

Table1 Patients for metagenomic next-generation sequencing (mNGS) and conventional laboratory-based diagnostic testing.

Patient ID (Age,Sex)	Underlying disease	Pulmonary disorders	Smear results	Culture results	Pathology results	GM test	Xpert MTB	mNGS based diagnosis (number of unique reads)	Other results
NO.1 (55,Female)	Immunological anemia	pulmonary infection, Type I respiratory failure	Negative	Negative	Alveolar septal fibrous tissue hyperplasia, inflammatory cell infiltration	Negative	Negative	<i>Human cytomegalovirus</i> (72), <i>Pneumocystis jirovecii</i> (28)	Negative
NO.2 (38,Male)	None	pulmonary infection	Negative	Negative	Fibrous tissue hyperplasia, inflammatory cell infiltration	Negative	Negative	<i>Pseudomonas aeruginosa</i> (50), <i>Human cytomegalovirus</i> (32)	Negative
NO.3 (41,Male)	Vasculitis	pulmonary infection	Negative	Negative	Fibrous tissue hyperplasia, inflammatory exudative necrosis	Negative	Negative	<i>Mycobacterium abscessus</i> (2), <i>Aspergillus fumigatus</i> (6)	Negative
NO.4 (31,Female)	AML	pulmonary infection	Negative	Negative	Fibrous tissue hyperplasia, inflammatory cell infiltration	Negative	Negative	<i>Human cytomegalovirus</i> (10), <i>Pneumocystis jirovecii</i> (50916)	Negative

NO.5 (28, Male)	Aplastic anemia	pulmonary infection	Negative	Negative	Interstitial fibrous tissue hyperplasia with inflammatory cell infiltration	Negative	Negative	<i>Klebsiella pneumoniae</i> (111), <i>Pseudomonas aeruginosa</i> (397)	Negative
NO.6 (58, Male)	ALL	pulmonary infection	Negative	Negative	Alveolar septal fibrosis, alveolar occlusion, scattered chronic inflammatory cell infiltration	Negative	Negative	<i>Human cytomegalovirus</i> (4), <i>Acinetobacter baumannii</i> (64), <i>Aspergillus fumigatus</i> (12)	Negative
NO.7 (54, Male)	None	pulmonary infection	Negative	Negative	Chronic inflammatory cell infiltration, significant proliferation of fibrous tissue leading to alveolar occlusion	Negative	Negative	<i>Klebsiella pneumoniae</i> (1), <i>Rhizopus oryzae</i> (1)	Negative
NO.8 (49, Male)	MDS	pulmonary infection	Negative	Negative	Alveolar septal fibrous tissue hyperplasia, Inflammatory cell infiltration	Negative	Negative	<i>Klebsiella pneumoniae</i> (3), <i>Human cytomegalovirus</i> (2474), <i>Pseudomonas aeruginosa</i> (55)	Negative
NO.9 (47, Male)	ALL	pulmonary infection	Negative	Negative	Alveolar septum widening, interstitial fibrous tissue	Negative	Negative	<i>Aspergillus niger</i> (10),	Negative

					hyperplasia with scattered inflammatory cell infiltration			<i>Human cytomegalovirus</i> (103)	
NO.10 (65, Male)	None	pulmonary infection	Negative	Negative	Chronic inflammatory cell infiltration, interstitial fibrous tissue hyperplasia, partial alveolar epithelial hyperplasia	Negative	Negative	<i>Cryptococcus neoformans</i> (2), <i>Human cytomegalovirus</i> (5)	Negative
NO.11 (71, Male)	None	pulmonary infection, Type I respiratory failure	Negative	Negative	Interstitial fibrous tissue hyperplasia with inflammatory cell infiltration	Negative	Negative	<i>Acinetobacter baumannii</i> (61), <i>Aspergillus niger</i> (3), <i>Candida albican</i> (62)	Negative
NO.12 (26, Male)	Severe aplastic anemia	pulmonary infection	Negative	Negative	Alveolar epithelial dysplasia	Negative	Negative	<i>Human cytomegalovirus</i> (850), <i>Aspergillus oryzae</i> (134), <i>Pseudomonas aeruginosa</i> (48), <i>Acinetobacter baumannii</i> (5)	Negative
NO.13 (69, Female)	Autoimmune hemolytic anemia	pulmonary infection	Gram-negative bacilli	Negative	Chronic inflammation of the mucosa, a small	Negative	Negative	<i>Pneumocystis jirovecii</i> (64), <i>Human</i>	Negative

