Brief communication
Endemic goitre in Guinea–Bissau*

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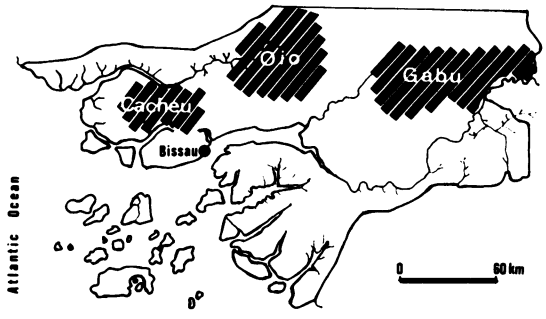
A survey was performed of endemic goitre in the Oio, Gabu, and Cacheu regions of Guinea–Bissau. Among adult women, the following prevalences of goitre were observed: 53% (Oio), 48% (Gabu), and 27% (Cacheu). For goitres of grades 2 and 3 only, the prevalences were 20% (Oio), 13% (Gabu), and 2% (Cacheu). No cretinism or cases of thyroid dysfunction were found. The mean urinary iodine excretions in Oio, Gabu, and Cacheu were 17 μg/g, 24 μg/g and 33 μg/g creatinine, respectively.

The presence of endemic goitre in the hinterland of Guinea–Bissau was reported by Costa in 1954 (*1*), and it is believed that the situation he described persists to the present day. The Ministry of Public Health, Guinea–Bissau, the Institute of Hygiene and Tropical Medicine, Lisbon (IHMT), and the Department of Endocrinology of the Portuguese Cancer Institute (IPO) therefore cooperated in a survey of two affected areas and one supposedly unaffected area of Guinea–Bissau in order to characterize the current situation.

Materials and methods

The whole adult population of six villages in each of the regions of Oio, Gabu, and Cacheu were observed (Fig. 1). Children and adolescents aged less than 15 years were also observed in one village in each of the study regions. Thyroids were classified according to the criteria proposed by Thilly et al. (*2*), which we have already used in a previous study (*3*). From a 10% randomly selected sample of adults, serum samples were obtained for the assay of thyroxine (T4), triiodothyronine (T3) and thyrotropin (TSH), as well as random urine samples for the assay of iodine and creatinine. The sera were separated locally with manual or electric centrifuges, and the samples were transported in isothermal boxes with thermal accumulators before being frozen a few hours later. The frozen samples were transported at the end of the study to the Department of Endocrinology, IPO, where they were processed by conventional methods. TSH was determined using an immunoradiometric assay (IRMA).[a]

Fig. 1. **Map of Guinea–Bissau, showing the regions surveyed in the study.**



The results for five serum samples were excluded from the calculations because they were from pregnant women (T4 > 11.5 μg/100 ml; TSH > 0.5 μU/ml; confirmed by β-specific chorionic gonadotropin assay). Similarly, the results for two urine samples were discarded because their iodine concentrations were >300 μg/g creatinine.

Mean values were compared using Student's *t*-test.

Results

The prevalences of goitre in the three study regions, according to grade and sex, are summarized in Table 1. Children were considered separately from adults, but further stratification of age groups was not possible because of the lack of reliable data. No cretinism was observed.

The results of the hormonal assays and of the

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[a] Amerwell TSH assay. Amersham, England.

Table 1: **Prevalence of goitre among the study adults and children, according to grade, sex, and region, Guinea–Bissau**

Region	*n*	No. with grade of goitre: 1a	1b	2	3	% with goitre	% with grade 2 or grade 3 goitre
Oio							
Females	365	59	62	55	19	53	20
Males	167	16	9	12	0	22	7
Children	59	14	15	0	0	49	0
Gabu							
Females	344	53	66	44	2	48	13
Males	276	25	8	9	0	15	3
Children	96	17	12	2	0	32	2
Cacheu							
Females	279	35	34	4	1	27	2
Males	228	10	0	0	0	4	0
Children	89	3	2	0	0	6	0

determinations of urinary iodine are summarized in Table 2.

Discussion and conclusions

From our results, it is clear that Oio and Gabu are severely affected with endemic goitre, especially Oio, where giant goitres are common. The elevated prevalence of goitre among children indicates that the factors responsible are still present. There is some goitre among adults, mostly grades 1a and 1b in Cacheu, but children are practically unaffected. These observations are corroborated by the low concentrations of urinary iodine, which in Oio and Gabu correspond to a grade V severity, using Follis's classification scale (*4*). As with other reported instances of endemic goitre in areas close to the sea (*3, 5*), the low dietary consumption of seafood and the abundant rainfall, which leaches soluble iodide salts from the soil, are the major determinants of the iodine deficiency. The hormonal studies did not reveal thyroid dysfunction. The T4 values were significantly lower in Oio and Gabu than in Cacheu, which reflects the differences in dietary iodine intake. However, only in Oio were the TSH and T3 levels slightly, albeit significantly, elevated. Oio was also the most severely affected in terms of the prevalence of grade 2 and 3 goitres and had the lowest mean urinary iodine; significantly less than the corresponding level for Gabu ($P < 0.03$). Despite the absence of cretinism and of thyroid dysfunction, there is evidence of severe endemic goitre in Oio and Gabu that is associated with a marked iodine deficiency. A survey of the situation in the rest of Guinea–Bissau and the introduction of appropriate corrective measures are urgently needed.

Table 2: **Mean serum hormonal concentrations and urinary iodine levels in the three study regions, Guinea–Bissau, and in Lisbon**

	Thyroxine (T4) (μg/dl)	Triiodothyronine (T3) (ng/ml)	TSH (μU/ml)	Urinary iodine (μg/g creatinine)
Oio	7.1[a] (1.6)[b]	1.18[a] (0.27)	1.8[a] (0.9)	17[a] (13)
Gabu	7.4[a] (1.5)	1.04 (0.23)	1.4 (0.8)	24 (26)
Cacheu	8.2 (1.6)	1.05 (0.20)	1.4 (0.6)	33 (26)
Lisbon	8.1 (1.2)	1.10 (0.17)	1.3 (0.5)	71 (63)

[a] Significantly different from the corresponding level in Cacheu. The level of significance varied between 0.03 for TSH and 0.001 for thyroxine.
[b] Values in parentheses are standard deviations.

Résumé

Une endémie de goitre a été décrite en 1954 en Guinée-Bissau. Comme la situation se poursuivait, nous avons étudié, en 1989, deux des régions qu'on pensait les plus affectées (Oio et Gabu) par comparaison avec une région témoin (Cacheu). La population adulte totale de six villages de chacune des régions a été observée.

La prévalence du goitre chez les femmes adultes était de 53% à Oio (dont 20% du 2e et 3e degré), de 48% à Gabu (dont 13% du 2e et 3e degré) et de 27% à Cacheu (dont 2% du 2e et 3e degré). Les concentrations de T4 étaient significativement plus basses à Oio (7,1 μg/100 ml) et à Gabu (7,4 μg/100 ml) qu'à Cacheu (8,2 μg/100 ml). Les concentrations de T3 et de TSH étaient significativement plus élevées à Oio (1,18 ng/ml; 1,8 μU/ml) qu'à Cacheu (1,05 ng/ml; 1,4 μU/ml). Les excrétions moyennes urinaires d'iode, de 17 et 24 μg/g de créatinine à Oio et Gabu respectivement, indiquent une importante carence iodée.

References

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