



Research Article

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Epidemiological, Clinical and Therapeutic Characteristics of Patients with goiter in the Diocesan Hospitals of Butembo-Beni, Eastern part of the Democratic Republic of the Congo, DRC

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Abstract

Background: Iodine deficiency is still common in some countries of the African continent. Thyroid hormones are essential for growth, neuronal development, reproduction and regulation of energy metabolism. This study aims to determine the prevalence of goiter in the diocesan hospitals of Butembo-Beni in the Eastern part of DRC. **Methodology:** It was a retrospective study carried out from January 2010 to December 2015 on 300 cases of goiter over 16 779 cases in the department of surgery in our study environment. **Result:** Patients suffering from goiter longer attend to General Referral Hospital of Kyondo was 97%. The predominance of women demonstrated in 96.7% and the most affected age group was between 18 and 42 years in 84,7%. The majority of patients was farmers. Multigravidas were affected in 95.5%. **Conclusion:** Iodine deficiency disorders are one of the most common public health problems throughout the rural eastern part of DRC, especially in the Diocesan Hospitals of Butembo-Beni. The sensitization of the population who is vulnerable and the thorough knowledge of its management by caregivers are of paramount importance in our country.

Keywords: Prevalence, Goiter, Diocesan, Hospitals, Butembo-Beni.

INTRODUCTION

Goiter is the often visible enlargement of the thyroid gland that affect the structure and function of the thyroid gland [1].

Thyroid disorders are common worldwide [2] and at least three hundred and fifty million of people in Africa are at risk of thyroid disorders [3].

Globally, about two thousand million people are affected by thyroid disorders. Although endemic goiter is the most visible sign of iodine deficiency, its most devastating consequence is brain damage causing mental retardation in children [4].

Thyroid disorders represent an important public health problem worldwide ranking second to diabetes as the commonest endocrinological disorder seen in adult medical practice and presenting amyriad of devastating consequences if not treated early [5, 6].

Around 2.2 billion people are affected worldwide and this is a real public health problem [6].

Foods rich in cyanogenic glucosides, including cassava and sweet potatoes are among the factors implicated in goitrogenesis in Africa. The very widespread consumption of cassava explains that endemic goiter occurs in low-lying areas and incidentally in the classic site of mountain valleys in Africa [7, 8].

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Ghana, a developing country in West Africa is a good example, as are most of the countries in the African continent because its government makes efforts to reduce endemic iodine deficiency disorder [9]. Nevertheless, due to deficiency support and qualified staff for the well-being and adequate treatment of patients, undernutrition and excess iodine nutrition has meant only about 32.5% coverage has been achieved in some areas, while in other areas overexposure of iodine has meant an increase in toxic thyroid disorders [10].

In Africa, especially in the Sub-Saharan region, this one has been for a very longtime classifying as an area of moderate to severe iodine deficiency disorders [11-16]. Iodine deficiency disorders on the continent represent over 25% of the global burden of the disease [17]. Still in this part of Africa, a rise in the incidence of thyrotoxicosis was noted by others authors in Zimbabwe and the Democratic Republic of the Congo following the introduction of iodized salt in both countries [18, 15].

In Burkina Faso, the endemic state with a prevalence rate is estimated at more than 20% [19].

However, this problem is not confined to developing countries. Iodine deficiency has been found in highly developed countries where it had been considered to have been eliminated or not exist [4].

Whereas persistent wars and famine coupled with difficulties in implementation and regulation of iodine nutrition have eroded some of the gains made towards sufficient iodine intake on parts of the continent [20-22], excessive intake of iodine has been recorded in other areas of the continent [23]. The World Health Organization's reports show that adequate or excessive iodine intake borne out of the universal iodization programme has been observed in over 30 countries, some of them on the African continent [24].

In the Democratic Republic of the Congo (DRC), goiter endemicity is especially intense in the region limited to the North by Ubangi and Uélé, to the South by Mongala and Dua, to the West by the Lokame basin, to the East and South-East by the Ebola Basin (50 to 63.2% of cases). In the territories between the Lokame and the Moto River, we find a percentage between 20 and 30% [19].

Iodine deficiency disorders (IDD) are more confined to mountainous regions where soil erosion and flooding is common [25]. The North Kivu Province, which is in the Eastern of DRC, especially the Butembo-Beni health areas, is one of the mountainous areas in DRC.

This study assessed the prevalence of goiter in the diocesan hospitals of Butembo-Beni in the Eastern part of DRC.

