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SUPPLEMENTARY MATERIAL

Frequency of viral etiology in community-acquired pneumonia

Zain Ahmad Khan,¹ Akbar Shoukat Ali,¹ Imran Ahmed,²

Joveria Farooqi,² Muhammad Irfan¹

¹Section of Pulmonary and Critical Care, Department of Medicine, Aga Khan University, Karachi; ²Section of Microbiology, Department of Pathology and Laboratory Medicine, Aga Khan University, Karachi, Pakistan

Correspondence: Muhammad Irfan, Section of Pulmonary and Critical Care, Department of Medicine, Aga Khan University, Stadium Road, P.O. Box 3500, Karachi 74800, Pakistan.

Tel.: +92 21 34864664. E-mail: muhammad.irfan@aku.edu

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Supplementary Table 1. Clinical characteristics of patients with community-acquired pneumonia (n=166).

Characteristics	Total (n=166)	None (n=51)	Viral (n=83)	Bacterial (n=18)	Viral-bacterial (n=14)	p
Age (Years)	61.58 ± 17.30	62.55 ± 18.03	62.75 ± 17.36	60.89 ± 17.44	52.07 ± 11.77	0.188
Gender (Male)	73 (44.0%)	21 (41.2%)	35 (42.2%)	11 (61.1%)	6 (42.9%)	0.489
Smoking						
Never Smoker	129 (77.7%)	44 (86.3%)	63 (75.9%)	11 (61.1%)	11 (78.6%)	0.122 [†]
Ex-Smoker	26 (15.7%)	6 (11.8%)	14 (16.9%)	3 (16.7%)	3 (21.4%)	
Current Smoker	11 (6.6%)	1 (2.0%)	6 (7.2%)	4 (22.2%)	0 (0.0%)	
Alcohol	4 (2.4%)	0 (0.0%)	3 (3.6%)	0 (0.0%)	1 (7.1%)	0.240 [†]
Prior Antibiotic Use*	78 (47.0%)	21 (41.2%)	41 (49.4%)	8 (44.4%)	8 (57.1%)	0.680
Comorbidities						
Diabetes Mellitus	78 (47.0%)	25 (49.0%)	40 (48.2%)	7 (38.9%)	6 (42.9%)	0.873
Hypertension	104 (62.7%)	31 (60.8%)	59 (71.1%)	9 (50.0%)	5 (35.7%)	0.043
Asthma	36 (21.7%)	12 (23.5%)	16 (19.3%)	6 (33.3%)	2 (14.3%)	0.525 [†]
COPD	21 (12.7%)	6 (11.8%)	11 (13.3%)	4 (22.2%)	0 (0.0%)	0.359 [†]
Bronchiectasis	6 (3.6%)	0 (0.0%)	3 (3.6%)	2 (11.1%)	1 (7.1%)	0.085 [†]
Interstitial Lung Disease	12 (7.2%)	4 (7.8%)	4 (4.8%)	1 (5.6%)	3 (21.4%)	0.180 [†]
OSA/OHS	12 (7.2%)	5 (9.8%)	5 (6.0%)	1 (5.6%)	1 (7.1%)	0.894 [†]
Cardiovascular Disease	47 (28.3%)	13 (25.5%)	26 (31.3%)	5 (27.8%)	3 (21.4%)	0.825
Chronic Liver Disease	2 (1.2%)	0 (0.0%)	1 (1.2%)	0 (0.0%)	1 (7.1%)	0.873
CURB-65 Score						
0-1	79 (47.6%)	19 (37.3%)	42 (50.6%)	11 (61.1%)	7 (50.0%)	0.117 [†]
2	49 (29.5%)	21 (41.2%)	20 (24.1%)	2 (11.1%)	6 (42.9%)	
3-5	38 (22.9%)	11 (21.6%)	21 (25.3%)	5 (27.8%)	1 (7.1%)	
Laboratory Results						
Leukocytes (10 ⁹ /L)	12.71 ± 7.22	14.57 ± 7.37	11.52 ± 6.35	16.16 ± 9.32	8.50 ± 5.20	0.002
Sodium (mmol/L)	136.18 ± 7.00	135.25 ± 8.17	137.24 ± 6.27	132.50 ± 7.01	138.00 ± 4.54	0.032
Potassium (mmol/L)	4.04 ± 0.76	4.11 ± 0.88	4.03 ± 0.72	4.08 ± 0.70	3.74 ± 0.53	0.436
Creatinine (mg/dl)	95.61 (36.65 –	105.13 (50.22 –	69.22 (31.83 –	178.67 (85.35 –	83.52 (28.50 –	0.295 [†]
C-Reactive Protein (mg/L)	161.81)	156.73)	144.15)	194.48)	118.98)	0.001
	95.95 ± 75.08	105.73 ± 81.44	80.02 ± 63.64	155.74 ± 87.98	81.60 ± 60.31	0.496 [†]

