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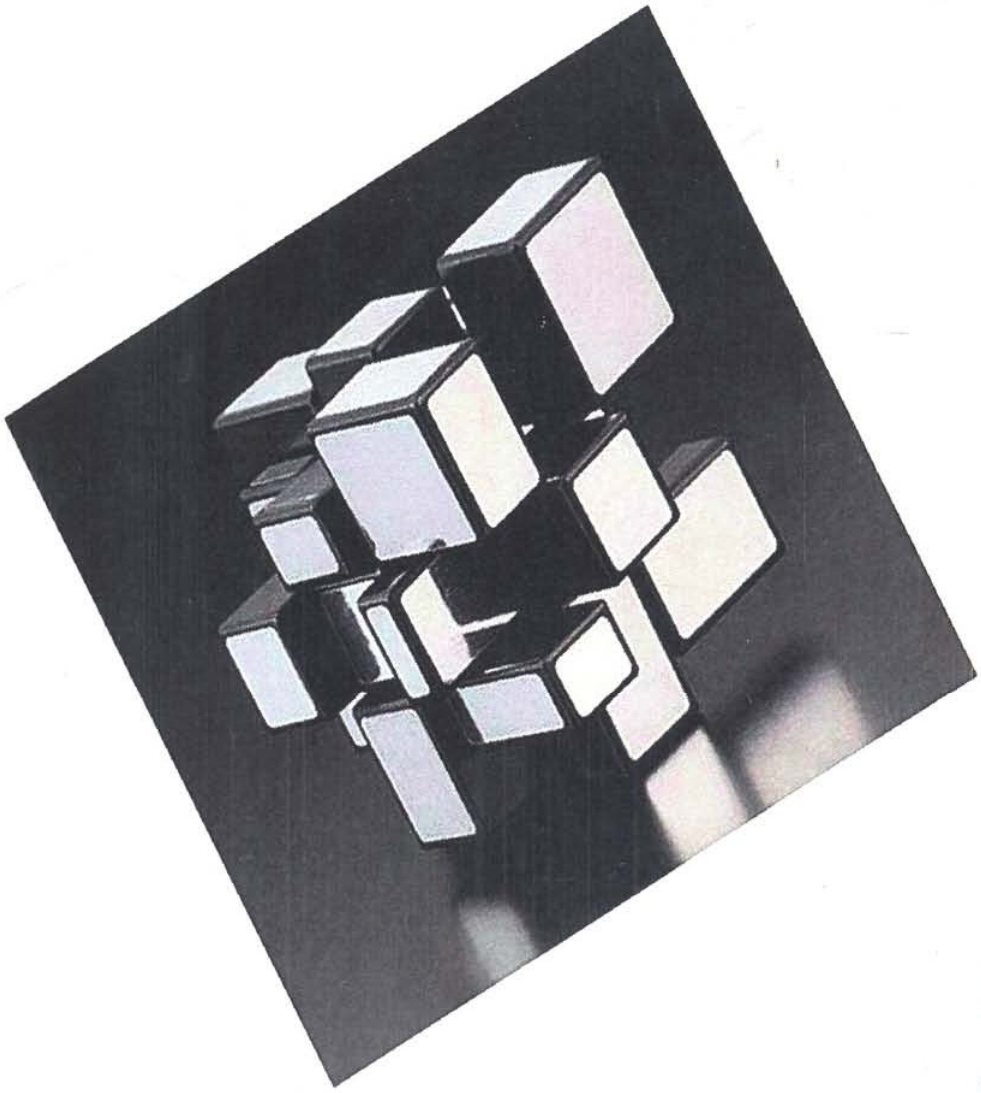

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Table of Content

Current scene and scenario of Visceral Leishmaniasis in Nigeria

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I. Introduction

The Neglected Tropical Diseases (NTDs) are a group of 17 or more chronic parasitic diseases and related infections that represent the most common illnesses of the world's poorest people (WHO, 2010; Nsofor, 2011). Leishmaniasis is a very important member of the neglected diseases group (Kimutai *et al.,* 2009; Dawit *et al*., 2012), which is found to be predominant in the northern parts and middle-belt of Nigeria; particularly Kano, Niger, Sokoto; Benue and Jos (Agwale *et al*., 1993; Ike *et al*., 1993; Jiya *et al*., 2007). However, leishmaniasis in these parts of Nigeria present more as cutaneous leishmaniasis (Igbe *et al.,* 2009; Yusuf *et al*., 2010), and more as co-infection with HIV (Pal, 2005).

