Cross-sectional analysis of invasive pneumococcal disease in a London HIV positive cohort

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Background

Streptococcus pneumoniae is the leading bacterial opportunistic infection (OI) in HIV positive individuals. Anti-retroviral treatment (ART) reduces their risk of invasive pneumococcal disease (IPD), however, it remains 20- to 40-fold greater compared to that in the general population[1].

In HIV-infected adults, pneumococcal vaccination (PCV) induces more durable and functional antibody responses in individuals on ART at the time of vaccination than in ART-naive adults, independently of baseline CD4+ cell count[2].
BHIVA guidelines recommend vaccination in HIV-infected adults with CD4 count >200 cells/mL and advice that it should be considered for those with CD^4 count <200 cells/mL[3].

In those of unknown HIV status a HIV test should be offered to those presenting with bacterial pneumonia[4].

We assessed HIV testing rates in invasive pneumococcal disease cases and the burden of invasive pneumococcal disease in a HIV positive cohort.

Methods

We included all cases of invasive pneumococcal disease at three North East London hospitals over three years from 2009 to 2012. Duplicate records were excluded as were those aged <16 years.

Invasive pneumococcal disease was defined as a positive pneumococcal culture from blood, CSF, joint aspirate or pericardial fluid.

HIV positive cases were identified by cross-referencing hospital identifiers with a positive HIV Ab/Ag test result or HIV viral load test result on the virology database. HIV testing status (i.e. was a test performed or not) was determined by the same method.

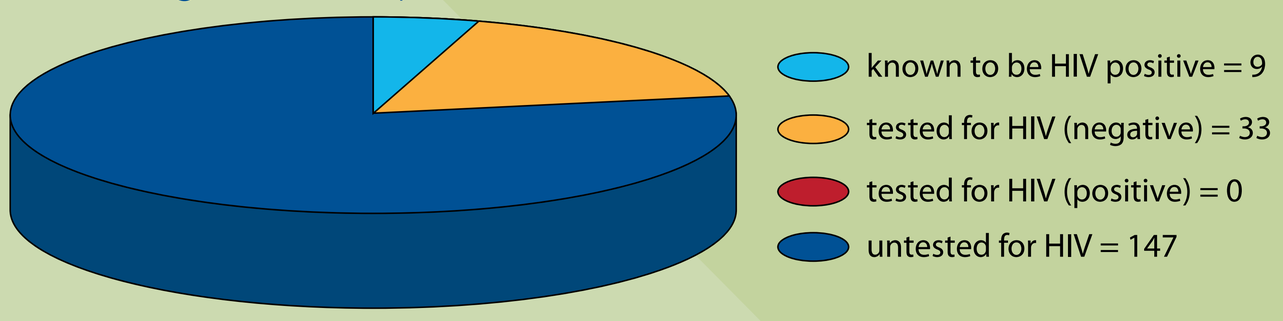
For HIV positive cases data pertaining to CD4 count, HIV viral load, ART, other opportunistic infections, and outcome were recorded, as were risk factors for severe disease including low CD4 count, and previous AIDS-defining illness.

The serotype and antibiotic resistance of each *Streptococcus pneumoniae* was obtained from the hospital microbiology database and the Health Protection Agency (HPA).

Results

- There were 189 cases of Invasive pneumococcal disease (IPD) identified in the cohort over the three years.
- 4.8% (n=9) were known to be HIV positive at the time of their IPD.
- 18.3% (33/180) had a HIV test performed (excluding those known to be HIV positive). All tested negative for HIV.
- 81.7% (n=147) were untested for HIV.

HIV testing in invasive pneumococcal desease



Invasive pneumococcal disease in HIV positive cases (n=9)

Mean age (years)		42
Average CD4 (cells/mL)		287
On ART		4/9
Viral load<40		3/9
Risk Factor for severe pneumococcal disease	CD4 <200 cells/mL	2/9
	Previous AIDS defining illness	3/9

Risk factors for severe pneumococcal disease were identified in 22-33%; however outcomes were good with no deaths

The serotypes of *Streptococcus pneumoniae* in the HIV positive cases included 3, 7F, 10F, 19A (X 2), 19F and 31. The serotype was unavailable for one case. Six of the serotypes were vaccine strains. One patient had a record of pneumococcal vaccination with her GP and subsequently developed IPD with serotype 3 (a vaccine strain). There were no deaths in this group.

The incidence of IPD in our HIV cohort was 85.7 per 100,000 (based on an overall HIV cohort size of 3500)

Conclusion

- **Our data suggests there is a higher incidence of invasive pneumococcal disease in the HIV positive compared to the general population in London (HPA data reported the incidence rate for IPD at 7.5 per 100,000 in London).**
- **In the HIV positive cohort the all *Streptococcus pneumoniae* cultured was fully sensitive. 66% of serotypes were vaccine sensitive, highlighting the importance of vaccination in this at risk groups.**
- **In those presenting with invasive pneumococcal disease with unknown HIV status the testing rates were low at 18.3%. The data was collected after publication of the BHIVA testing guidelines in 2008. This impresses the need for strategies to improve HIV testing rates in acute medical settings in those presenting with bacterial pneumonia.**

References

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