

Hydrocelectomy As An Indicator For The Occurrence And Spread Of Lymphatic Filariasis In Kano State, Nigeria

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Citation

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Abstract

Lymphatic filariasis is endemic in Nigeria, but the level of endemicity is unknown because many areas in the country remain unstudied. The Nigeria Lymphatic Filariasis Elimination Program (NLFE) has set an ambitious target of 2015 to eliminate this disease. The success of this program depends on the use of an inexpensive, easy, and simple method to both identify and treat endemic communities. Hydrocoele is one of the chronic symptoms of lymphatic filariasis that is surgically treated in major hospitals in areas where the disease is endemic. Hydrocelectomy has been used as an index to determine the prevalence of lymphatic filariasis in certain endemic communities. The aim of this work is to determine the prevalence of hydrocelectomy in hospitals to assess the occurrence and spread of lymphatic filariasis in Kano State, Nigeria. To accomplish this goal, the prevalence of hydrocelectomy was investigated from 1994–2003 in 20 hospitals spread across eight of the nine Zonal Health Centers (ZHCs) in Kano State. The data obtained were analyzed using simple frequencies and percentages with respect to the specific hospital examined, patient age and type of hydrocoele on which hydrocelectomy was performed. Of 54,943 surgeries performed in 20 hospitals, 1,271 (2.31%) were hydrocelectomies. The prevalence of hydrocelectomy among the hospitals and ZHC cases ranged from 59 (0.16%) to 121 (29.4%) and from 59 (0.16%) to 325 (12.9%), respectively. The frequency of hydrocelectomy cases showed an initial rise with patient age, reaching a peak at the older age groups and then dropping thereafter. Although the overall prevalence of hydrocelectomy is generally low, its prevalence in all the hospitals surveyed strongly suggests that lymphatic filariasis may be prevalent and widespread throughout the state. However, none reflection of the domicile of the patients coupled with poor record taking/keeping and storage made it impossible to use the results in selecting villages for further epidemiological studies. Therefore there is need to develop a standard and sustainable system of taking and keeping records; and storage in Kano State hospitals for effective planning and research.

INTRODUCTION

Lymphatic filariasis resulting from infection with the mosquito borne nematode parasite *Wuchereria bancrofti*, is an important public health problem in many developing countries, affecting over 50 million people in Africa alone (Michael and Bundy, 1997; Mwobobia et al; 2000). The common clinical manifestations of lymphatic filariasis are acute attacks of adenolymphangitis (ADL), and disfiguring conditions such as hydrocoele and lymphoedema/elephantiasis (Ahorlu et al; 2001). Hydrocoele is a condition that results from the accumulation of fluid in the tunica vaginalis of the scrotum and is the most commonly observed chronic presentation of lymphatic filariasis in *W. bancrofti* endemic regions of the world (Ahorlu et al; 2001).

The hydrocoele associated with lymphatic filariasis in males, causes physical, psychological, social and economic distress (Mwobobia et al; 2000). The associated scrotal pain may be

sufficiently severe to make work impossible (Wijers, 1997), and large hydrocoeles may prevent sexual intercourse and so weaken marriages (Gyapong et al; 1996b). The economies of whole communities may be damaged because cases stay at home and depend on family members, lose their jobs, or work less hours than their unaffected counterparts (Basu et al; 1971, Lu et al; 1988). The hydrocoele condition is managed through surgical procedure, the hydrocelectomy. The surgical management of hydrocoele consumes scarce hospital resources, straining already overburdened health delivery systems (Mwobobia et al; 2000).

Since hydrocoeles correlates well with the prevalence of microfilaraemia, the prevalence of hydrocoele can be used to assess the prevalence of lymphatic filariasis in a community rapidly (Gyapong et al; 1996a; WHO, 1997). Up to 40% of men actively or previously infected with *W. bancrofti* exhibit hydrocoele and in a region of northern Ghana and coastal Kenya endemic for this disease; hydrocelectomy

accounts for 25% of all surgical procedures (Haddix and Kestler, 2000; Mwobobia et al; 2000). Hydrocelectomy can therefore be used to assess the prevalence of lymphatic filariasis in Kano State as it is located within the geographical area considered endemic for lymphatic filariasis, but the level of endemicity is unknown. The aim of this work is to determine the prevalence of hydrocelectomy as well as its burden on health resources in Kano State hospitals. The result will also be used to select villages for detailed epidemiological studies of lymphatic filariasis in the state.