MATERIALS AND METHODS

The present study was conducted to find out the prevalence of goiter in the diocesan hospitals of Butembo-Beni, located in the Eastern part of the Democratic Republic of the Congo where the war is ongoing since 1996, especially at General Referral Hospital (GRH) of Kyondo, Matanda Hospital and at the Cliniques Universitaires du Graben of Butembo. This is a retrospective study which covered a period of 6 years, from January 2010 to December 2015.

We included in this study, all patients diagnosed for goiter and all those who have received medical or surgical treatment in the above Hospitals, during the study period. All cases that has been diagnosed or treated outside the hospitals listed above were excluded from this study.

Three hundred cases of goiter were diagnosed and treated in the diocesan hospitals of Butembo-Beni among 17647 patients with surgical pathologies during this period of study. This sample was exhaustive.

The information for each patient was collected on individual survey cards previously prepared with the following elements (the hospital concerns, the year of consultation, the age, the gender, and gravidity, clinical characteristics of the patients, the treatment, the outcome of and complication).

Data entry and analysis was performed using the EPI-INFO software version 3.5.4. Data were presented as tables. Ethical norms were respected in the realization of this work. Confidentiality was guaranteed by the use of a code instead of the name. The authorities of Beni and Butembo health areas gave their approval for this study. No individual consent was required as archived patient records were collected and no patient identification was used.

RESULTS

Prevalence of goiter in the Diocesan Hospitals of Butembo-Beni

Three hundred cases of goiter were diagnosed and treated in the diocesan hospitals of Butembo-Beni among 17647 patients with surgical pathologies during this period of study. The prevalence of goiter in the Diocesan Hospitals of Butembo-Beni was 1.7%.

Health structures and years of consultation

The following table divided the patients according to the health structures and the year of consultation.

Table 1: Health structures and years of consultation

Health structures and the year of consultation	Number=300	Percentage=100
Health structures		
GRH of Kyondo	291	97
Matanda Hospital	7	2.3
Cliniques Universitaires du Graben	2	0.6
Years of consultation		
2010	56	18.7
2011	52	17.3
2012	54	18
2013	43	14.3
2014	32	10.7
2015	63	21

Socio-demographic characteristics of patients

The following table divided the patients according to their socio-demographic characteristics of patients

Table 2: Distribution of patients according to their socio-demographic characteristics

Socio-demographic characteristics of patients	Number=300	Percentage=100
Gender		
Female	290	96.7
Male	10	3.3
Age range (in years)		
≤18	2	0.7
18-30	38	12.7
31-42	94	31.3
43-54	101	33.7
55-66	49	16.3
67-75	13	4.3
76 and above	3	1
Profession		
Farmers	254	84.7
Trader	21	7
Household	13	4.3
Pupil / Student	6	2
Nurses	4	1.3
Teachers	2	0.7

Distribution of patients according to their gravidity

The table below divides patients according to their gravidity

Table 3: Distribution of patients according to their gravidity

Gravidity of patients	Effective=289	Percentage=100
Multigravida	276	95.5
Nulligravida	8	2.8
Gravida	5	1.7
Total	289	100

Clinical characteristics of patients

The table divides patients according to their clinical characteristics

Table 4: Clinical characteristics of patients.

Clinical characteristics of Patients	Number=300	Percentage=100
Type goiter		
Asphyxiating	1	0.3
Basedowien	1	0.3
Euthyroid	55	18.3
Giant	6	2
Hyperthyroid	1	0.3
Hypothyroid	1	0.3
Undetermined	145	48.3
Multi nodular	23	7.7
Plunging	35	11.7
Toxic	31	10.3
Collateral circulation	1	0.3
Evolutionary stage		
Stage I	7	2.3
Stage Ia	1	0.3
Stage Ib	1	0.3
Stage II	84	28
Stage III	102	34
Undetermined stage	98	32.7
Stage IV	7	2.3
Antiquity of goiter		
Less than 5 years	10	3.3
Less than or equal to 5 years	91	30.3
Over 5 years	199	66.3

Treatment and outcome of patients

The table below divides the patients according their treatment and outcome.

Table 5: Treatment, outcome and complications.

Treatment, outcome and complications	Number=300	Percentage=100
Treatment		
Surgical	295	98.3
Medical	5	1.7
Outcome		
Deceased	6	2
Escaped	1	0.3
Healed or improve	280	93.3
Static	7	2.3
Transferred	6	2

DISCUSSION

During the study period, 300 cases of goiter were diagnosed and treated in the diocesan hospitals of Butembo-Beni among 17647 patients with surgical pathologies. The prevalence of goiter in the Diocesan Hospitals of Butembo-Beni was 1.7%. This finding is similar to the one conducted in 2011 by A. O. Ogbera *et al*, in which, they found that the prevalence rates of endemic goiter range is between 1.2% to 6% in Central Africa [6].

