An Audit of Amenorrhea in a Nigerian Tertiary Health Institution

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Authors' contributions

This work was carried out in collaboration among all authors. Author AGU designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AAP and YA managed the analyses of the study. Authors FBA, AUA and SB managed the literature searches. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Background: Amenorrhea is the absence of menstruation during puberty or later in life. It is a symptom that result due to several factors that range from genetic abnormalities to endocrine disorders, psychological, environmental and structural abnormalities.
Objective: The aim of this study is to determine the prevalence and causes of amenorrhea among women at the Usmanu Danfodiyo University Teaching, Sokoto, Nigeria.
Materials and Methods: This is a five-year retrospective study of cases of amenorrhea managed at the Usmanu Danfodiyo University Teaching Hospital, Sokoto. Information was extracted from patients' case notes and data was managed using Statistical Package for Social Sciences version 20. The results are presented in texts, tables and charts.
Results: There were 140 cases of amenorrhea managed over the study period out of 1,742 gynaecological consultations, giving a prevalence rate of 8%. Among them, 86% (104/121) have secondary amenorrhea and 14% (17/121), have primary amenorrhea. The major cause of secondary amenorrhea is Asherman's syndrome in 42.3% (44/104) and primary amenorrhea is mainly due to outflow tract obstruction, 64.7% (11/17) among the subjects with primary amenorrhea.

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Conclusion: Secondary amenorrhea is the most common type of amenorrhea in our environment and the most prevalent cause is outflow tract obstruction for both primary and secondary amenorrhea.

1. INTRODUCTION

Amenorrhea is the absence of menstruation during puberty or later in life [1]. It is primary amenorrhea when there is failure to commence menstruation by the age 14 years in the absence of secondary sexual characteristics or, by age 16 years in the presence of normal secondary sexual characteristics [2]; Secondary amenorrhea occur due to absence of menstruation for 3 cycles in a woman with previously regular menstruation, or for 6 months in a woman with a history of oligomenorrhea [2]. It is estimated that, secondary amenorrhea affects 3 to 4% and primary amenorrhea affects 0.3% of all women in the reproductive age [3].

Although overlapping attributes exist between the two groups, the diagnostic approaches vary significantly. The prevalence of primary amenorrhea in the US is <0.1%, compared with 4% for secondary amenorrhea [4].

A complex interaction between the hypothalamic-pituitary-ovarian axis and the outflow tract is required for the normal menstrual bleeding to take place [5], and any disruption of these interaction can result in amenorrhea [5]. The causes of amenorrhea are therefore, related to defects in any of the following four compartments. Compartment I; Outflow tract and the uterus, II; Defect in ovulation, III; Defect at the level of pituitary gland and IV; Defect at the level of hypothalamus and central nervous system. It may occur as a normal physiological condition such as before puberty, during pregnancy, lactation or the menopause, or as a feature of a systemic or gynaecological disorder [5,6]. The causes of amenorrhea are broad and can range from genetic abnormalities to endocrine disorders psychological, environmental and structural anomalies [7]. Studies had shown that primary amenorrhea is mostly due to chromosomal irregularities that lead to primary ovarian insufficiency such as Turner syndrome or anatomic abnormalities such as Mullerian agenesis. And that most pathologic causes of secondary amenorrhea were attributed to polycystic ovary syndrome (PCOS), hypothalamic amenorrhea, hyperprolactinemia or primary ovarian insufficiency [2]. Similarly,

gonadal dysgenesis was the most common cause of primary amenorrhea and polycystic ovary syndrome was the most common cause of secondary amenorrhea among women in Korea [8]. In Nigeria, previous study from Lagos revealed causes of secondary amenorrhea to be mainly hypothalamic/pituitary abnormalities (58%), followed by ovarian disorders and outflow tract abnormalities [7,8]. This implies that the causes vary with geographical location.

Despite the low prevalence of primary amenorrhea, a prompt, comprehensive assessment by a specialist in similar field is warranted, as is often the presenting sign of an underlying reproductive disorder. A delay in diagnosis and treatment may adversely impact the long-term future of such patients. When such occur, the consequences in those with androgen insensitivity syndrome is that they have about 30% risk of gonadal neoplasms. In polycystic ovary syndrome and hyperinsulinemia, behavioral and dietary modifications may prevent subsequent cardiovascular disease [9,10,11].

In those with chronic anovulation, not due to identifiable organic causes, often associated with stress, weight loss, excessive exercise, or a combination thereof. Investigations should include assessment of systemic and endocrinologic etiologies. A multidisciplinary treatment approach is necessary, including medical, dietary and mental health support depending on the cause [12].

Despite the fact that amenorrhea is associated with gynaecological and psychological complications that affects fertility and quality of life, there is scanty literature addressing such with limited resources for both evaluation and treatment options.

Therefore, the aim of this study is to determine the prevalence and causes of amenorrhea among women managed at the Usmanu Danfodiyo University teaching Hospital Sokoto, Nigeria.

2. MATERIALS AND METHODS

This is a five-year retrospective study of the cases of amenorrhea managed at the Usmanu

Danfodiyo University Teaching Hospital, Sokoto - Nigeria from 1st January, 2011 and the 31st December, 2015. Case notes were retrieved from gynaecological clinic, gynaecological ward and the main library. The Information regarding socio-demographic characteristics, duration of symptoms, types of amenorrhea and their causes. The data was analyzed by descriptive statistics using the statistical package for social science (SPSS) version 20 and the results were represented on frequency distribution tables and charts.

