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Evaluation of the Challenges of Typhoid Fever Control in Nigeria

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ABSTRACT

In Nigeria, typhoid fever remains a major disease because of factors such as increased urbanization, inadequate supplies of potable water, regional movement of large numbers of immigrant workers, inadequate facilities for processing human waste, overburdened healthcare delivery systems, fake and counterfeit drugs and overuse use of antibiotics that contribute to the development and spread of antibiotic-resistant. The continuous fight against typhoid fever shows that the disease continues to be a problem globally despite socioeconomic gains in certain settings. Morbidity remains high in many endemic countries, notably in sub-Saharan Africa, Nigeria inclusive. In addition, antimicrobial resistance is a growing issue that poses a challenge for clinical management. The effect is mainly notable in countries with higher baseline levels of economic development, female literacy, and investments in public sanitation. High burden countries must therefore continue to invest in strategies at the local level to address environmental factors such as access to safe drinking water and improved public sanitation that are known to interrupt transmission or diminish the risk of acquiring typhoid. A combined approach that includes the use of typhoid vaccines, improvements in sanitation, and safe water supply is essential.

Keywords: Typhoid fever, resistance, control, Nigeria, healthcare.

INTRODUCTION

Typhoid fever remains a major problem in several parts of the world. Although the burden has declined in many countries, the disease is still widespread, notably in South Asia and sub-Saharan Africa, and a source of much morbidity [1], loss in income and economic productivity [2] and, in many instances, severe disease requiring hospitalization. Although accurate estimates are difficult to come by, 200,000 global deaths may be associated with typhoid, predominantly in certain impoverished settings where incidence can be as high as one in five children experiencing typhoid fever by the age of 10 [3; 4]. In recent years, the emergence of drug resistance, especially multidrug resistant–and fluoroquinolone-resistant strains of *Salmonella* Typhi (*S. Typhi*) and Salmonella *Paratyphi A (S. Paratyphi A*), has been shown to be associated with more severe disease and potentially adverse outcomes, posing challenges for clinical management and further increasing disease burden [5]. Control measures should include investments in water and sanitation services, food safety, and optimal immunization strategies that countries can implement [6]. Despite some specific global recommendations on the use of currently available typhoid vaccines in school age children, there are very few examples of systematic implementation; furthermore, currently available vaccines do not address the burden of *Salmonella* Paratyphi A disease. Similarly, attempts to expand access to potable water and to improve sanitation in many locales have been unable to keep pace with population growth and migration.

Factors inhibiting the Effective Control of Typhoid Fever

Poor Access to Portable Water

Availability and portability of drinking water is still a luxury in most developing nations of the world. The WHO estimated that 1.2 billion of the world's estimated population lacked access to portable water [7, 8] at the peak of the dry season, especially in developing countries, water is often sourced from various doubtful places, most of which are contaminated by human waste. This no doubt, accounts

for the rise in the incidence of typhoid fever which has been documented in such communities during this period of the year [9].

Poor Environmental Sanitation Practice

Adequate sanitation is the management of human excreta and includes both hardware sanitation medium such as toilets, and hygiene latrines as well as hygiene promotion such as hand washing with soap. The [10] observed that 40 % of the world's over 2 billion population lacked access to basic sanitation. One of the major public health concerns in cities in developing nations are slums with overcrowding at its worst. Poor urban planning without regard for waste disposal and drainage facilities all tend to encourage transmission of infectious diseases. An international workshop in 1986 identified ingestion of foods or water contaminated by acutely infected persons or chronic typhoid carriers as the most common form of transmission of the disease [7]. As a result of poor sanitation, typhoid fever is very common in communities where contaminated water and food is common.

Inadequate Health Education

Knowledge is limited about many infectious diseases in many developing countries, as many diseases are still attributed to spiritual attacks by the common folks. Also, as a result of illiteracy, half measures are often taken by self medicating, in order to avoid the unaffordable cost of modern healthcare in a situation where there is no health insurance cover. This often leads to mismanagement with unsubstantiated and misplaced spiritual intervention. As a consequence of this, patients with typhoid fever often present late and also with complications. Olubuyide in 1992 [11] documented delay in seeking medical care, misdiagnosis, and inappropriate therapy as the factors that may contribute to mortality from typhoid fever among Nigerians [11]. Occasionally, inadequate premedication before seeking medical care often changes the expected clinical picture of the disease, thus also leading to misdiagnosis.

