

Pneumococcal pneumonia in a confused older person - Is it enough for diagnosis of delirium?

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OBJECTIVE

- To highlight the strong suspicion of meningitis in an immunocompromised patient presenting with pneumococcal bacteremia, as *Streptococcus pneumoniae* (SP) has a significant affinity for the meninges.
- With the recent rise in non-PCV13 serotypes¹, it is important to remain attentive to the possibility of pneumococcal meningitis in susceptible individuals despite the widespread use of pneumococcal vaccines.
- Health promotion through vaccination should be encouraged to prevent an increase in invasive pneumococcal disease (IPD) incidence.

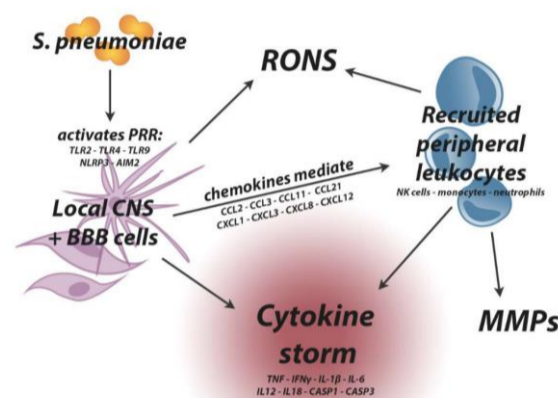
CASE PRESENTATION

- An 82-year-old gentleman with a background of low-grade lymphoproliferative disorder presented with confusion. His CXR was reported as having a diffused bilateral shadow, suggesting possible acute infection. He was treated with intravenous antibiotics for the initial diagnosis of community-acquired pneumonia, complicated with delirium.
- Later, his initial blood culture confirmed the presence of *Streptococcal pneumoniae*. Given this organism's predilection for meninges, he was re-assessed clinically, which identified neck stiffness and positive Kernig and Brudzinski's sign. The CSF sample is shown in Table 1.
- Intravenous antibiotics were adjusted, and the patient recovered fully. After the discharge, conjugated pneumococcal vaccine and monthly immunoglobulin replacement were recommended due to the high risks and life-threatening nature of IPD, following discussion with haematology colleagues.

Test (CSF)	Result	Reference range
Colour	Xanthochromia	
Protein	1.92 grams/L	0.15 to 0.6 g/L
Glucose	0.9 mmol/L	2.77 to 4.44 mmol/L
Lactate	6.7 (mmol/L)	1.1 to 2.4 mmol/L
Leucocytes	60% polymorphs, 40% lymphocytes	
PCR	<i>Streptococcus pneumoniae</i> (+)	

DISCUSSION

- Despite vaccination efforts, *Streptococcus pneumoniae* remains the leading cause of bacterial meningitis². It is associated with long-term neurological complications and high mortality rates, even with antibiotic treatment.
- Even with only a brief neurological presentation, a high index of suspicion for meningitis is warranted, especially where SP appears in blood culture, as it denotes invasiveness.



Pneumococci predilection of central nervous system (CNS) - the release of inflammatory mediators facilitates bacteria to cross the blood-brain barrier³.

LEARNING POINTS

- This case report highlights diagnostic problems of meningitis in the older who frequently present with delirium in the context of less sinister infections such as chest or urinary tract infections.
- The need for vaccination (including boosters) is crucial to safeguard against serious infections caused by SP⁴.

REFERENCE:

1. Koelman DLH, Brouwer MC, van de Beek D. Resurgence of pneumococcal meningitis in Europe and Northern America. *Clin Microbiol Infect*. 2020 Feb;26(2):199-204. doi: 10.1016/j.cmi.2019.04.032. Epub 2019 May 14. PMID: 31100424.
2. Mukerji, R. and Briles, D. E. (2020) 'New Strategy Is Needed to Prevent Pneumococcal Meningitis', *Pediatric Infectious Disease Journal*, 39(4), pp. 298–304. doi: 10.1097/INF.0000000000002581.
3. Yau, B. *et al.* (2018) 'Blood-brain barrier pathology and CNS outcomes in streptococcus pneumoniae Meningitis', *International Journal of Molecular Sciences*, 19(11). doi: 10.3390/ijms19113555.
4. Bonnaville, C. *et al.* (2019) 'Adult vaccination for pneumococcal disease: a comparison of the national guidelines in Europe.' *European Journal of Clinical Microbiology & Infectious Diseases* : official publication of the European Society of Clinical Microbiology, 38(4), pp. 785–791. doi: 10.1007/s10096-019-03485-3.