MATERIALS AND METHODS

THE STUDY AREA

Kano State is located in the north western Nigeria. The state is situated between 100° 33'N - 100° 33'N and 70° 34'E - 90° 29' E respectively. The State is bordered in the east by Jigawa State, on the west by Katsina State, to the south by Kaduna and Bauchi States. It covers a total area of 20,760 SqKm with 1,754,200 hectares of arable land and 75,000 hectares of forest vegetation and grazing lands. The topography is generally flat. The main river is the Kano River on which the second largest dam in Nigeria, the Tiga was built. Minor rivers include Challawa, Watari, Tomas and Kafin-Chiri. The state has an estimated population of about 9,383,332 million people (NPC, 2006).

The state is situated in the Sahel savannah region of West Africa and its climatic condition is tropical having rainy and dry seasons. The length of the wet season is about 100-150 days or five months (from mid-May to mid-October of each year). Rainfall pattern is unimodal; with an average rainfall of 600mm. The dry season lasts for about seven months (from mid-October to mid-May of each year). However, there is the dominance of North Easterly winds, the harmattan which is cold and dry that extends from November to February of each year. The average maximum and minimum temperature fluctuates throughout the year. The annual mean ranges from 30°C to 35°C. High temperatures are recorded during March to May annually while the lowest 13°C (sometimes it goes down as low as 10°C is from December to January).

The State Ministry of Health is concerned with preventive aspect of the health care while the State Health Management Board deals with curative medicine. The board delivers its health care services through about forty five General and Cottage Hospitals spread across the state. Of this number

about 24 hospitals are managed by the State's Health Management Board.

RETROSPECTIVE SURVEY OF HYDROCELECTOMY IN KANO STATE

The Health Management Board, a parasatal of the Kano State Ministry of Health manages all the General Hospitals and some Cottage Hospitals in the state. For ease of administration, the hospitals are grouped into nine Zonal Health Centres (ZHC). Permission to undertake the proposed study was sought and obtained from the Executive Secretary of the board. Thereafter, eight ZHCs were selected to conduct the work in order to adequately cover the entire state. The ZHCs selected include; Municipal (Zone I), Rano (Zone II), Danbatta (Zone III), Gwarzo (Zone IV), Gaya (Zone V), Sheik Jidda (Zone VI), Sir Muhammadu Sunusi (Zone VII) and Sheikh Muhammadu Gidado (Zone VIII).

The aim of the survey was to determine the prevalence of hydrocelectomy and types documented in the hospitals records and/or presently admitted cases in the hospitals as well as its burden on the hospital resources. It was also aimed at providing background information for the selection of endemic areas where further detailed study will be carried out. In each of the eight zones, all the hospitals were visited except in Municipal (Zone I) where only the leprosarium at Yadakunya was visited, because the other two are a Psychiatric and a Paediatric hospital and do not undertake hydrocelectomy. Data was also not collected at Sheikh Muhammadu Gidado Hospital because it is a Maternity Hospital.

In each of the hospitals, records for a period of ten years (1994-2003) were obtained and examined from the Medical Records and Theatre. Medical records were examined to determine the number of cases diagnosed for hydrocelectomy. The theatre registers were also examined to determine the number of hydrocelectomies performed during the period under review. The information obtained was recorded in a data collection form. Records of hydrocelectomy were obtained from twenty hospitals.

ETHICS STATEMENT

Permission to carry out the work was approved by the Kano State Hospital Management Board, a parasatal in the State's Ministry of Health via a letter dated 26th March, 2003. The work was also reviewed and approved by the Postgraduate Research Committee of the Department of Biological Sciences, Ahmadu Bello University, Nigeria.

DATA ANALYSIS

The data of records of hydrocelectomies was analyzed using simple frequencies and percentages with respect to hospitals, age and type of hydrocoele and then presented in tabular forms. The hydrocelectomies were categorized into right; left, bilateral and unspecified (which are cases not indicated as either right, left and bilateral in the Physician's Register).

RESULTS

RETROSPECTIVE SURVEY OF HYDROCELECTOMY IN SELECTED HEALTH CENTRES IN KANO STATE

In the process of data collection, most hospitals visited did not have up to date records in their Medical Record Units. For example, in Tudun-Wada Dankadai, the Medical Record Unit was none existent at the time of the visit. In addition many of these units have poor storage facilities and therefore past records of many years in some hospitals were not available. Where record files were available, documents were either missing or information incomplete. However, records with respect to the statistic of some inpatient, outpatient, paediatric cases and surgeries performed were usually found kept in good order.