Confounding Disease

Typhoid fever as a multi-systematic disease has been dubbed the great mimicker especially in the tropical and subtropical environment, where several other confounding infections and infestations present with febrile illness. Many of these febrile illnesses such as malaria viral hepatitis and liver abscess often present in a similar way as typhoid or even co-exist with typhoid ever. This often leads to delay or misdiagnosis and subsequent increased incidence of complication and mortality.

Poor Personal and Communal Hygiene

Poor personal and communal hygiene is a common occurrence in less developed nations of the world, especially among the illiterate population. Lack of public sanitation as a result of ineffective health policies leads to reckless deposition of waste and use of bush paths and river banks as refuse dumps and defecation points. During the early rainy season, faecal matters from carriers of typhoid are washed into rivers and brooks. Unsuspecting members of the community use it for various domestic purposes including drinking, cooking, etc.

Insufficiency of Laboratory Equipment

It is very difficult to isolate Salmonella typhi from urine and stool specimens in most developing countries. This is often due to lack of culture media, expertise and sometimes, previous exposure to inadequate doses of antibiotics. Another major problem relating to is the abuse of the Widal's test. Some clinicians will not treat or suspect the disease unless the test is positive, while others treat with a positive result even in low titres for an endemic zone of typhoid fever or in the absence of clinical symptoms and signs. [11] showed that malaria could interfere with serological diagnosis of typhoid fever, leading to over diagnosis [11]. Typhoid fever in most developing countries is thus a disease of over- and

under-diagnosis. It would be necessary to carry out studies of baseline values of typhoid agglutinins for every locality as has been done in some areas to know the diagnostic utility of the widal's test. Advances in diagnosis of typhoid fever with the use of enzyme linked immunosorbent assay [12] are still beyond the reach of many developing nations.

Challenges of Drug Resistance

Resistance to Chloramphenicol developed two years after its discovery in 1948; this phenomenon has since become a major challenge to contend with in the management of typhoid fever. Resistance has since been noticed with virtually all drugs including trimethropim and ampicillin [13]. Recent studies have shown resistance and reduced susceptibility to ceftriazone and quinolones [14; 15]; however, quinolones are still regarded as the best and first-line drugs in the management of typhoid fever.

Widespread Fake and Counterfeit Drugs

In 2001, the National Agency for Food and Drugs Administration and Control (NAFDAC) in Nigeria, reported 50% of the drugs in circulation in Nigeria to be fake. The problem of counterfeit and fake drugs no doubt has compounded the problem of management of typhoid fever, with a great potential for increased morbidity and mortality.

Possible Measures to Control Typhoid Fever

Improvement in personal and communal hygiene, effective waste disposal system, and provision of portable water will no doubt go a long to reduce the incidence of typhoid fever. Effective treatment of index cases, health education for both the population and the physicians are important measures to reduce the incidence typhoid fever. Determination of drug sensitivity patterns and aggressive policy will be quite helpful. The difficulty in diagnosis could also be overcome by making laboratory facilities such as culture media available. Above all, resources should be made available, accessible and affordable to the common man. National Health Insurance Scheme is a likely solution to this, as well as citizens economic empowerment.

CONCLUSION

Although accurate estimates are difficult to come by, 200,000 global deaths may be associated with typhoid, predominantly in certain impoverished settings where incidence can be as high as one in five children experiencing typhoid fever by the age of 10. In recent years, the emergence of drug resistance, especially multidrug resistant–and fluoroquinolone-resistant strains of Salmonella Typhi (S.Typhi) and Salmonella Paratyphi A (S. Paratyphi A), has been shown to be associated with more severe disease and potentially adverse outcomes, posing challenges for clinical management and further increasing disease burden. Control measures should therefore include investments in water and sanitation services, food safety, and optimal policies strategies that countries can implement.

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