

Table S1 Variables related to the ACCP and Light's classifications

Variables (n=167)	n	%
Anatomy		
10 mm < and 1/2 hemithorax	107	64.1
>1/2 hemithorax	60	35.9
Free flowing	29	17.4
Single locule	38	22.8
Multilocular	100	59.9
LAMS	63	37.7
Pleural microbubbles	38	22.8
Sprit pleura sign	107	64.1
Bacteriology		
Negative	61	36.5
Positive (not pus)	60	35.9
Pus	46	27.5
Chemistry		
pH: not detected	63	37.7
pH ≥ 7.20	53	31.7
pH <7.20	51	30.5
Glucose <40 mg/dL	64	38.3
LDH >1,000 IU/L	90	53.9
ACCP category		
2	14	8.4
3	107	64.1
4	46	27.5
Light classification		
2–3	21	13.6
4–5	100	59.9
6–7	46	27.6

ACCP, American College of Chest Physicians; LAMS, locule in the anterior mediastinum side.

Table S2 The clinical and image findings of patients with pleural infection who cured by non-surgical therapy (n=94) and who resistant to non-surgical therapy (n=73)

Variables	Cured by non-surgical therapy (n=94)	Resistant to non-surgical therapy (n=73)	P
Age >70 years	50 (53)	45 (62)	0.273
Sex: male	77 (82)	62 (85)	0.603
Body mass index >25	12 (13)	15 (21)	0.177
ECOG-PS 3–4	9 (10)	10 (14)	0.421
PaO ₂ /FiO ₂ <300	37 (39)	26 (36)	0.620
Pack-year smoking>60	15 (16)	7 (10)	0.221
Comorbidity/anamnesis			
Diabetes mellitus	23 (24)	26 (36)	0.117
Chronic kidney disease	7 (7)	8 (11)	0.433
From appearance of symptoms to hospitalization >7 days	40 (43)	40 (55)	0.116
Fistula	6 (6)	6 (8)	0.650
Septic shock at the hospitalization	5 (5)	5 (7)	0.680
Serum albumin level <2.5 g/dL	42 (45)	33 (45)	0.946
WBC >15,000/μL	44 (47)	30 (41)	0.461
CRP >200 mg/L	42 (45)	39 (53)	0.262
Pus	25 (27)	21 (29)	0.756
Glucose <40 mg/dL (pleural effusion)	35 (37)	29 (40)	0.743
pH <7.2 (pleural effusion)	25 (27)	26 (36)	0.210
Bacteria positive (pleural effusion)	58 (62)	41 (56)	0.470
Image findings	58 (62)	41 (56)	0.470
Pleural space anatomy >1/2 hemithorax	31 (33)	29 (40)	0.370
Locules			<0.001*
Single locule	29 (31)	9 (12)	
Multiple locules without LAMS	23 (25)	16 (22)	
Multiple locules + LAMS	18 (19)	43 (59)	
Microbubbles	21 (22)	17 (23)	0.885
Split pleural sign	56 (60)	51 (70)	0.168

All variables are number (%). ECOG-PS, Eastern Cooperative Oncology Group-performance status; CRP, C-reactive protein; WBC, white blood cells; LAMS, locule on the anterior mediastinum side.

Table S3 Treatment courses and prognosis were analysed by comparing the findings across three groups: patients who underwent surgery within 7 days of admission (n=33), the patients who underwent surgery more than 7 days after the admission (n=29), and patients who treated by non-surgical therapy (n=105)

Variables/outcome	Surgery ≤7 days (n=33)	Surgery >7 days (n=29)	Non-surgery (n=105)
Age (average, range)	61.8±14.0	57.8±15.0	67.8±13.6
ECOG-PS 3–4	12.1% (4)	13.8% (4)	10.6% (11)
From appearance of symptoms to hospitalization	15.0±13.9	11.6±9.6	10.8±12.0
Septic shock at the hospitalization	9.1% (3)	6.9% (2)	6.0% (5)
Hospitalization (average, days)	26.9±12.4	42.0±28.1	32.6±23.5
Using antibiotics (average, days)	31.0±14.2	38.5±16.9	38.9±24.3
Duration of tube placement (average, days)	16.7±6.4	23.9±11.9	18.2±13.6
CRP improved <1.0 mg/dL <30 days	69.7% (23)	20.7% (6)	49.5% (52)
CRP improved <1.0 mg/dL during the observation period	96.7% (32)	82.8% (24)	83.8% (88)
Recurrence of empyema, % (n)	0.0% (0)	0.0% (0)	2.9% (3)
Disease related death in 3 month, % (n)	0.0% (0)	0.0% (0)	2.9% (3)
3-month mortality, % (n)	0.0% (0)	3.5% (1)	5.7% (6)
6-month mortality, % (n)	0.0% (0)	6.9% (2)	11.4% (12)

Surgery ≤7 days: patients underwent surgery within 7 days of admission; surgery >7 days: patients underwent surgery over 7 days of admission; non-surgery: patients who treated by non-surgical therapy. CRP, C-reactive protein; ECOG-PS, Eastern Cooperative Oncology Group-performance status.