Procalcitonin (ng/ml)	0.27 (0.11 – 1.61)	0.19 (0.09 – 0.59)	0.32 (0.13 – 1.65)	0.50 (0.14 – 2.22)	1.05 (0.10 – 4.00)	
Radiographic Findings						
Bilateral Pneumonia	149 (89.8%)	43 (84.3%)	74 (89.2%)	18 (100.0%)	14 (100.0%)	0.182 [†]
Cavitation	10 (6.0%)	2 (3.9%)	2 (2.4%)	4 (22.2%)	2 (14.3%)	0.006[†]
Consolidation	78 (47.0%)	34 (66.7%)	25 (30.1%)	12 (66.7%)	7 (50.0%)	<0.0001
Infiltrate	162 (97.6%)	48 (94.1%)	83 (100.0%)	18 (100.0%)	13 (92.9%)	0.051 [†]
Effusion	21 (12.7%)	7 (13.7%)	9 (10.8%)	3 (16.7%)	2 (14.3%)	0.814 [†]
ICU Admission	32 (19.3%)	10 (19.6%)	12 (14.5%)	4 (22.2%)	6 (42.9%)	0.107 [†]
Length of ICU Stay (Days)	0.00 (0.00 – 0.00)	0.00 (0.00 – 0.00)	0.00 (0.00 – 0.00)	0.00 (0.00 – 0.25)	0.00 (0.00 – 3.25)	0.128 [†]
Mechanical Ventilation Required	29 (17.5%)	10 (19.6%)	11 (13.3%)	3 (16.7%)	5 (35.7%)	0.215 [†]
Length of Hospital Stay (Days)	4.00 (2.00 – 6.00)	4.00 (2.00 – 6.00)	3.00 (2.00 – 6.00)	5.00 (3.00 – 12.00)	4.50 (2.75 – 6.25)	0.059 [†]
Complications						
Shock	23 (13.9%)	9 (17.6%)	5 (6.0%)	4 (22.2%)	5 (35.7%)	0.006[†]
Pneumothorax	3 (1.8%)	1 (2.0%)	1 (1.2%)	0 (0.0%)	1 (7.1%)	0.324 [†]
NSTEMI	27 (16.3%)	11 (21.6%)	10 (12.0%)	2 (11.1%)	4 (28.6%)	0.257 [†]
Parapneumonic Effusion	7 (4.2%)	1 (2.0%)	3 (3.6%)	2 (11.1%)	1 (7.1%)	0.252 [†]
Outcome						
Death	21 (12.7%)	7 (13.7%)	6 (7.2%)	4 (22.2%)	4 (28.6%)	0.046[†]

COPD, chronic obstructive pulmonary disease; OSA/OHS, obstructive sleep apnea/obesity-hypoventilation syndrome; CURB-65, Confusion-Urea-Respiratory Rate-Blood Pressure-Age of 65; NSTEMI, non-ST elevation myocardial infarction; ICU, intensive care unit. Values are presented as Mean ± Standard Deviation (SD), Median and Interquartile Range (IQR), and Frequency (%). [†]Exact Chi-Square test; *Kruskal-Wallis H test; *prior antibiotic use during last 30 days (broad-spectrum antibiotics frequently prescribed for CAP associated with bacterial organisms, like beta-lactams, second generation cephalosporins, macrolides, and fluoroquinolones).

Supplementary Table 2. Frequency of viral etiology in biofire filmarray positive community-acquired pneumonia patients (n=97).

Viral Organisms	Frequency (%)
Influenza A*	46 (47.42)
Rhino-Enterovirus	19 (19.59)
Coronavirus†	11 (11.34)
Influenza B	10 (10.31)
Human Metapneumovirus	8 (8.25)
Parainfluenza Virus‡	4 (4.12)
Respiratory Syncytial Virus	3 (3.09)
SARS-CoV-2	2 (2.06)
Adenovirus	1 (1.03)

CAP, community-acquired pneumonia; SARS-CoV-2, severe acute respiratory syndrome coronavirus disease 2019. *Includes Influenza AH1, Influenza AH3, Influenza A (non typable) and Influenza AH1-2009; †includes Coronavirus OC43, Coronavirus HKU1, Coronavirus NL63, and Coronavirus 229E; ‡includes Parainfluenza 1, Parainfluenza 2, Parainfluenza 3 and Parainfluenza 4. Due to multiple organisms detected in the BioFire FilmArray, the total percentage exceeds 100%.

Supplementary Table 3. Frequency of specific bacterial organisms in culture-positive community-acquired pneumonia Patients (n=32).

