

Supplemental Tables for:
Etiology and prognosis of pneumonia in patients with solid tumors: a prospective cohort of hospitalized cases
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Table S1.

Test	Performed	Diagnostic yield
	(n, % out of 132 episodes)(n, % of performed)	
Urinary antigens	89 (67.4)	12 (13.5)
Sputum Gram stain and culture	59 (44.7)	14 (23.7)
Fungal biomarkers	17 (12.9)	4 (23.5)
BAL	7 (5.3)	3 (28.6)
Blood culture	102 (78.0)	8 (7.8)
<i>Staphylococcus aureus</i> nasal swab	64 (49)	0
Virus nasal swab	63 (47.7)	6 (9.5)
Sputum fungal stain and fungal culture	7 (5.3)	0
<i>Pneumocystis jiroveci</i> stain in induced sputum	6 (4.5)	1 (16.7)
Sputum mycobacterial stain and culture	7 (5.3)	0
CMV antigen or PCR in blood	5 (3.8)	1 (20)

BAL: Bronchoalveolar lavage; CMV: Cytomegalovirus; PCR: polymerase chain reaction.

Table S2. Differences between episodes according to ICU admission.

	Total (n:132, %)	Non-ICU admission (, %)	ICU admission (, %)	p
Characteristics of cancer				
Type of tumor (lung vs other)	42 (31.8)	35 (30.4)	7 (41.2)	0.409
Tumor stage (metastatic vs other)	102 (77.3)	91 (79.1)	11 (64.7)	0.217
Terminal	31 (23.5)	31 (27.0)	0 (0)	0.012
Presence of lung involvement	73 (55.3)	65 (56.5)	8 (47.1)	0.602
Recent chemotherapy (previous month)	89 (67.9)	77 (67.5)	12 (70.6)	0.999
Therapy (cytostatics vs other)	84 (63.3)	73 (63.5)	11 (64.7)	0.999
Clinical characteristics				
Sex (men)	97 (73.5)	87 (75.7)	10 (58.8)	0.151
Age, mean (SD)	65.7 (12.9)	65.9 (13.4)	63.9 (9.5)	0.558
Age-adjusted Charlson (mean, SD)	8.5 (2.3)	8.5 (2.3)	8.2 (2.5)	0.689
PS status (0-1)	63 (50.8)	52 (48.6)	11 (64.7)	0.298
Place of acquisition (hospital vs other)	42 (31.8)	36 (31.3)	6 (35.3)	0.783
Vaccinated against influenza	53 (40.5)	49 (43.0)	4 (23.5)	0.185
Vaccinated against <i>Streptococcus pneumoniae</i>	48 (36.9)	46 (40.7)	2 (11.8)	0.029

Hypoxemia at presentation	75 (56.8)	61 (53.0)	14 (82.4)	0.034
Fever at presentation	76 (57.6)	67 (58.3)	9 (52.9)	0.754
BP, mean (SD)	90.4 (16.9)	90.5 (17.1)	89.5 (16.4)	0.823
Creatinine, mean (SD)	0.8 (0.5)	0.8 (0.5)	0.9 (0.7)	0.325
Bilirubin, mean (SD)	0.67 (0.8)	0.6 (0.8)	0.9 (0.7)	0.243
Neutropenia <1000 ANC	13 (9.8)	(6.1)	6 (35.3)	0.002
Neutropenia <500 ANC	9 (6.8)	5 (4.3)	4 (23.5)	0.016
Corticosteroids	42 (31.8)	37 (32.2)	5 (29.4)	0.999
Influenza	5 (3.8)	4 (3.5)	1 (5.9)	0.999
Recurrent episode	15 (11.4)	13 (11.3)	2 (11.8)	0.999
Radiology				
Interstitial infiltrate	12 (20.3)	9 (7.8)	3 (17.6)	0.186
Lobar infiltrate	110 (90.2)	96 (89.7)	14 (93.3)	0.999
Pleural effusion	40 (55.6)	32 (51.6)	8 (80)	0.169
Nodules	8 (14)	8 (15.4)	0 (0)	0.999
Obstructive pneumonia	9 (6.8)	9 (.8)	0 (0)	0.604
Diagnosis				
Bronchoscopy	7 (5.3)	6 (5.2)	1 (5.9)	0.999
Etiological diagnosis	48 (36.6)	40 (34.8)	8 (47.1)	0.419
Management and outcome				