					amount of neutrophil infiltration, partial alveolar septum widening with fibrous tissue hyperplasia			<i>cytomegalovirus</i> (23282), <i>Rhizopus microsporus</i> (6)	
NO.14 (55,Female)	AML	pulmonary infection	Negative	Negative	Fibrous tissue and alveolar epithelial hyperplasia, scattered chronic inflammatory cell infiltration, macrophage visible in some alveolar spaces	Negative	Negative	<i>Rhizopus delemar</i> (3168), <i>Haemophilus parainfluenzae</i> (9)	Negative
NO.15 (21,Female)	AML	pulmonary infection	Negative	Negative	Alveolar septal fibrous tissue hyperplasia, inflammatory exudate necrosis and silk-like structure, histochemical staining showed PAS positive, hexamine silver negative, considering mold hyphae	Negative	Negative	<i>Pneumocystis jirovecii</i> (6), <i>Aspergillus oryzae</i> (48)	Negative
NO.16 (48,Male)	ALL	pulmonary infection	Negative	<i>Pneumocystis jirovecii</i>	Lymphocyte, plasma cell and neutrophil infiltration	Negative	Negative	<i>Human cytomegalovirus</i> (154), <i>Pneumocystis jirovecii</i> (1058)	Negative

NO.17 (55, Male)	Chronic myelogenous leukemia	pulmonary infection	Gram-positive cocci	<i>Staphylococcus epidermidis</i>	Interstitial fibrous tissue hyperplasia with inflammatory cell infiltration	Negative	Negative	<i>Staphylococcus epidermidis</i> (23), <i>Aspergillus fumigatus</i> (13)	Negative
NO.18 (36, Female)	None	pulmonary infection	Negative	Negative	Interstitial fibrous tissue hyperplasia with inflammatory cell infiltration	Negative	Negative	<i>Klebsiella pneumoniae</i> (3), <i>Pseudomonas aeruginosa</i> (85), <i>Haemophilus parainfluenzae</i> (17), <i>Aspergillus fumigatus</i> (2)	<i>Cryptococcus neoformans capsular polysaccharide</i> (+) <i>Cryptococcus neoformans capsular polysaccharide antigen</i> (+)
NO.19 (58, Male)	Lymphoma	pulmonary infection	Negative	<i>Acinetobacter baumannii</i>	A little carbon dust in the alveolar space	Negative	Negative	<i>Pseudomonas aeruginosa</i> (4), <i>Acinetobacter baumannii</i> (2778), <i>Klebsiella pneumoniae</i> (46)	Negative
NO.20 (27, Female)	Autoimmune hemolytic anemia	pulmonary infection	Negative	Negative	Alveolar septal fibrous tissue hyperplasia, a large amount of chronic inflammatory cell infiltration	Negative	Negative	<i>Cryptococcus neoformans</i> (88) , <i>Pneumocystis jirovecii</i> (122)	<i>Cryptococcus neoformans capsular polysaccharide antigen</i> (+)

NO.21 (30, Male)	ALL	pulmonary infection	Negative	<i>Pseudomonas aeruginosa</i>	Alveolar septum widening, interstitial fibrous tissue hyperplasia with a small amount of inflammatory cell infiltration	Negative	Negative	<i>Pseudomonas aeruginosa</i> (132), <i>Pneumocystis jirovecii</i> (3086)	Negative
NO.22 (24, Male)	ALL	pulmonary infection	Negative	Negative	Fibrous tissue hyperplasia, inflammatory cell infiltration	Positive	Negative	<i>Haemophilus parainfluenzae</i> (9), <i>Aspergillus niger</i> (577)	Negative
NO.23 (24, Male)	AML	pulmonary infection	Gram- positive cocci	<i>Candida albican</i>	Alveolar septal fibrous tissue hyperplasia, scattered inflammatory cell infiltration	Negative	Negative	<i>Klebsiella pneumoniae</i> (4858), <i>Human cytomegalovirus</i> (86), <i>Rhizomucor pusillus</i> (24088), <i>Torque teno virus</i> (7)	Negative
NO.24 (41, Male)	AML	pulmonary infection	Negative	<i>Klebsiella pneumoniae</i>	Alveolar septal local fibrous tissue mild hyperplasia	Negative	Negative	<i>Klebsiella pneumoniae</i> (20), <i>Human cytomegalovirus</i> (1052)	Negative

