LETTER TO THE EDITOR

Chromosomally Mediated Antibiotic Resistance in Non-typhoidal Salmonellae Isolated from HIV Patients in Lagos

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The Editor,

Sir,

Disseminated infections with *Salmonella typhimurium*, *S enteritidis*, *S arizona*, *S dublin* and other non-typhoidal Salmonella (NTS) serotypes were recognized early in the HIV epidemic and occur at a prevalence greatly exceeding that in the general population (1). Salmonellosis can occur in patients with a pre-existing diagnosis characteristic of advanced HIV disease or can be the disease that indicates an advance stage of HIV disease (2). The diagnosis of recurrent Salmonellae bacteraemia in a person at risk for AIDS has been recognized as an AIDS defining diagnosis which suggests underlying immune dysfunction with coincident HIV infection (3). Non-typhoid septicaemia is one of the most frequent manifestations of HIV disease in adults in Africa. In Kenya, 11.3% of blood cultures of 1220 patients with febrile episodes were positive for NTS (4).

Antibiotic treatment is guided by drug sensitivities of isolates. Ampicillin or amoxicillin, trimethoprim-sulfamethoxazole (TMP-SMX), extended-spectrum cephalosporins and oral quinolones such as ciprofloxacin are effective during frequent recurrences in blood and stool (5). However, widespread drug resistant NTS and associated complications in the treatment of infection have been reported (6, 7). Genetic analysis has indicated that the source of resistance is either a transferable plasmid or chromosomal mutation (8).

In Nigeria, information on prevalence of NTS in HIV patients and their antibiotic resistant pattern does not exist. This current study is an attempt to bridge this information gap.

Using standard procedures, we cultured 201 blood samples obtained from previously diagnosed HIV-1 positive patients attending the out-patient department of the University Teaching Hospital, Lagos (9). Similarly, 48 stool samples were obtained from some of these patients and cultured on MacConkey agar and incubated appropriately. Identification of bacterial isolates was done using AP120E Kits. Informed consent was obtained from each patient before sampling. Susceptibility of the isolates to the following antibiotics was determined using NCCLS standards (10): ofloxacillin (5 ug), chloramphenicol (30 ug), gentamycin (10 ug), nalixidic acid (30 ug), amikacin (30 ug), septrin (25 ug) piperacillin traxobactam (P-100ug, Tz-10 ug), tetracycline (30 ug), cefotaxime (30 ug), ampicillin (10 ug), cefuroxin (30 ug), ectazidin (30 ug) and augmentin (30 ug).

Plasmid analysis was done using the Birnboin and Doly procedure (11) followed by gel-electrophoresis. Six non-typhoid Salmonella isolates (3%) comprising four *Salmonella typhimurium* and two *Salmonella enteritidis* were recovered from 201 blood samples while there were three *Salmonella typhimurium* (6.2%) and two *Shigella flexneri* (4.1%) grew in the 48 stool samples. Nine (100%) of the NTS isolates were resistant to ampicillin, eight (88.9%) to chloramphenicol, eight (88.9%) to trimethoprim/sulfamethoxazole and 7 (77.7%) to tetracycline.

Subsequent agarose gel electrophoresis showed no plasmid DNA band in gel indicating that observed resistance was chromosomally gene-mediated.

From our observation, the apparent low NTS carriage in HIV subjects in this report was due to the fact that about half (48.5%) of them were on antiretrovivals. Also the antimicrobial resistance patterns and failure to detect plasmid DNA in the isolates suggest that they may belong to the chromosomally mediated multi-resistant strain of phage type 104 (DT104).

In resource poor countries including Nigeria, such drug resistant Salmonella infections may become effectively untreatable.

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