Reversibility of Antibiotic Resistance in an Orphanage of Children with AIDS in Cambodia

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Introduction

According to UNICEF statistics, around 100 million children are living on the streets around the world. The majority of them, condemned in extreme poverty, are living in Sub-Saharan Africa and Southeast Asia. Just in Cambodia, there are an estimated 20,000 children living and begging on Phnom Penh’s streets. Street children are at significantly higher risk of abuse, neglect, exploitation and criminal activities. Their poor nutritional status and vitamin deficiency are background for many infectious diseases, including RTI, diarrhea and parasites. Poor management of infectious diseases can contribute to antimicrobial resistance, especially in countries where antibiotics are widely accessible without prescription. The highest burden of malnutrition, infectious diseases and mortality is for HIV positive children from socially disadvantaged environments. (1-5)

The aim of this paper is to compare resistance patterns of ATB resistant bacteraemia on admission to the facility and 10 to 15 years after the admission. The study has been conducted at two houses for HIV positive children, one in Phnom Penh and the other in Sihanoukville.

Patient and Methods

In total, 149 HIV positive children aged 6 to 18 years living in orphan houses were included in the study. 120 children (80%) are on first line treatment with either Nevirapine or Efavirenz. 29 children were receiving second line treatment of ARV. When there was an occurrence of respiratory tract infection, samples of sputum and oropharynx swabs were analyzed for pathogen identification and resistance to antimicrobials. With occurrence of resistant bacteria, the colonizing of infected respiratory tracts was analyzed and compared with chi-squared test for statistical analysis in univariate model.
Results and Discussion

Initially, all pathogens found, had very high resistance to antimicrobial agents. On admission 90% of all S. aureus were MRSA; 75% pneumococci were penicillin-resistant; 66% of S. pyogenes were erythromycin-resistant. After 10-14 years of HAART, resistance decreased to about 25-33% in previously mentioned pathogens. The change of resistance was most significant in S. aureus and S. pyogenes, where resistance to the majority of antimicrobials decreased by 50-70%. The rate of resistance with gram-negative bacteria was similar: for example, 70-90% of all enterobacteria were producing betalactamase with extended spectrum (ESBL) and were resistant to third generations of cefalosporines; 75% of all candida species were initially resistant to fluconasole (Table 1.) The decrease in resistance was 20-40%. The reversibility of ATB resistance has been noted 10-14 years after admission, probably due to significant improvement of their immune systems and to 90-100% adherence to antimicrobial therapy. Conditions of environment and nutrition are probably also significant factors (3-5); these hypotheses, however, need more research.

Table 1 Comparison of ATB resistance to respiratory tract isolates in orphans with AIDS before and after ART treatment.

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>On admission</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. aureus/ MRSA</td>
<td>90%</td>
<td>25%</td>
</tr>
<tr>
<td>S. pneumoniae./ PRP</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>S. pyogenes./ERY-SP</td>
<td>66%</td>
<td>33%</td>
</tr>
<tr>
<td>Enterobacteriaceae/ ESBC</td>
<td>70%</td>
<td>55%</td>
</tr>
<tr>
<td>Candida Spp</td>
<td>70%</td>
<td>45%</td>
</tr>
<tr>
<td>PS.aeruginosa spp/CTAZ-R</td>
<td>90%</td>
<td>55%</td>
</tr>
<tr>
<td>Acinecobacter spp / CTA-R</td>
<td>90%</td>
<td>45%</td>
</tr>
</tbody>
</table>

Conclusion

Antibiotic resistance in street children with HIV in Cambodia is high and decrease with proper ARV administration; improved nutrition; safe environments. Therefore environment, nutrition and compliance to ARV remain the biggest challenges for reaching sustainable development targets.

References

5. J. STACHO, A. KROBOT (2016): Cognitive aspects of visa-motor integration in the rehabilitation of patients CMP 2016 REHABILITACIA LIII, č. 1, ISSN 0375-0922, s. 62-69

