

THE PREVALENCE OF GOITRE IN PREGNANCY—A PRELIMINARY STUDY

S. L. KATUGAMPOLA¹

SUMMARY. 319 pregnant mothers from an endemic area were examined for goitre using the standardized techniques recommended by the WHO. 33.8% of the sample were goitrous, 20.6% being grade Ia. The prevalence of goitre increased with age of mother as well as with parity up to the third para. The findings suggest that the risk of abortion is increased by 50% in goitrous mothers. Further studies are necessary to determine the mode of development of goitre in pregnancy and the influence of goitre on the outcome of pregnancy.

Key words: Goitre, Pregnancy, Parity, Abortion

INTRODUCTION

Several centuries ago, hypertrophy of the thyroid gland was recognized by the Chinese as a sign of pregnancy(1). Nevertheless studies on the prevalence of goitre in pregnancy are scanty and the few studies available do not provide adequate information(2).

In an islandwide study carried out in Sri Lanka in 1963, the prevalence of goitre in pregnancy ranged from 0.4% in Weligama to 34.6% in Horana(3). The above study was based on data collected by medical officers of health while conducting antenatal clinics in their respective areas. Since a standardized technique had not been observed in the identification of goitre, the validity of the above estimates need consideration.

The aim of the present study was to determine the prevalence of goitre among pregnant mothers living in an endemic area, using a standardized technique based on the WHO criteria(4) and to observe any association of goitre to maternal age, parity, and pregnancy wastage.

SUBJECTS AND METHODS

Kandy District which has been identified as a moderately endemic area(5) was selected for the study. Pregnant mothers from three adjacent health areas in the Kandy District, namely Kadugannawa, Gampola and Hindagala were selected due to their close proximity to the University.

From each health area two antenatal clinics were randomly selected for the study. The study sample included mothers attending the clinic on the day the clinic was visited by the observer. Consent was obtained for examination and particulars of age, parity and the number of abortions, still-births and living children were recorded prior to the examination of the neck. The examination was conducted by the author using the recommended procedure for examination of goitre and observations classified on the WHO criteria(4)

1. Department of Community Medicine, Faculty of Medicine, Peradeniya.

The study was completed within a period of 8 weeks and the findings were computer processed.

RESULTS

The study sample comprised 319 pregnant mothers whose ages ranged from 17 to 43 years and parity varied from one to nine. The total goitre prevalence in this group was 33.8%, the prevalence of grade la goitre (palpable but not visible when head is extended) being 20.6% and that for grade lb and over (visible goitre) being 13.2% (Table 1). The distribution of mothers by 5 year age groups showed an overall prevalence of goitre ranging from 25% in the 16—20 year age group to 45.5% in the age group 36 years and over. The prevalence of grade la goitre showed a steady rise with age while the prevalence of grade lb and over did not show a consistent pattern. However, the highest prevalence for grade lb and over was observed in the age group 36 years and over.

TABLE 1. Distribution of mothers by age and grade of goitre

Age Group	No. examined	Grade la	Grade la >	Total Positive
16—20	48	7 (14.6)	5 (10.4)	12 (25.0)
21—25	121	25 (20.7)	19 (15.7)	44 (36.4)
26—30	98	21 (21.4)	12 (12.3)	33 (33.7)
31—35	41	10 (24.3)	4 (9.8)	14 (34.1)
36 >	11	3 (27.3)	2 (18.2)	5 (45.5)
Total	319	66 (20.6)	42 (13.2)	108 (33.8)

Percentages are given in parentheses.

The distribution of mothers by parity and grade of goitre showed a steady rise in the prevalence of grade la goitre up to the third parity and a sharp drop by the fourth parity (Table 2). A similar pattern was observed in the overall prevalence, the highest being 40.5% in the third parity. However, goitres of grade lb and over did not show a marked variation in the prevalence except that a relatively high prevalence was observed in the third parity and thereafter.

TABLE 2. Distribution of mothers by parity and grade of goitre

Parity 1	Total No.	Grade la	Grade lb > 1	Total Positive
1	114	22 (19.2)	13 (11.4)	35 (30.7)
2	83	19 (22.8)	9 (10.8)	28 (33.7)
3	69	17 (24.6)	11 (15.9)	28 (40.5)
4	27	3 (11.1)	5 (18.5)	8 (29.6)
5 >	26	5 (19.2)	4 (15.3)	9 (34.6)

Percentages are given in parentheses.

The prevalence of goitre in the 3 health areas were, 32.8% in Kadugannawa, 36.3% in Gampola and 33.4% in Hindagala (Table 3). The prevalence of grade Ia and Ib goitre showed very little variation in the 3 areas, the overall prevalence being 20.6% and 13.2% respectively. However, the prevalence of grade 2 goitre in Hindagala was higher than that in the other two areas.

