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Factors Affecting Tb Transmission From Adult To Children Within Households In The Gambia

A. Mendy¹, L. Tientcheu¹, A. Ayorinde¹, E. Coker¹, U. Egere¹, B. Kampmann¹

¹Medical Research Council, Banjul, Gambia

Corresponding author's email: alieumendy@hotmail.com

Background:

Childhood tuberculosis (TB) has significant impact on public health worldwide and it is believed that most children acquire TB from an adult smear-positive index case within their household. To further examine this hypothesis and to investigate transmissibility of strains within the household setting, we compared strain-types in adults and their child contacts. We also examined the influence of bacillary burden and strain-type on clinical outcome of contacts.

Materials and Methods:

Stored isolates from smear positive adult TB cases (n =136) were selected according to clinical outcomes of their household contacts (children 15 years old). Mycobacteria were isolated from both adult and –where available- children samples via culture, and typed using spoligotyping to enable strain classification.

Results

The AFB grade of adult index cases correlated with clinical outcome of the children with microbiologically confirmed TB, clinically diagnosed probable TB, asymptomatic but TST positive and asymptomatic, TST negative children showed 60%, 35%, 34% and 33% highest AFB grade (3+) levels respectively.

Strain-type determination by spoligotyping showed that 93% of children had acquired Euro-American lineages, while 7% had *M. africanum* lineage. Combined results for adult index cases of children with confirmed and probable TB showed 76% Mtb-Euro-American, 17% *M. africanum* and 7% Mtb-Indo-Oceanic. Index cases of TST positive children showed 59% Mtb-Euro-American, 32% *M. africanum*, 8% Mtb-Indo-Oceanic and 2% Mtb-Beijing. Those of TST negative children showed 63% Mtb-Euro-American, 26% *M. africanum*, 9% Mtb-Indo-Oceanic and 2% Mtb-Beijing.

Conclusion:

The data so far support other published data, which show that a higher bacillary burden in the index case increases the likelihood of TB transmission to child contacts. Adult patients appear to be more likely to transmit TB if they were carrying Euro-American lineages rather than West African strains.

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