization within the last year	No	236	78.1	66	21.9	302	0.130
	Yes	40	69.0	18	31.0	58	
History of biliary disease	No	215	81.4	49	18.6	264	0.002
	Yes	61	63.5	35	36.5	96	
Underwent biliary surgery before cholecystectomy	No	273	77.8	78	22.2	351	0.002
	Yes	3	33.3	6	66.7	9	
Biliary instrumentation	No	275	77.2	81	22.8	356	0.014
	Yes	1	25.0	3	75.0	4	
History of antibiotic use in the last 3 months	No	212	75.4	69	24.6	281	0.301
	Yes	64	81.0	15	19.0	79	
ASA score	1	75	77.3	22	22.7	97	0.488
	2	160	78.0	45	22.0	205	
	3	39	72.2	15	27.8	54	
	4	2	50.0	2	50.0	4	
Operation simultaneously with cholecystectomy	No	258	77.7	74	22.3	332	0.001
	Yes	18	64.3	10	35.7	28	
Presence of complication	No	270	78.3	75	21.7	345	0.001
	Yes	6	40.0	9	60.0	15	
The patients with risk factors*	No	135	81,3	31	18,7	166	0.050
	Yes	141	72,7	53	27,3	194	

*Risk factors: DM, malignity, immunosuppression, biliary disease, biliary surgery, biliary instrumentation antibiotic use in the last three month, hospitalization the last year.

Tablo 3 Laboratory parameters affecting culture positivity

	Culture Negative				Culture positive				<i>p</i>
	n	Mean	SD	Median	n	Mean	SD	Median	
WBC	276	8726.9	3744.6	7820.0	84	10325.8	4853.4	8880.0	0.017
PNL (%)	271	61.7	11.3	59.8	83	70.7	12.6	69.8	0.001
Hemoglobin	276	13.1	1.7	13.2	84	13.2	1.6	13.2	0.685
PLT	276	271.2	68.5	263.0	84	254.2	88.9	250.5	0.066
CRP	156	3.7	6.7	0.8	67	6.3	8.8	1.3	0.019
Creatinine	271	0.8	0.6	0.7	82	0.8	0.3	0.8	0.008
AST	272	25.1	23.9	19.0	84	32.2	35.3	20.0	0.224
ALT	272	31.1	41.2	20.5	83	45.3	70.6	22.0	0.486
ALP	255	84.6	37.6	76.0	79	102.1	73.1	85.0	0.010
GGT	258	56.5	109.2	26.0	79	72.2	124.8	29.0	0.505
T. bilirubin	262	0.6	0.4	0.5	82	0.9	1.0	0.7	0.003
Glucose	270	107.4	33.9	100.0	84	116.8	35.0	111.0	0.002

WBC: White Blood Cell; PNL: Polymorph Nuclear Leukocyte; PLT: Platelet; AST: Aspartate

Aminotransferase; ALT: Alanine Aminotransferase; ALP: Alkaline Phosphatase; GGT: Gama Glutamyl Transferase

Table 4 Cultures and antimicrobial test results according to presence risk factors

		Risk factors				
		No		Yes		
		n	%	n	%	P
Enterococci spp.	Ampicillin resistance	0	0.0	9	100.0	0.017
	Ampicillin sensitive	8	53.3	7	46.7	
Staphylococcus spp.	Methicillin resistance	0	0	10	100.0	0.007
	Methicillin sensitive	3	30.0	7	70.0	
E. coli	ESBL positive	3	75.0	1	25.0	0.606
	ESBL negative	7	53.8	6	46.2	
Klebsiella spp	ESBL positive	2	66.7	1	25.0	0.381
	ESBL negative	1	33.3	3	75.0	
Pseudomonas spp.	No	164	46.2	191	53.8	0.039
	Yes	0	0.0	5	100.0	
Culture positivity	No	135	48.9	141	51.1	0.050
	Yes	31	36.9	53	63.1	
Two bacteria	No	158	46.7	180	53.3	0.344
	Yes	8	36.4	14	63.6	

*Risk: DM, malignity, otoimmun disorder, biliary disease, biliary surgery, biliary instrumentation, antibiotic use in last month. hospitalization the last year. **Others: *Acinetobacter baumannii*. *Corynebacterium spp.*. *Haemophilus spp.* *Rothia dentocariosa* and *Candida spp.* in one patient for each.