Among mothers who had more than one pregnancy, an association of abortion with maternal goitre was observed. The strength of the association was indicated by a relative risk of 1.48, 95% confidence interval for the odds ratio of 1.6 being 0.82 to 3.3 (6) (Table 4).

No such association was observed with respect to the number of stillbirths. However, the relative risk of abortion and/or stillbirth occurring in goitrous mothers was 1.23, 95% confidence interval being 0.69 to 2.45 (6).

TABLE 3. Distribution of mothers by Health area and grade of goitre

Health area	Total examined	Grade Ia	Grade Ib	Grade 2	Total positive
Kadugannawa	131	29 (22.1)	9 (6.9)	5 (3.8)	43 (32.8)
Gampola	80	18 (22.5)	8 (10.0)	3 (3.8)	29 (36.3)
Hindagala	108	19 (17.6)	9 (8.4)	8 (7.4)	26 (33.4)
Total	319	66 (20.6)	26 (8.2)	16 (5.0)	108 (33.8)

Percentages are given in parentheses.

TABLE 4. Pregnancy wastage in goitrous and non-goitrous mothers

Category	Goitrous mothers (n=73)	Non-goitrous mothers (n=132)
No. with 1 > abortions	18	22
Incidence of abortions	24.7%	16.7%
No. with 1 > stillbirths	5	11
Incidence of stillbirths	6.8%	8.3%
No. with abortion or stillbirth	21	31
Incidence of abortion or stillbirth	28.8%	23.5%

$$\text{Relative risk of abortion} = \frac{24.7}{16.7} = 1.48$$

$$\text{Relative risk of abortion or stillbirth} = \frac{28.8}{23.5} = 1.23$$

DISCUSSION

This study enables comparison of data since standardized techniques were used in the identification and classification of goitre. Further, the inter-observer variation in the present study is nil since the study was conducted by one observer. The intra-observer variation too was minimal as the study was conducted over a short period of 8 weeks.

The present study recorded a goitre prevalence of 33.8% in pregnant mothers from Kandy District while the prevalence of goitre among school children was 20%(5). This figure is almost equal to 34.6% reported by Mahadeva in 1967 for pregnant mothers in Horana(3). However, the figures are not comparable as the techniques of examination and classification of goitre were different. Since we have found the prevalence among school children in Horana to be 30%(5) a prevalence of 34.6% in pregnancy may be an underestimate.

The overall prevalence and the prevalence of grade Ia goitre showed a steady increase with age, reaching the highest in the age group 36-43 years. At puberty the thyroid gland enlarges because the physiological demand for iodine is high. Likewise, enlargement of the thyroid gland in pregnancy could be explained as being due to increased renal clearance(7) and increased physiological demand, specially in an area of iodine deficiency. The gradual increase in the prevalence with age could be explained as being due to the cumulative effects of repeated pregnancies. It also implies that the gland is unlikely to regress to its original size between pregnancies. The relatively steady prevalence of grade Ib goitre with age suggests that the influence of pregnancy on visible goitre is negligible. However, valid conclusions cannot be drawn from these data owing to the small sample size in the older age groups. Nevertheless, it could be suggested that the cumulative effects of increased demands following each pregnancy probably contributes to the highest overall prevalence observed in the age group 36 years and over. It is also observed that grade Ia goitres contribute largely to the increase in the overall prevalence.

The overall prevalence and the prevalence of grade Ia goitre showed a steady rise up to the third parity and then a decline, while grade Ib goitre did not show a clear trend.

The enlargement of the thyroid gland could be due to the development of transient postpartum thyroiditis similar to subacute thyroiditis described by Fein(8). Fibrosis of the gland following thyroiditis could be a likely explanation for the low prevalence beyond third parity. The absence of a marked change in the prevalence of visible goitre supports the view that effects of pregnancy are negligible once the goitre becomes visible.

The association of abortion to goitre in the mother, as observed in the present study, agrees with the observation made by Jones(9). The strength of the association, as indicated by a relative risk of 1.48, suggests that the risk of abortion is increased by nearly 50% in goitrous mothers. However, it has to be noted that parity is a confounding factor

in this study and that no adjustment was made due to the small sample size. Absence of an association between still-births and goitre in the mother is to be expected, since the number exposed to the risk of still-birth is low, due to the high risk of abortion in early pregnancy. The same explanation holds for the lower relative risk of 1.2 for abortions and/or still-births.

The observations highlight the necessity for further studies to determine :

- 1 The proportion of goitre attributable to pregnancy
- 2 The stage of pregnancy during which the goitre appears
- 3 Whether goitre regresses after pregnancy and
- 4 The influence of goitre on the outcome of pregnancy

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