Bacterial Organisms	Frequency (%)
<i>Staphylococcus aureus</i>	18 (56.25)
<i>Pseudomonas aeruginosa</i>	9 (28.13)
<i>Klebsiella pneumoniae</i>	3 (9.38)
Group A Beta-Hemolytic <i>Streptococci</i>	2 (6.25)
<i>Streptococcus pneumoniae</i>	1 (3.13)
<i>Stenotrophomonas</i>	1 (3.13)
<i>Mycoplasma pneumoniae</i>	1 (3.13)
<i>Haemophilus parainfluenzae</i>	1 (3.13)
<i>Eschericia coli</i>	1 (3.13)
<i>Haemophilus influenzae</i>	1 (3.13)
<i>Acinetobacter</i>	1 (3.13)

CAP, community-acquired pneumonia. Due to multiple organisms detected in the Culture, the total percentage exceeds 100%.

Supplementary Table 4. Comparison of clinical characteristics between survivors and non-survivors (n=166).

Characteristics	Survivors (n=145)	Non-Survivors (n=21)	P value
Age (Years, Mean ± SD)	62.27 ± 17.20	56.86 ± 17.66	0.181
Gender (Male)	64 (44.1%)	9 (42.9%)	0.912
Smoking			
Never Smoker	115 (79.3%)	14 (66.7%)	0.345 [†]
Ex-Smoker	21 (14.5%)	5 (23.8%)	
Current Smoker	9 (6.2%)	2 (9.5%)	
Alcohol	3 (2.1%)	1 (4.8%)	0.421 [†]
Prior Antibiotic Use*	65 (55.1%)	13 (72.2%)	0.143
Comorbidities			
Diabetes Mellitus	69 (47.6%)	9 (42.9%)	0.685
Hypertension	93 (64.1%)	11 (52.4%)	0.298
Asthma	31 (21.4%)	5 (23.8%)	0.781 [†]
COPD	17 (11.7%)	4 (19.0%)	0.311 [†]
Bronchiectasis	5 (3.4%)	1 (4.8%)	0.562 [†]
Interstitial Lung Disease	9 (6.2%)	3 (14.3%)	0.181 [†]
OSA/OHS	11 (7.6%)	1 (4.8%)	1.000 [†]
Cardiovascular Disease	44 (30.3%)	3 (14.3%)	0.127
Chronic Liver Disease	1 (0.7%)	1 (4.8%)	0.238 [†]
CURB-65 Score			
0-1	75 (51.7%)	4 (19.0%)	0.019
2	39 (26.9%)	10 (47.6%)	
3-5	31 (21.4%)	7 (33.3%)	
Laboratory Results			
Leukocytes (10 ⁹ /L)	12.65 ± 6.72	13.08 ± 10.23	0.803
Sodium (mmol/L)	136.14 ± 6.77	136.43 ± 8.62	0.863
Potassium (mmol/L)	4.05 ± 0.72	3.96 ± 1.01	0.632
Creatinine (mg/dl)	1.15 (0.80 – 1.60)	1.40 (1.05 – 2.65)	0.017[†]
C-Reactive Protein (mg/L)	90.79 ± 70.74	140.13 ± 97.05	0.012
Procalcitonin (ng/ml)	0.18 (0.09 – 0.92)	4.39 (1.50 – 20.50)	<0.0001[†]
Radiographic Findings			

Bilateral Pneumonia	130 (89.7%)	19 (90.5%)	1.000 [†]
Cavitation	7 (4.8%)	3 (14.3%)	0.117 [†]
Consolidation	61 (42.1%)	17 (81.0%)	0.001
Infiltrate	142 (97.9%)	20 (95.2%)	0.421
Effusion	17 (11.7%)	4 (19.0%)	0.311
ICU Admission	15 (10.3%)	17 (81.0%)	<0.0001[‡]
Length of ICU Stay (Days)**	0.00 (0.00 – 0.00)	3.00 (0.50 – 11.00)	<0.0001[‡]
Mechanical Ventilation Required	12 (8.3%)	17 (81.0%)	<0.0001[‡]
Duration of Mechanical Ventilation (Days)**	0.00 (0.00 – 0.00)	3.00 (1.00 – 11.00)	<0.0001[‡]
Length of Hospital Stay (Days)	4.00 (2.00 – 6.00)	6.00 (2.50 – 13.50)	0.055
Complications			
Shock	6 (4.1%)	17 (81.0%)	<0.0001[†]
Pneumothorax	0 (0.0%)	3 (14.3%)	0.002[†]
NSTEMI	16 (11.0%)	11 (52.4%)	<0.0001[†]
Parapneumonic Effusion	6 (4.1%)	1 (4.8%)	1.000
Infectious etiology identified			
None/Viral	121 (83.4%)	13 (61.9%)	0.034[†]
Bacterial/Viral-Bacterial	24 (16.6%)	8 (38.1%)	