Table 5 Antimicrobial susceptibility results of Gram negative bacteria

	<i>E. coli</i> n =20		<i>Klebsiella</i> spp n =10		<i>Enterobacter</i> spp n =7		<i>Pseudomonas</i> <i>aeruginosa</i> [‡] n =5		<i>Citrobacter</i> spp. n =3		Total n = 40	
	n	%	n	%	n	%	n	%	n	%	n	%
AMC*	11/12	91.6	5/7	71.4	1/5	20.0	-	-	0/2	00.0	17/26	65.3
Cefuroxime	12/16	75.0	4/7	57.1	1/5	20.0	-	-	2/3	66.6	19/31	61.2
Ceftriaxone	13/16	81.2	6/7	85.7	4/6	66.6	-	-	2/3	66.6	25/32	78.1
Ceftazidime	13/16	81.2	6/7	85.7	4/6	66.6	2/4	50.0	2/3	66.6	27/36	75.0
Cefepime	13/16	81.2	5/5	100.0	4/6	66.6	2/4	50.0	2/3	66.6	26/34	76.4
PIPTAZ**	12/15	80.0	5/7	71.4	4/6	66.6	3/4	75.0	2/3	66.6	26/35	74.3
Gentamycin	10/12	83.3	5/5	100.0	3/4	75.0	3/3	100.0	1 / 2	50.0	22//26	84.6
Amikacin	14/14	100.0	5/5	100.0	5/5	100.0	3/4	75.0	3 /3	100.0	30/31	96.7
Ciprofloxacin	13/15	86.6	7/7	100.0	4/5	80.0	2/3	66.6	2/3	66.6	28/33	84.8
Ertapenem	12/13	92.3	7/7	100.0	6/6	100.0	-	-	2/3	66.6	27/29	93.1
IMP/MEM***	12/12	100.0	7/7	100.0	6/6	100.0	4/5	80.0	3/3	100.0	32/33	96.9
SXT [§]	11/15	73.3	6/6	100.0	6/6	100.0	-	-	3/3	100.0	26/30	86.6
Tigecycline	9/10	90.0	5/6	83.3	2/4	50.0	-	-	-	-	16/20	80.0
ESBL ^{&} positivity	4/13	30.7	2/6	33.3	2/5	40.0	1/3	33.3	1/2	50.0	10/29	34.4

[‡] There was a history of biliary operation in the patient with growing carbapenem resistant *P.aeruginosa* . *AMC: Amoxicillin-clavulanic acid ; **PIPTAZ: Piperacillin-Tazobactam; ***IMP/MEM: Imipenem/ Meropenem; [§]SXT: Trimethoprim/ Sulfamethoxazole; [&] ESBL:Extended-spectrum beta- lactamase.

Table 6 Antimicrobial susceptibility results of Gram positive bacteria

	<i>Enterococcus spp.*</i>		<i>Staphylococcus spp.</i>	
	n = 26		n = 22	
Ampicillin	17/25	68.0	-	-
Ciprofloxacin	15/19	78.9	7/8	87.5
Levofloxacin	10/13	76.9	12/15	80.0
Clindamycin	-	-	15/20	75.0
Erythromycin	-	-	9/19	47.3
Vancomycin	24/24	100.0	22/22	100.0
Teicoplanin	24/24	100.0	22/22	100.0
Linezolid	20/20	100.0	22/22	100.0
Streptomycin	6/8	75.0	-	-
Gentamicin	5/7	71.4	20/20	100.0
Trimethoprim/Sulfamethoxazole	-	-	15/16	93.7
Sefoxitin	-	-	10/22	45.4

*High level of aminoglycoside resistance (HLAR) was investigated in *Enterococcus spp.*