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Title: Thin-section computed tomography findings of patients with acute Streptococcus pneumoniae pneumonia with and without concurrent infection

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Body: Objectives: To compare the pulmonary thin-section computed tomography (CT) findings of patients with acute Streptococcus pneumoniae pneumonia with and without concurrent infection. Methods: The study group comprised 86 patients with acute S. pneumoniae pneumonia, 36 patients with S. pneumoniae pneumonia combined with Haemophilus influenzae infection, 26 patients with S. pneumoniae pneumonia combined with Pseudomonas aeruginosa infection, and 22 patients with S. pneumoniae pneumonia combined with methicillin-susceptible Staphylococcus aureus (MSSA) infection. We compared the thin-section CT findings among the groups. Results: Centrilobular nodules and bronchial wall thickening were also significantly more frequent in patients with pneumonia caused by concurrent infection (H. influenzae: $p<0.001$ and $p<0.001$, P. aeruginosa: $p<0.001$ and $p<0.001$, MSSA: $p<0.001$ and $p<0.001$, respectively) than in those infected with S. pneumoniae alone. Cavity and bilateral pleural effusions were significantly more frequent in cases of S. pneumoniae pneumonia with concurrent P. aeruginosa infection than in cases of S. pneumoniae pneumonia alone ($p<0.001$ and $p<0.001$, respectively) or with concurrent H. influenzae ($p<0.05$ and $p<0.001$, respectively) or MSSA infection ($p<0.05$ and $p<0.05$, respectively). Conclusions: When a patient with S. pneumoniae pneumonia has centrilobular nodules, bronchial wall thickening, cavity or bilateral pleural effusions on CT images, concurrent infection should be considered.