

## Prevalence of gall stones in a group of antenatal women in Ibadan, Nigeria

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### Summary

The prevalence of gall stones in Africa is low even though this varies from one part of the continent to another. The few studies were hospital based and excluded majority of silent stones. Abdominal ultrasounds were carried out prospectively on 4,214 consecutive patients referred to an ultrasound centre which cares primarily for pregnant women – a well known vulnerable group for gall stones. An overall prevalence rate of 2.1% was found. This represents a 300-fold increase over previous figures in Ibadan albeit from a different study group. A further study of the disease in the general population is necessary, though it is suggested that the figure in the general population may be less. When this figure is compared with the 10 to 20% in Europe and North America, it confirms the low incidence of the disease in our environment. Majority of the stones were asymptomatic (95%). This needs to be confirmed in the general population. The average stone former in our environment as in previous study does not conform to the classical caucasian description.

**Keywords:** Gall stones, prevalence, ultrasound, symptomatic, asymptomatic, (silent), low, increase.

### Résumé

La prevalence des calculs de vesicule biliaire en Afrique est basse, bien que elle varie d'un continent a l'autre. Le petit nombre d'etudes faites a l'hopital incluant des cas de bilicure non mesnifeste l'echographie de abdomen avait ete faite sur 4.214 patients consecutif referes dans un centre d'echographie qui s'occupe generalement des femme enceintes (groupe le plus vulneirable au colcule de vesicules biliaires) Un taux total de prevalence de 2.1% etait trouve. Ceci represente une augmentation de 300 fois les figures precedentes obtenue par un groupe d'etude different a Ibadan. Une etude de la maladie sur la population tout entiere est necessaire bien que les chiffres pourraient etre plus faibles. Lorsque ce chiffre est compare au 10 a 20% obtenus en Europe et en Ameriques du nord il convient de dire que l'incidence de la maladie est faible dans notre environnement. La majorite des calculs des vesicules biliaires etait asymptomatiques (95%) ceci doit etre confirme chez toute la population. La moyenne des precursors de calculs de vesicule biliaire de notre environnement ne correspond pas a la description classique proposee par les caucasiens.

### Introduction

Cholelithiasis is one of the commonest surgical diseases in the caucasians. About 10 to 20% of the population in North America and Europe, respectively, suffer from the disease and in women over 60 years of age, the figure is over 30% [1,2,3a,4,5 and 6]. In Africa, however, the frequency of the disease is low [1,2,6,7,8&9] and reliable information of the true incidence and prevalence of the disease is lacking. The few figures available were hospital based and derived from oral cholecystogram, cholecystectomy or autopsy

records. It was, therefore, decided to ascertain the prevalence of the disease both symptomatic and asymptomatic in a community setting, especially in our women, and in particular, among those presumed to be the most vulnerable (the fertile group), using ultrasound as the investigative tool. The figure so obtained will, hopefully, be a pointer as to what to expect in the general population. The frequency of silent gall stones was also studied and the average stone former in our environment contrasted with the classical European victim [6].

### Patients and method

Abdominal ultrasound was carried out for a two-month period from July 27<sup>th</sup>, 1995 on 4,214 consecutive patients referred to St. Gregory Ultrasound Clinic – a popular ultrasound centre in Ibadan with a bias for antenatal patients. All the patients who presented at this period were examined for gall stones in addition to the examination requested by the referring doctor. These sonograms were performed by A.O.M., A.O.K., and K.S., using 3.5 MHZ and sector transducers on sonoline 1000, micro-imager 1000 and ATL 850 machines. Scans were carried out in supine position with mobilisation of the patient when necessary to improve access to the gall-bladder. The other data studied include the age, parity, the build of the patients as well as primary diagnosis necessitating ultrasonography of the abdomen. All pregnant patients aged between 15 and 54 years in the fertile group formed the focus of this study. Body mass index and other similar indices will be vitiated in this sample and were, therefore, considered inappropriate.