In these 300 patients, 290 (97%) of them were found at General Referral Hospital of Kyondo. This higher proportion of patients in this hospital is due to generalist practitioners with experience in thyroidectomy who work in this hospital.

Women were more represented with 96.7% in this study. Our study thus confirms several reports of a clear female gender predisposition to thyroid disease [26, 27]. This finding is similar to the one of Ilumbulumbu and his collaborators in DRC, who also found a predominance of women [19]. In France, Bilosi and colleagues, in their study on 128 patients, found similar results [28]. The female predominance is explained by the fact that the hormonal factors especially estrogen, promote epithelial hyperplasia and reduce the entry of iodine into the thyroid. In addition, goiter is frequent in periods when the need for synthesis of thyroid hormones is increased: during pregnancy and breastfeeding [29].

The age group of 31 years and above was the most represented with 81.3% of cases in this study. This finding is similar to the one of Ilumbulumbu and his collaborators in DRC, who also found that the age group of 40 years and above was the most represented with 87% of cases [19].

Our results are similar with those found in the study conducted by Pierre Aubry in tropical climates. This author found that the distribution of goiter prevalence is strongly influenced by age and sex. The frequency of goiter increases with age. The need for thyroid hormone synthesis also increases with age [29].

In our study, the majority of patients were farmers in 84.7% of cases. This is explained by the excessive consumption by this population group of foods rich in cyanogenic glucosides, including cassava and sweet potatoes. This finding is similar to the one of O E Okosieme who also found that the majority of affected people live within subsistence agricultural systems, commonly in mountainous regions which have been deprived of iodine by leaching of the soil. Goitrogens in local foods like cassava and millet accentuate the effects of iodine deficiency and other micronutrient deficiencies such as selenium also play a role in the development of goiters [2]. Foods rich in cyanogenic glucosides are among the factors implicated in goiterogenesis [19].

Pierre Aubry found that farmers are the most affected because of the very low social and economic level, unlike in the Alps, where endemic goiter has considerably decreased in high socioeconomic countries [29].

According to our results, it appears that goiter affects more multigravida in (95.5%) of cases.

Recent studies have shown total goiter rates of close to a 100% in pregnant women, even in areas within countries with iodine sufficiency status [30, 31].

Pregnant women are a particularly vulnerable group because of the susceptibility of the fetus to iodine deficiency. However, access to, and utilization of, health-care services by women at high risk for iodine deficiencies can be highly variable and no criteria for assessing the severity of iodine deficiency based on prevalence have been recommended for pregnant women [32].

Dietary iodine requirements increase during pregnancy [33]. Although the full effect of mild maternal iodine deficiency on the offspring is still not fully understood, severe maternal iodine deficiency and hypothyroidism have been associated with impaired neurological development in the offspring [4].

Regarding the type of goiter, the undetermined, euthyroid and plunging goiter were the most represented and the majority of our patients consulted at the third stage, the indeterminate stage and the second stage. The antiquity of goiter was more than 5 years.

Ilumbulumbu *et al* found in their study that the diving, multi nodular and toxic goiters were the most represented and the majority of the patients consulted at the fourth stage, the indeterminate stage and the third stage [19].

According to the WHO classification, 12.9% of subjects had goiter stage Ia, 1.8% stage Ib, 0.3% stage II, but none had stage III goiters [19].

Our results are explained by the fact that in our country, the population always consults when the disease is at the terminal stage or at the moment when complications begin to appear.

According to this study, 98.3% of cases were undergoing goiter surgery. The outcome was favorable in 93.3%.

In Kano, a northern state of Nigeria 75 patients with iodine deficiency disorders had benefited surgical treatment [34].

This finding is similar to the one conducted by Ilumbulumbu *et al* in the eastern part of DRC, at the General Referral Hospital of Beni. In their study, subtotal lobectomy and subtotal thyroidectomy were the techniques used [19].

In literature, it is said that medical treatment can be effective in the treatment of goiter but only in half of the cases. Nevertheless, recurrence is very common after medical treatment. After therapeutic failure, the only alternative is radical treatment such as thyroidectomy, which is rarely performed in Africa [35].

CONCLUSION

Goiter, an indicator of chronic iodine deficiency, is a major public health problem for populations living with iodine deficient environment, commonly in mountainous regions which have been deprived of iodine by leaching of the soil in this part of DRC.

Increasing iodine deficiency in developed countries, particularly in pregnant women, requires the governments of these countries to address this problem. To ensure adequate iodine nutrition during pregnancy and lactation, women should be provided with iodine supplements if iodine nutrition is not optimal.

Ensuring the consumption of iodized salt and promotion of fish intake at the household level are highly recommended.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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