NO.25 (33,Female)	ALL	pulmonary infection	Negative	Negative	Inflammatory cell infiltration and interstitial fibrous tissue hyperplasia	Negative	Positive	<i>Mycobacterium tuberculosis</i> (6) , <i>Human cytomegalovirus</i> (8)	Negative
NO.26 (42,Female)	AML	pulmonary infection	Negative	Negative	Mild chronic inflammation, mild hyperplasia of alveolar septal fibrous tissue	Negative	Positive	<i>Mycobacterium tuberculosis</i> (864), <i>Human cytomegalovirus</i> (60)	Negative
NO.27 (46,Female)	Lymphoma	pulmonary infection	Gram -positive cocci, Gram- negative bacilli	<i>Staphylococcus epidermidis</i>	Alveolar fibrous tissue hyperplasia	Negative	Negative	<i>Human cytomegalovirus</i> (1626), <i>Pneumocystis jirovecii</i> (303572)	Negative
NO.28 (68,Male)	None	pulmonary infection	Negative	Negative	Small airway mucosa chronic inflammation, inflammatory exudation with neutrophil infiltration	Positive	Negative	<i>Human cytomegalovirus</i> (218), <i>Aspergillus fumigatus</i> (1)	Negative
NO.29 (63,Female)	None	pulmonary infection	Negative	Negative	Inflammatory cell infiltration and interstitial fibrous tissue hyperplasia	Positive	Negative	<i>Haemophilus parainfluenzae</i> (1066), <i>Pseudomonas</i>	Negative

NO.30 (62, Male)	None	pulmonary infection	Gram- positive cocci	<i>Acinetobacter baumannii</i> , <i>Pneumocystis jirovecii</i>	Inflammatory cell infiltration and interstitial fibrous tissue hyperplasia	Negative	Negative	<i>aeruginosa</i> (242) <i>Human cytomegalovirus</i> (4), <i>Pneumocystis jirovecii</i> (4522), <i>Aspergillus fumigatus</i> (6), <i>Acinetobacter baumannii</i> (338)	<i>Human cytomegalovirus</i> nucleic acid (+)
NO.31 (27, Female)	AML	pulmonary infection	Negative	Negative	Chronic inflammation of small airway mucosa, localized phosphation of the epithelium and interstitial fibrous tissue hyperplasia	Positive	Positive	<i>Mycobacterium tuberculosis</i> (78), <i>Aspergillus oryzae</i> (112)	Negative
NO.32 (63, Female)	ALL	pulmonary infection	Negative	<i>Pseudomonas aeruginosa</i>	Inflammatory exudation and necrosis	Positive	Negative	<i>Aspergillus fumigatus</i> (1653), <i>Pseudomonas aeruginosa</i> (103), <i>Streptococcus pneumoniae</i> (3)	Negative
NO.33 (56, Male)	None	pulmonary infection	Negative	<i>Pneumocystis jirovecii</i>	Inflammatory cell infiltration and interstitial fibrous tissue hyperplasia	Positive	Negative	<i>Pneumocystis jirovecii</i> (104054), <i>Human</i>	<i>Human cytomegalovirus</i> nucleic acid (+)

								<i>cytomegalovirus</i> (29)	
NO.34 (59, Male)	None	pulmonary infection, small cell lung cancer	Negative	<i>Pseudomonas aeruginosa</i>	Chronic inflammation of small airway mucosa, mild hyperplasia of alveolar septal fibrous tissue, inflammatory cell infiltration	Positive	Negative	<i>Pseudomonas aeruginosa</i> (14978), <i>Human cytomegalovirus</i> (6)	Negative
NO.35 (65, Male)	MDS	pulmonary infection	Negative	Negative	Alveolar septum widening, interstitial fibrous tissue hyperplasia with a small amount of inflammatory cell infiltration	Negative	Negative	Negative	Negative
NO.36 (69, Female)	Diffuse large B cell lymphoma	pulmonary infection	Negative	Negative	Slightly widened alveolar space, interstitial fibrous tissue hyperplasia with a small amount of inflammatory cell infiltration, a little small airway mucosa showing chronic inflammation	Negative	Negative	<i>Pneumocystis jirovecii</i> (125), <i>Torque teno virus</i> (46)	Negative
NO.37 (70, Female)	None	pulmonary infection	Negative	Negative	Inflammatory cell infiltration and interstitial fibrous tissue hyperplasia	Negative	Negative	Negative	Negative
NO.38	ALL	pulmonary	Negative	Negative	Chronic	Negative	Negative	<i>Human</i>	Negative