### Result

During the study period, 4,214 patients in all were scanned but 3,832 pregnant women aged 15-54 years (mean age 28.7 with a S.D=7.0) form the focus of this study. There were 81 cases of cholelithiasis giving an overall prevalence of 2.1%. Most of the patients were between 25 and 34 years of age with a class centre of 29.5 (the mode) quite close to the overall mean (Table 1 and Figure 1).

Table 1: Frequency of gall stones

| Age group | Total no. of patients | No. of patients with stones |             | Total No. with stones | Prevalence |
|-----------|-----------------------|-----------------------------|-------------|-----------------------|------------|
|           |                       | Asymptomatic                | Symptomatic |                       |            |
| 15-24     | 1203                  | 12                          | -           | 12                    |            |
| 25-34     | 2104                  | 45                          | 3           | 48                    |            |
| 35-44     | 486                   | 16                          | 1           | 17                    |            |
| 45-54     | 39                    | 4                           | -           | 4                     |            |
| Total     | 3832                  | 77                          | 4           | 81                    | 2.1%       |

The majority of the patients were asymptomatic (77 out of 81). Seventy-one (71) out of the eighty-one (81) cases had their parity determined (Table 2). The mean parity was 2.8 (S.D = 1.4). Sixty-three percent (63%) of the patients were para 3 and below while only 14.1% were para 6. Obesity was assessed only clinically (because of the nature of the sample as earlier stated) by

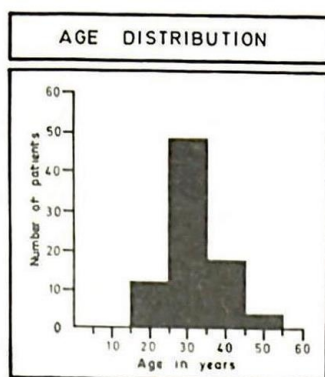


Fig. 1. Age distribution.

Table 2: Parity of patients with gall stones

| Parity                   | Number of patients | Percentage |
|--------------------------|--------------------|------------|
| Para 0-3                 | 45                 | 63.38      |
| Para 4                   | 6                  | 8.45       |
| Para 5                   | 10                 | 14.08      |
| Para 6                   | 10                 | 14.08      |
| Total number of patients | 71                 | 100        |

*Average parity = 2.8 per patient*

comparing patients to similar population in the community. Sixty-five percent (65%) of the women were described as slim and only 13.2% were obese (Table 3). The serum cholesterol and

Table 3: Clinical assessment of body fluids of patients with gall stones

| Types of Patients        | Number of patients | Percentage |
|--------------------------|--------------------|------------|
| Slim                     | 44                 | 64.7       |
| Medium                   | 15                 | 22.1       |
| Obese                    | 9                  | 13.2       |
| Total number of patients | 68                 | 100        |

haemoglobin genotype could not be determined. There was, however, no clinical case of sickle cell anaemia among the patients. Table 4 is a summary of the clinical diagnosis necessitating requests for abdominal ultrasound. Seventy-three (73) out of the 81 women (90.1%) came primarily because they were pregnant (without any biliary or gastro-intestinal symptoms) and in the course of the scanning were found to have gall stones. Only four came with a clinical picture of right upper quadrant syndrome (?cholelithiasis) in addition to being pregnant.

### Discussion

The frequency of gall stones in Africa varies from one part of the continent to another but every writer agrees that it is low [1,2,6,7,8 and 9]. The figures available are hospital based with attendant limitations. Oral cholecystogram depends on patients' compliance, is precluded in patients with jaundice, gastroenteritis and is better avoided in pregnant women. Cholecystectomy record excludes silent stones which constitute the majority while autopsy record excludes those that came to surgery and is dependent on autopsy rate and completeness of record. Ultrasound is virtually free of