Cases diagnosed as hydrocoeles were encountered in the Medical Records, which were usually referred to the theatre for hydrocelectomies. The records in the theatre registers were properly kept in most hospitals, although there were few instances of missing pages in some registers. Every case of hydrocoele recorded in the Medical Record Unit was also reflected in the theatre register, in view of this duplication, only the results of cases of hydrocoeles from the theatre registers are reported since the records were more accurate and properly kept. However, most of the records from the registers had the fault of none reflection of ages and domicile of the patients. This made the selection of villages or areas where further detailed epidemiological study was to be done impossible. That is why the analysis of hydrocelectomies on the basis of age was done only in instances where such information was available. In addition, the aetiology of the hydrocoeles was not reflected both in the theatre registers and the patients file folder, thus making it impossible to know those that were due to lymphatic filariasis.

Hydrocelectomies were encountered in all the hospitals visited except at Sheikh Muhammadu Gidado, but the number of cases varied from one hospital to another.

However, no clear pattern of the distribution was discernible.

Of the 54,943 surgeries performed 1,271 (2.31%) were hydrocelectomies (Table, 1). Of the total number of hydrocelectomies, 291 (22.9%) were done on the right type, 203 (15.9%) on the left, 368 (28.9%) on the

Figure 1

Table 1: Hydrocelectomy cases for a decade in the twenty hospitals in Kano State bilateral and 409 (32.2%) on the unspecified type of hydrocoeles. The prevalence of hydrocelectomies among the hospitals ranged from 59 (0.16%) in Yadakunya hospital to 121 (29.4%) in Rogo hospital. The prevalence according to Zonal Health Centres ranged between 59 (0.16%) in Municipal (Zone I) to 325 (12.9%) in Rano Zone (Zone II).

Hospital	No. of surgeries	No hydrocelectomies	Number of type hydrocelectomies			
			Right	Left	Bilateral	Unspecified
Kano	456	92(20.20)	36(39.10)	23(25.00)	30(32.60)	3(3.30)
Kura	292	12(4.10)	1(8.30)	2(16.70)	1(8.30)	8(66.70)
Tiga	440	35(7.80)	6(17.14)	3(8.60)	8(22.86)	18(51.43)
T/Wada	903	139(15.40)	28(20.10)	16(11.50)	47(33.80)	48(34.50)
Dogwawa	421	47(11.20)	5(10.60)	6(12.70)	25(53.20)	11(23.40)
Sub-Total	2512	325(12.93)	76(15.38)	50(15.38)	111(34.15)	88(27.08)
Danbatta	1428	103(7.20)	15(14.60)	11(10.70)	27(26.20)	50(48.50)
Bichi	1980	109(5.50)	20(18.30)	8(7.30)	32(29.40)	54(49.50)
Gezawa	1953	142(7.20)	48(33.80)	29(20.40)	40(28.10)	24(16.90)
Minjibir	353	26(7.40)	2(7.60)	3(11.50)	8(30.80)	13(50.00)
Sub-Total	5714	380(6.65)	85(22.36)	51(13.42)	107(28.16)	41(37.11)
Gwarzo	1651	99(5.99)	21(21.21)	17(17.17)	34(34.40)	27(27.27)
D/Tofa	2023	123(6.08)	34(27.34)	39(22.76)	28(22.76)	22(17.89)
Rogo	412	121(29.36)	25(20.66)	11(9.10)	57(47.10)	32(26.45)
Kabo	24	2(8.33)	2(100.00)	0(0.00)	0(0.00)	0(0.00)
Sub-Total	4110	345(8.39)	82(23.77)	67(19.42)	119(34.49)	81(23.48)
Gaya	1723	46(2.67)	3(7.14)	2(4.35)	5(10.87)	36(78.26)
Wudil	1415	28(1.98)	6(21.43)	1(3.59)	7(25.00)	14(50.00)
D/Kudu	507	22(4.34)	4(18.18)	4(18.18)	5(22.70)	9(40.00)
Sumaila	178	9(5.1)	0(0.00)	0(0.00)	3(33.33)	6(66.66)
Sub-Total	3823	105(2.75)	13(12.38)	7(6.67)	20(19.05)	65(61.90)
Yadakunya	36326	59(0.16)	12(20.34)	8(13.56)	2(20.34)	27(45.76)
Sheik Jidda Sir	440	35(7.95)	15(48.86)	14(40.00)	5(14.29)	1(2.86)
Muhammad Sumusi	2018	24(1.19)	8(33.33)	6(25.00)	4(16.67)	6(25.00)
Sub-Total	38784	118(0.30)	35(29.16)	28(23.72)	11(9.32)	34(28.81)
Grand Total	54943	1271(2.31)	292(22.95)	203(15.95)	368(28.95)	409(32.18)

AGE DISTRIBUTION OF CASES OF HYDROCELECTOMIES

Ages of the patients on which hydrocelectomies were performed were reflected in the records of only in five of the hospitals surveyed. The general pattern showed an initial rise with age reaching a peak in the older age groups and then began to drop thereafter in the older age group (Table, 2). In fact, the pattern revealed an increase with age reaching a peak at 50 – 59 year age group and then it begins to decrease up to the 80+ year age group.