Antimicrobial PDD, mean (SD)	20.3 (52.1)	20.9 (55.6)	16.7 (12.8)	0.758
Appropriate empirical antimicrobials according to etiology ^a	35 (77.8)	31 (83.8)	4 (50)	0.059
Appropriate empirical antimicrobials according to local guideline (all)	60 (45.8)	53 (88.3)	7 (11.7)	0.797
Appropriate empirical antimicrobials according to local guideline if if no etiologic diagnosis	34 (41)	31 (91.2)	3 (8.8)	0.731
ID consultation	34 (25.8%)	27 (23.5)	7 (41.2)	0.141
Vasoactive drugs	5 (3.8)	1 (0.9)	4 (23.5)	0.001
NIMV	14 (10.6)	1 (0.9)	13 (76.5)	0.0001
10-day mortality	33 (24.2)	21 (18.3)	11 (64.7)	0.0001
30-day mortality	61 (46.2)	47 (40.9)	14 (82.4)	0.002

^aEvaluated only in 48 episodes with etiological diagnosis

BAL: Broncho-alveolar lavage; ICU: Intensive care unit; ID: Infectious diseases; MDR: Multidrug-resistant; MV: Mechanical ventilation; NIMV: Non-invasive mechanical ventilation; PDD: Prescribed daily dose; PS: Performance status; SD: Standard deviation

Table S3. Characteristics of pneumonia in hospitalized cancer patients and risk factors for 10-day and 30-day mortality (only first episode per patient).

	Total (n, %)	Survivors 10 d (100, 75.8%)	Non- survivors 10 d (32, 24.2%)	p	Survivors 30 d (71, 53.8%)	Non- survivors 30 d (61, 46.2%)	p
Characteristics of cancer							
Type of tumor (lung vs other)	34 (29.1)	26 (28.6)	8 (30.8)	0.811	22 (32.8)	12 (24.0)	0.313
Tumor stage (metastatic vs other)	93 (79.5)	70 (76.9)	23 (88.5)	0.274	50 (74.6)	43 (86.0)	0.167
Terminal	27 (23.1)	13 (14.3)	14 (53.8)	0.0001	6 (9.0)	21 (42)	0.0001
Presence of lung involvement	63 (53.8)	46 (50.5)	17 (65.4)	0.265	38 (56.7)	25 (50.0)	0.574
Recent chemotherapy (previous month)	81 (69.8)	60 (66.7)	21 (80.8)	0.227	49 (73.1)	32 (65.3)	0.416
Therapy (cytostatics vs other)	74 (63.2)	57 (62.6)	17 (65.4)	0.068	44 (65.7)	30 (60.0)	0.175
Clinical characteristics							
Sex (men)	34 (29.1)	24 (26.4)	10 (38.5)	0.233	16 (23.9)	18 (36.0)	0.217
Age, mean (SD)	65.6 (13.1)	66.0 (13.7)	63.9 (10.8)	0.462	67.4 (13.3)	63.1 (12.6)	0.084
Age-adjusted Charlson (mean, SD)	8.47 (2.3)	8.5 (2.5)	8.5 (1.7)	0.983	8.4 (2.4)	8.5 (2.2)	0.842
PS status (0-1)	60 (53.6)	47 (54.7)	13 (50.0)	0.823	39 (60.9)	21 (43.8)	0.086
Place of acquisition (hospital vs other)	37 (31.6)	27 (29.7)	10 (38.5)	0.474	15 (22.4)	22 (44.0)	0.016
Vaccinated against influenza	50 (43.1)	42 (46.2)	8 (32.0)	0.257	33 (49.3)	17 (34.7)	0.133
Vaccinated against <i>Streptococcus pneumoniae</i>	45 (39.1)	39 (42.9)	6 (25)	0.158	31 (46.3)	14 (29.2)	0.082