Table 4: Reasons for ultrasound (primary clinical diagnosis)

| Diagnosis                    | Numbe, of patients | Percentage |
|------------------------------|--------------------|------------|
| Pregnancy                    | 73                 | 90.1       |
| (Pregnancy) + cholelithiasis | 4                  | 4.9        |
| (Pregnancy) + Others         | 4                  | 4.9        |
| Total number of patients     | 81                 | 100        |

contra-indications and is ideal for pregnant women. The result, though operator dependent, is reputed to have an accuracy of 92-96% and approaches 98% sensitivity and specificity [3b, 10 and 11]. The ultrasound centre from where this study was carried out is a popular centre in the city of Ibadan with a population of over two million [12]. The women under study constituted the fertile group and all of them were pregnant- a very susceptible sample by all accounts [3a,13 and 14]. The overall prevalence in this vulnerable group is 2.1%, far lower than the 10 to 20% in the Western World and the 48.6% in the Pima Indian women of America [3a,4,5 and 15]. Most previous figures from Africa were below 1%. In Ibadan, the hospital rate was 0.007% and Ajaó's recent figure of 19 cases in three years was regarded as no improvement [1 and 12]. The hospital rate was 0.18% in Lagos, 0.4% in Ghana while Sudan had the highest figure of 3% [7]. The 2.1% prevalence found in this study (about 300 times the previous figure from Ibadan) is significant but it has to be accepted that the sample was from a selected group. It is suggested that the figure may be lower in the general population and further study in the general population is required. Recent work from Lagos [16] and South Africa [1,12] has suggested an increase in the in-hospital incidence of the disease. The various reasons for this may include better access to health facility, improved socioeconomic circumstances, better diagnostic facilities and may be, a true increase in incidence of the disease. Consumption of refined Western diet by urban blacks has been blamed [2,16,17,18]. In this country, refined sugar and finely milled grain are now consumed by the high and low in the society even though in addition to the traditional diet. Oral contraceptives, obesity and sex have also been incriminated as predisposing factors. However, the importance attached to these factors is a subject of controversy [15,17,18,19,20,21,22,23 and 24] and what role they play in our patients is debatable [12,16], the average patient with gall stones in our environment does not fall into the typical text book description of the caucasian victim [12,25]. This study also confirmed that assertion. About 65% of our patients were described as slim, 63.4% were para 3 or less and 54.2% were between 25 and 34 years of age. The mean age of the entire group is 28.7 years (S.D.=7). In a previous study by one of the authors [25] that looked at the issue of obesity, taking into consideration weight, age, sex and height, only one of 19 cases was found to be obese. Ajaó [12] also writing from the same environment, came to the same conclusion. Most gall stone victims in East Africa are in their twenties and thirties [17] like in this sample. All the above factors may account for the low frequency of gall stones in our population. However, as family planning with the use of oral contraceptive pills becomes more widespread, the economy improves, diet more westernised and our sickle cell population live longer into adulthood, the frequency of gall stones will rise as already noted in the American blacks [3a]. Asymptomatic gall stones as currently defined (as opposed to the traditional definition) include only those gall stones discovered during screening

examination [3a] (i.e. without any symptoms whatsoever referable to the biliary or gastro-intestinal tract). Prevalence in this entity ranges from 10 to 90% [3a,5 and 6]. The prevalence in this study is 95% - no doubt a high percentage. It is to be noted, however, that this figure is derived from a pregnant population. It is not impossible that some factors responsible for lack of symptoms may be pregnancy related and after pregnancy some may become symptomatic albeit a view in conflict with previous observation [20]. The management of this group that forms the majority is still a controversial topic [3a].

#### Conclusion

In conclusion, the prevalence of gall stones is still low in our environment - a frequency of 2.1% in our most vulnerable group. It is suggested that the prevalence will be less than this in the general population. The explanation for this is probably social and environmental rather than racial or genetic. The impression is that the prevalence though still low, may begin to rise just as witnessed in blacks in the diaspora. It is also probable that the frequency of silent stones is high in our environment but a less bias sample will be needed to confirm this observation. The majority of stone formers in our environment are slim, symptomless, low to average parity young women (25 to 34 years) (symptomless soul sisters), quite unlike the classical European victim [6]. K.W. Heaton et al. [27] blamed a slow colonic transit time for formation of gall stones in this group of patients.

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