COPD, chronic obstructive pulmonary disease; OSA/OHS, obstructive sleep apnea/obesity-hypoventilation syndrome; CURB-65, Confusion-Urea-Respiratory Rate-Blood Pressure-Age of 65; NSTEMI, non-ST elevation myocardial infarction; ICU, intensive care unit. Values are presented as Mean ± Standard Deviation (SD), Median and Interquartile Range (IQR), and Frequency (%).[†]Exact Chi-Square test; [‡]Mann-Whitney U test; *prior antibiotic use during last 30 days (broad-spectrum antibiotics frequently prescribed for CAP associated with bacterial organisms, like beta-lactams, second generation cephalosporins, macrolides, and fluoroquinolones); **length of ICU Stay (Survivors), Days = 10 (0 – 10), Length of ICU Stay (Non-Survivors), Days = 18 (0 – 18), length of Mechanical Ventilation (Survivors), Days = 9 (0 – 9), length of Mechanical Ventilation (Non-Survivors), Days = 18 (0 – 18)

Supplementary Table 5. Factors associated with Mortality in patients with community-acquired pneumonia (n=166).

Characteristics	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	P value	OR (95% CI)	P value
Age (Years)	0.983 (0.958 – 1.008)	0.183	-	-
Gender (Male)	0.949 (0.377 – 2.392)	0.912	-	-
Smoking				
Ex-Smoker	1.956 (0.637 – 6.007)	0.241	-	-
Current Smoker	1.825 (0.358 – 9.312)	0.469	-	-
Alcohol	2.367 (0.235 – 23.868)	0.465	-	-
Prior Antibiotic Use*	2.000 (0.782 – 5.118)	0.148	-	-
Comorbidities				
Diabetes Mellitus	0.826 (0.328 – 2.081)	0.685	-	-
Hypertension	0.615 (0.245 – 1.545)	0.301	-	-
Asthma	1.149 (0.390 – 3.383)	0.801	-	-
COPD	1.772 (0.533 – 5.888)	0.351	-	-
Bronchiectasis	1.400 (0.156 – 12.604)	0.764	-	-
Interstitial Lung Disease	2.519 (0.624 – 10.173)	0.195	-	-
OSA/OHS	0.609 (0.075 – 4.976)	0.644	-	-
Cardiovascular Disease	0.383 (0.107 – 1.366)	0.139	-	-
Chronic Liver Disease	7.200 (0.433 – 119.710)	0.169	-	-
CURB-65 Score				
2	4.808 (1.416 – 16.323)	0.012	4.027 (0.552 – 29.374)	0.169
3-5	4.234 (1.156 – 15.501)	0.029	3.938 (0.412 – 37.663)	0.234
Leukocytes (10⁹/L)				
4-11	0.103 (0.021 – 0.504)	0.005	0.035 (0.001 – 1.498)	0.080
>11	0.137 (0.030 – 0.636)	0.011	0.035 (0.001 – 2.075)	0.107
Sodium (mmol/L)				
135-145	0.904 (0.334 – 2.447)	0.843	-	-
>145	2.286 (0.383 – 13.635)	0.364	-	-
Potassium (mmol/L)				
3.5-5.0	0.594 (0.206 – 1.717)	0.336	-	-
>5.0	1.071 (0.233 – 4.919)	0.929	-	-

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Creatinine (>1.5 mg/dl)	2.229 (0.881 – 5.642)	0.091	-	-
C-Reactive Protein (mg/L)	1.008 (1.001 – 1.014)	0.017	1.009 (0.998 – 1.020)	0.119
Procalcitonin (≥0.5 ng/ml)	10.731 (3.018 – 38.153)	<0.0001	4.600 (0.685 – 30.892)	0.116
Radiographic Findings				
Bilateral Pneumonia	1.096 (0.232 – 5.175)	0.908	-	-
Cavitation	3.286 (0.779 – 13.853)	0.105	-	-
Consolidation	5.852 (1.875 – 18.263)	0.002	0.456 (0.073 – 2.845)	0.400
Infiltrate	0.423 (0.042 – 4.261)	0.465	-	-
Effusion	1.772 (0.533 – 5.888)	0.351	-	-
Mechanical Ventilation Required	47.104 (13.644 – 162.625)	<0.0001	43.407 (8.083 – 233.085)	<0.0001
Co-Infection Status				
Bacterial/Viral-Bacterial	3.103 (1.160 – 8.297)	0.024	3.073 (0.575 – 16.407)	0.189

CI, confidence interval; COPD, chronic obstructive pulmonary disease; OSA/OHS, obstructive sleep apnea/obesity-hypoventilation syndrome; CURB-65, Confusion-Urea-Respiratory Rate-Blood Pressure-Age of 65. *Prior antibiotic use during last 30 days (broad-spectrum antibiotics frequently prescribed for CAP associated with bacterial organisms, like beta-lactams, second generation cephalosporins, macrolides, and fluoroquinolones)