Human leishmaniasis is a protozoan disease of public health significance (Alsadig *et al*., 2014). Generally, the leishmaniases are a complex of diseases caused by the intracellular protozoan *Leishmania*. They are widely spread and their disease burden is high, with 350 million people considered at risk. There are an estimated 1.5–2 million new cases per year, up to 500 000 of which are visceral and 1 500 000 are (muco-) cutaneous (Dedet and Pratlong, 2003; den Boer *et al.,* 2011). The incidence of this fast-becoming scourge is on the rise in the India, Middle East and sub-Sahara Africa (Mukhtar *et al*., 2000; Mehrotra *et al.,* 2011; Bhunia *et al.,* 2013). Visceral leishmaniasis (VL) is more malignant than the cutaneous manifestation; whereas cutaneous leishmaniasis (CL) has a tendency to spontaneously self-heal with resulting scars, VL is fatal when left untreated (den Boer *et al.,* 2011). The complications arising from visceralization of cutaneous leishmaniasis make it difficult to treat as it may relapse into diffused form which resembles lepromatous leprosy (Opara and Ameh, 2005). One way to treat CL has been by mectizan, ketoconazole, pentamidine, meglumine antimoniate, liposomal amphothericin B, miltefosine and fluconazole administration (Opara and Ameh, 2005; Barat *et al*., 2007; Adamu *et al*., 2010; Blum *et al*., 2013). *Leishmania* species can cause a wide spectrum of cutaneous lesions; clinical variants of leishmaniasis and clinical status are largely determined by parasite species and host cell mediated immunity (CMI) response. Dissemination of lesions is determined by host immunogenic status. Although CL has been reported more commonly with HIV infection, diffuse CL in the absence of visceral involvement has been reported as a first manifestation leading to the diagnosis of HIV infection (Niamba *et al*. 2007; Calza *et al*., 2004). The species involved in diffuse CL lesions include *L. braziliensis*, *L. amazonesis* and *L. aethiopica* (Desjeux, 2004; CFSPH 2009).

Visceral leishmaniasis is the most severe form of leishmaniasis. It is caused by *L. donovani* and *L. infantum* (Kimutai *et al*., 2009). In endemic areas, the disease is more chronic with young adults and children being more commonly infected. About twice as many male are infected than females. In epidemics, all age groups are susceptible (except those with acquired immunity), and the disease is often acute. Without treatment, VL is usually fatal (WHO, 2015). Symptoms in chronic VL include irregular fever, splenomegaly, hepatomegally, and, or, lymphadenopathy, loss of weight with wasting, diarrhea, low white cell and platelet counts, and anaemia. Skin changes are common (Palumbo, 2010). In acute VL there is splenomegaly, high undulating fever, chills, profuse sweating, rapid weight loss, fatigue, anaemia, and leucopenia. Often there is epistaxis and bleeding from the gums (Freitas-Junior *et al*., 2012).

II. Background of Leishmaniasis in Nigeria

Leishmaniasis has been reported in Nigeria, among other West African countries such as Niger, Mali, Senegal, Cameroon, Burkina Faso, Mauritania, Gambia and Guinea (Dyce-Shar, 1924; Kimutai *et al.,* 2009). CL is proposed to be

endemic in a belt running from Mauritania, Gambia and Senegal in the west to Nigeria and Cameroon in the east. Although the endemic belt so defined for CL runs through the northern part of Ghana, the disease was not been reported in the country until 1999, at which time some chronic ulcers diagnosed as CL (Boakye *et al*., 2006).

III. Research Endeavours Towards Control and Cure of Leishmaniasis in Nigeria

It is possible to manufacture vaccine in order to prompt host cell mediated immunity (CMI) response against leishmaniasis from the view point that individuals who had healed their skin lesions from cutaneous leishmaniasis were protected from further infections (Curtis, 2002; RTI International, 2007). Interestingly also, experiments conducted showed that *L. major* offered protection against visceral leishmaniasis in mice (Uzonna *et al*., 2004). However this approach has the limitation of safety and challenges associated with large-scale production.

So far, the drugs available for the treatment of leishmaniasis show limited efficacy for different strains and species (partly due to drug resistance), toxicity, and are expensive for the poor (Nwaka and Ridley, 2005; Sawadogo *et al*., 2012; WHO, 2012). The search for new chemical entities (NCEs) to discover promising active compounds has led Nigerian researchers to test several natural products for activity (Oseni *et al*., 2013). The methanolic extracts of the leaves of *A. hispida* and *P. amarus* have been shown to possess leishmanicidal property, *in vitro* (Onocha and Ali, 2010; Onocha *et al*., 2011). Hepatosaab®, a cocktail of fruits and vegetables with *V. amygdalina* as active ingredient has also reportedly been indicated in the treatment of leishmaniasis (Amodu *et al*., 2014). Although the idea that herbal supplements are totally safe and free from side effects is erroneous, adverse effects of phytotherapeutic agents are less common compared with synthetic drugs (Luize *et al*., 2005). Nevetheless, care must be taken to prevent indiscriminate use of herbal supplements.

Presently, research in VL (the worst form of leishmaniasis) is greatly slowed down by the lack of an appropriate animal model for the disease (den Boer *et al*., 2011). Meanwhile, controlling sand fly (*Phlebotomus*) populations can be done, although challenging (Kaldas *et al*., 2014). However, research in Africa has shown that effective control of vector breeding can be achieved by the application of preparations from plant with known entomocidal properties (Anjili*et al*., 2014). These are safer than dichlorvos-based pesticides.

IV. Conclusion

Integrated Vector Management (IVM) has been greeted with success in several countries in Africa, including Tanzania, Nigeria, Zambia, and Sudan (Caldas De Castro *et al*., 2004; Keiser *et al*., 2005). However, an increase in vector densities may be seen in association with ecological and climatic changes which can result from urbanisation and developmental efforts such as irrigation, dam construction and other governmental projects, resulting in changes in vector population densities (Colwell *et al*., 2011; M a r o l i *et al*., 2012). Therefore, continuous awareness drives must go on to keep sensitizing dwellers endemic communities, school children, market traders and even office workers on safe, hygienic practices (soft skills such as regular hand washing, pest and vector control, pet care). Individuals showing symptoms should be advised to promptly report to health facilities for appropriate care.

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