Figure 2

Table 2: Age distribution among patients with cases of hydrocelectomies at Kura, Dawakin-Kudu, Yadakunya, Sumaila and Rogo General Hospitals

Age Group	Number	Percentage
1 – 9	3	2.30%
10 – 19	2	1.5%
20 – 29	4	3.1%
30 – 39	12	9.2%
40 – 49	22	6.9%
50 – 59	40	30.8%
60 – 69	27	20.8%
70 – 79	13	10.0%
80+	7	5.4%
Total	130	100%

DISCUSSION

In spite of the problems associated with record keeping encountered in most of the hospitals surveyed, the prevalence of hydrocelectomy (an index of filariasis) suggest that lymphatic filariasis is endemic in different parts of Kano State. Hydrocelectomy has been used as a proxy for the prevalence of hydrocoeles in coastal Kenya endemic for filariasis by (Mwobobia et al; 2000). In regions of northern Ghana and coastal Kenya endemic for lymphatic filariasis, hydrocelectomies account for 25% of all surgical procedures (Haddix and Kestler, 2000; Mwobobia et al; 2000). In this study, the prevalence of hydrocelectomy ranged from 0.16% to 29.4% of the total surgeries performed in the hospitals surveyed during the period under review (1994 – 2003). This therefore, strongly suggests that lymphatic filariasis is not only prevalent but widespread in most parts of Kano State as cases of hydrocelectomies have been recorded in all the major hospitals spread across the state. It also shows that hydrocelectomy constitute a sizeable proportion of surgeries performed in many hospitals spread across the state.

In fact, the low prevalence of hydrocelectomy of 59(0.16%) recorded in this study is from a specialized hospital, the Yadakunya leprosarium where most of the surgical cases are concerned with medical ailments of leprosy. However, in all the conventional hospitals with exception of Sir Muhammadu Sunusi 24(1.19%) and Wudil 28(1.98%), the prevalence of hydrocelectomy ranged from 4% to 29.4%. The low prevalence of hydrocelectomy in Wudil General Hospital may be due to unavailability of data for a period of three years (1996, 2002 and 2003). At Sir Muhammadu Sunusi (a major General Hospital located in the state capital), the low prevalence may be explained by the fact

that many hydrocelectomy patients that would have normally gotten their surgeries done in the hospital do so at either Gezawa or Minjibir hospitals that are located around that axis of the state capital. In spite of the overall low prevalence of hydrocelectomy, 1,272(2.3%) and the review covered a period of ten years, the results compares favourably well with that obtained by (Mwobobia et al; 2000) in five hospitals in coastal Kenya based on surgery records for five years. They found that hydrocelectomies accounted for 27.6%, 16.6%, 13.6%, 4.3% and 2% of major operations (totalling 6339) recorded in Kinango, Msambweni, Kilifi, Malindi and coastal general hospitals, respectively. In fact the low prevalence in this study largely results from the very high number of surgeries 36,326 recorded compared to the 59 for hydrocelectomies at Yadakunya leprosarium. In addition, the stigma associated with the presence of hydrocoeles and of course, the hydrocelectomy might have led many patients to undertake hydrocelectomy in private hospitals. In addition, the poor record keeping and storage observed in many hospitals accounted for the low prevalence of hydrocelectomies in the hospitals surveyed. Therefore, the frequencies of hydrocelectomies in major hospitals of Kano State are evidence of the heavy social and economic burden caused by hydrocoeles associated morbidity and its management.

The distribution of hydrocelectomy in relation to age in this study was shown to increase with age reaching a peak in the older age groups and then to a downward trend. This is because children are less exposed to predisposing factors to infection and also the possession of immunity against the infection. This result is in agreement with previous findings such as those of Onapa et al; (2001) in Lira, Soroti and Katakwi districts, Uganda where prevalence increased gradually with age in men aged >56 years and also that of Badaki and Akogun, (2001) in Taraba State, Nigeria.

The results of this study underscores the need to develop a reliable and sustainable system of standard method of collecting, recording and storing both inpatient and outpatient data in hospitals managed by the Kano State Health Management Board.

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