Hypoxemia at presentation	64 (54.7)	44 (48.4)	20 (76.9)	0.013	31 (46.3)	33 (66.0)	0.040
Fever at presentation	69 (59.0)	57 (62.6)	12 (46.2)	0.175	41 (61.2)	28 (56.0)	0.706
BP, mean (SD)	90.9 (17.4)	91.5 (17.4)	88.7 (17.7)	0.523	93.2 (17.2)	87.4 (17.5)	0.127
Creatinine, mean (SD)	0.8 (0.50)	0.9 (0.5)	0.8 (0.4)	0.344	0.9 (0.6)	0.8 (0.4)	0.151
Bilirubin, mean (SD)	0.7 (0.83)	0.7 (0.8)	0.9 (0.8)	0.263	0.6 (0.9)	0.8 (0.7)	0.420
Neutropenia <1000	12 (10.3)	9 (9.9)	3 (11.5)	0.727	7 (10.4)	5 (10)	0.999
Neutropenia<500	8 (6.8)	5 (5.5)	3 (11.5)	0.374	4 (6)	4 (8)	0.722
Corticosteroids	34 (29.1)	24 (26.4)	10 (38.5)	0.233	13 (19.4)	21 (42.0)	0.013
Influenza	5 (12.2)	3 (8.8)	2 (28.6)	0.196	3 (12.0)	2 (12.5)	0.999
Radiology							
Interstitial infiltrate	11 (9.4)	10 (11.0)	1 (3.8)	0.452	6 (9.0)	5 (10.0=)	0.999
Lobar infiltrate	97 (90.7)	73 (88.0)	24 (10.0)	0.112	53 (88.3)	44 (93.6)	0.507
Pleural effusion	38 (58.5)	28 (56.0)	10 (66.7)	0.558	19 (59.4)	19 (57.6)	0.999
Nodules	7 (14.3)	5 (13.2)	2 (18.2)	0.646	5 (21.7)	2 (7.7)	0.230
Obstructive pneumonia	7 (6.0)	7 (7.7)	0 (0.0)	0.346	5 (7.5)	2 (4.0)	0.697
Diagnosis							
Bronchoscopy	6 (5.1)	5 (5.5)	1 (3.8)	0.999	4 (6.0)	2 (4.0)	0.999
Etiological diagnosis	41 (35)	34 (37.4)	7 (26.9)	0.362	25 (37.3)	16 (32.0)	0.565
Management and outcome							
Antimicrobial PDD, mean (SD)	18.9 (49.8)	22 (55.9)	8.1 (9.6)	0.210	22.7 (64.8)	13.8 (12.5)	0.343
Appropriate empirical antimicrobials^a	29 (76.3)	25 (78.1)	4 (66.7)	0.613	16 (72.7)	13 (81.3)	0.706

ID consultation	28 (23.9)	20 (22.0)	8 (30.8)	0.435	12 (17.9)	16 (32.0)	0.085
Vasoactive drugs	5 (4.3)	2 (2.2)	3 (11.5)	0.072	2 (3.0)	3 (6.0)	0.650
ICU admission	15 (12.8)	6 (6.6)	9 (34.6)	0.001	3 (4.5)	12 (24.0)	0.004
MV	3 (2.6)	1 (1.1)	2 (7.7)	0.124	0 (0.0)	3 (6.0)	0.075
NIMV	11 (9.4)	3 (3.3)	8 (30.8)	0.0001	0 (0.0)	11 (22.0)	0.0001