(25, Male)		infection			inflammatory cell infiltration and interstitial fibrous tissue hyperplasia			<i>Cytomegalovirus</i> (2), <i>Ralstonia insidiosa</i> (205)	
NO.39 (47, Female)	AML	pulmonary infection	Negative	Negative	Fibrous tissue hyperplasia	Negative	Negative	<i>Haemophilus parainfluenzae</i> (2686), <i>Candida tropicalis</i> (10)	Negative
NO.40 (33, Female)	AML	pulmonary infection	Negative	Negative	Fibrous tissue hyperplasia, chronic inflammatory cell infiltration	Negative	Negative	<i>Ralstonia insidiosa</i> (36), <i>Acinetobacter baumannii</i> (3)	Negative
NO.41 (22, Female)	None	pulmonary infection	Negative	Negative	Fibrous tissue hyperplasia, scattered lymphocyte infiltration	Negative	Negative	<i>Ralstonia insidiosa</i> (37)	Negative
NO.42 (30, Female)	MDS	pulmonary infection	Negative	Negative	Slightly widened alveolar space, scattered inflammatory cell infiltration, fibroblast formation in the alveolar cavity	Negative	Negative	<i>Ralstonia insidiosa</i> (2028), <i>Acinetobacter baumannii</i> (357)	Negative
NO.43 (23, Male)	None	pulmonary infection	Negative	Negative	Interstitial chronic inflammatory cell	Negative	Negative	<i>Human cytomegalovirus</i>	Negative

					infiltration, alveolar septal fibrous tissue hyperplasia			(213)	
NO.44 (43,Female)	None	pulmonary infection	Negative	Negative	Chronic inflammation, widening of alveolar septum, interstitial fibrous tissue hyperplasia with lymphocytes, plasma cells and eosinophil infiltration	Negative	Negative	<i>Human cytomegalovirus</i> (3)	Negative
NO.45 (65,Female)	None	pulmonary infection	Negative	Negative	Chronic inflammation of airway mucosa, widening of the alveolar septum, mild hyperplasia of fibrotic tissue , lymphocytic infiltration	Negative	Negative	Negative	Negative
NO.46 (28,Female)	None	pulmonary infection	Negative	Negative	Mild hyperplasia of alveolar septal fibrous tissue , lymphocytic infiltration	Negative	Negative	<i>Pneumocystis jirovecii</i> (70)	Negative
NO.47 (74,Male)	None	pulmonary infection	Negative	Negative	Chronic inflammation of small airway mucosa, mild fibrosis of lung tissue, multiple focal eosinophil infiltration	Negative	Negative	Negative	Negative

NO.48 (11,Female)	None	pulmonary infection	Negative	Negative	Slightly widened alveolar space, interstitial mild fibrous tissue hyperplasia, scattered inflammatory cell infiltration	Negative	Negative	<i>Aspergillus oryzae</i> (14)	Negative
No.49 (22,Male)	ALL	pulmonary infection	Negative	Negative	Granulomatous lesions, atypical caseous necrosis and multinucleated giant cells	Negative	Positive	<i>Human betaherpesvirus 5</i> (218), <i>Aspergillus fumigatus</i> (1)	Negative
NO.50 (34,Male)	Lymphoma	pulmonary infection	Negative	<i>Pneumocystis jirovecii</i>	Mild hyperplasia of fibrous tissue, a little lymphocyte infiltration	Negative	Negative	<i>Pneumocystis jirovecii</i> (86), <i>Human cytomegalovirus</i> (4)	Negative
NO.51 (54,Female)	Diffuse large B cell lymphoma	pulmonary infection	Negative	<i>Pseudomonas aeruginosa</i>	Mild hyperplasia of fibrous tissue in local alveolar septal	Negative	Negative	<i>Pseudomonas aeruginosa</i> (395)	Negative
NO.52 (26,Male)	None	pulmonary infection	Negative	Negative	Alveolar septum widening, mild hyperplasia of interstitial fibrous tissue with lymphocytic	Positive	Negative	<i>Ralstonia insidiosa</i> (117), <i>Cryptococcus neoformans</i> (1)	Negative

NO.53 (43, Male)	None	pulmonary infection	Negative	<i>Acinetobacter baumannii</i>	infiltration Mild hyperplasia of alveolar septal fibrous tissue, lymphocyte infiltration	Negative	Negative	<i>Acinetobacter baumannii</i> (128)	Negative
NO.54 (68, Male)	None	pulmonary infection	Negative	<i>Flavobacterium indologenes</i>	Alveolar septal fibrous tissue hyperplasia, lymphocyte and neutrophil infiltration	Negative	Negative	<i>Cryptococcus neoformans</i> (4)	Negative
NO.55 (60, Male)	None	pulmonary infection	Negative	<i>Acinetobacter baumannii</i>	Small airway mucosa chronic inflammation, large amount of inflammatory exudate necrosis	Negative	Negative	Negative	Sputum T-spot (+)

AML, Acute myeloid leukemia; ALL, Acute lymphocytic leukemia; MDS, Myelodysplastic syndrome.