3. RESULTS

A total of 1,742 cases were managed over the study period, out of which 140 presented with amenorrhea. This gives a prevalence of 8%. However only 121 case notes were retrieved which gives a retrieval rate of 86.4%. Majority, 31.4% (38) of the patients are within the age group of 20 -24 years, with a range of 17 years to 40 years and a mean of 25.48 ± 5.8 years. Married women constitute 93.3% (113) and majority of them, 81.0% (98) are of the Hausa/Fulani ethnicity. Most of them, 42.2% (51) have none formal education, in addition, more than 2/3, 97 (80.2%) are not gainfully employed. Details of the socio demographic characteristics of the respondents is as shown on Table 1.

Among the respondents, 104 (86%) have secondary amenorrhea while, 17 (14%) have primary amenorrhea. For those with primary amenorrhea, majority presented after 2-5 years, 10 (58.83%), 4 (23.53%) after 1-2 years and 3 (17.64%) after 5 years. The maximum duration of symptoms was 10 years. Among those of them with secondary amenorrhea, 43 (41.3%) presented before 1 year, 36 (34.6%) after 1-2 years, 19 (18.3%) after 2-5 years and 6 (5.8%) after five years. The minimum duration of symptom was 8 months and the maximum was 9 years for those with secondary amenorrhea.
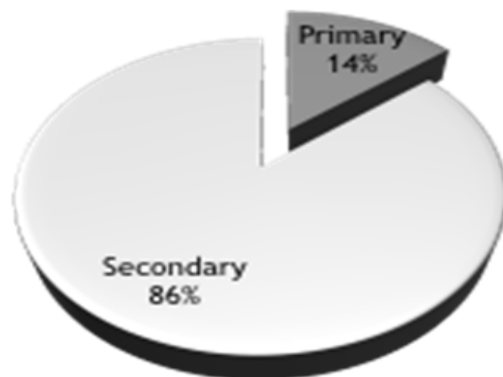
Fig. 1 show the proportion of types of amenorrhea among the subjects.

Table 2 demonstrate the proportion of type of infertility in relation the respondent's sociodemographic characteristics. The highest proportion of subjects with primary amenorrhea, 64.7% are those within 15-19 years while those with secondary amenorrhea were within the age group of 20-24 years across all age groups. Married women mostly, 97.1% have secondary

amenorrhea and majority, 84.6% of the unemployed have secondary amenorrhea. There is no much difference in development of types of amenorrhea across educational status. Further detail is as shown in Table 1.

Table 1. Socio-demographic characteristic of the patients

Variable	Frequency	Percentage
	Primary infertility	**%**
Age in years		
15-19	18	14.7
20-24	38	31.4
25-29	29	24.0
30-34	28	23.14
≥ 35	8	6.6
Marital status		
Married	113	93.3
Single	6	5.0
Divorcee	2	1.7
widow	0	0
Tribe		
Hausa/Fulani	98	81.0
Yoruba	9	7.4
Igbo	3	2.5
Others	11	9.1
Educational status		
None formal	51	42.2
Primary	20	16.5
Secondary	34	28.1
Tertiary	16	13.2
Occupation		
Unemployed	97	80.2
Civil servant	8	6.6
Self employed	8	6.6
Student	8	6.6
Total	121	100

Fig. 1. Types of amenorrhea

The major cause of primary amenorrhea is outflow tract abnormality/obstruction in

Table 2. Proportion of type of infertility in relation sociodemographic characteristics

Sociodemographic variable	Frequency Primary amenorrhea	Percentage %	Frequency Secondary amenorrhea	Percentage %	Frequency Total	Percentage %
Age in years						
15-19	11	64.7	7	6.7	18	14.9
20-24	5	29.4	33	31.7	38	31.4
25-29	1	5.9	28	26.9	29	24
30-34	0	0	28	26.9	27	22.3
≥ 35	0	0	8	7.7	8	6.6
Marital status						
Married	13	76.5	101	97.1	113	93.4
Single	2	11.8	3	2.9	6	5.0
Divorcee	2	11.8	0	0	2	1.7
widow	0	0	0	0	0	0
Tribe						
Hausa/Fulani	14	82.4	86	82.7	98	81.0
Yoruba	2	11.8	8	7.7	9	7.4
Igbo	0	0	2	1.9	3	2.5
Others	1	5.9	8.	7.7	11	9.1
Educational status						
None formal	8	47.1	44	42.3	51	42.1
Primary	5	29.4	15	14.4	20	16.5
Secondary	3	17.6	30	29.8	34	28.1
Tertiary	1	5.9	15	14.4	16	13.1
Occupation						
Unemployed	9	52.9	88	84.6	97	80.2
Civil servant	2	11.8	5	4.8	8	6.6
Self employed	0	0	8	7.7	8	6.6
Student	6	35.3	3	2.9	8	6.6
Total	17	100	104	100	121	100

64.7% (11/17). Of them, Mullerian agenesis, MRKH (Mayer Rokinstansky Kauster Hauster syndrome) accounted for 45.5% (5/11). Gonadal and higher center contribution are less common. Details on the causes of primary amenorrhea is described on Table 3.

Of those with secondary amenorrhea, asherman's syndrome is the most common, accounting for 42.3% (44/104), then Polycystic ovary syndrome (PCOS) is the second with 35.6% (37/104). Others are as detailed on Fig. 2.

Table 3. Causes of primary amenorrhea among respondents

Causes	Frequency	Percentage
Outflow tract abnormality		
MRKH	5	29.4
Androgen insensitivity	0	0
Imperforate hymen	3	17.6
Transverse vaginal septum	3	17.6
Gonadal failure		
Turner's syndrome	1	5.9
Sweyer's syndrome	0	0
Chemotherapy induced	0	0
Idiopathic	1	5.9
Hypothalamic		
Constitutional delay	2	11.8
Polycystic ovary syndrome	2	11.8
Total	17	100
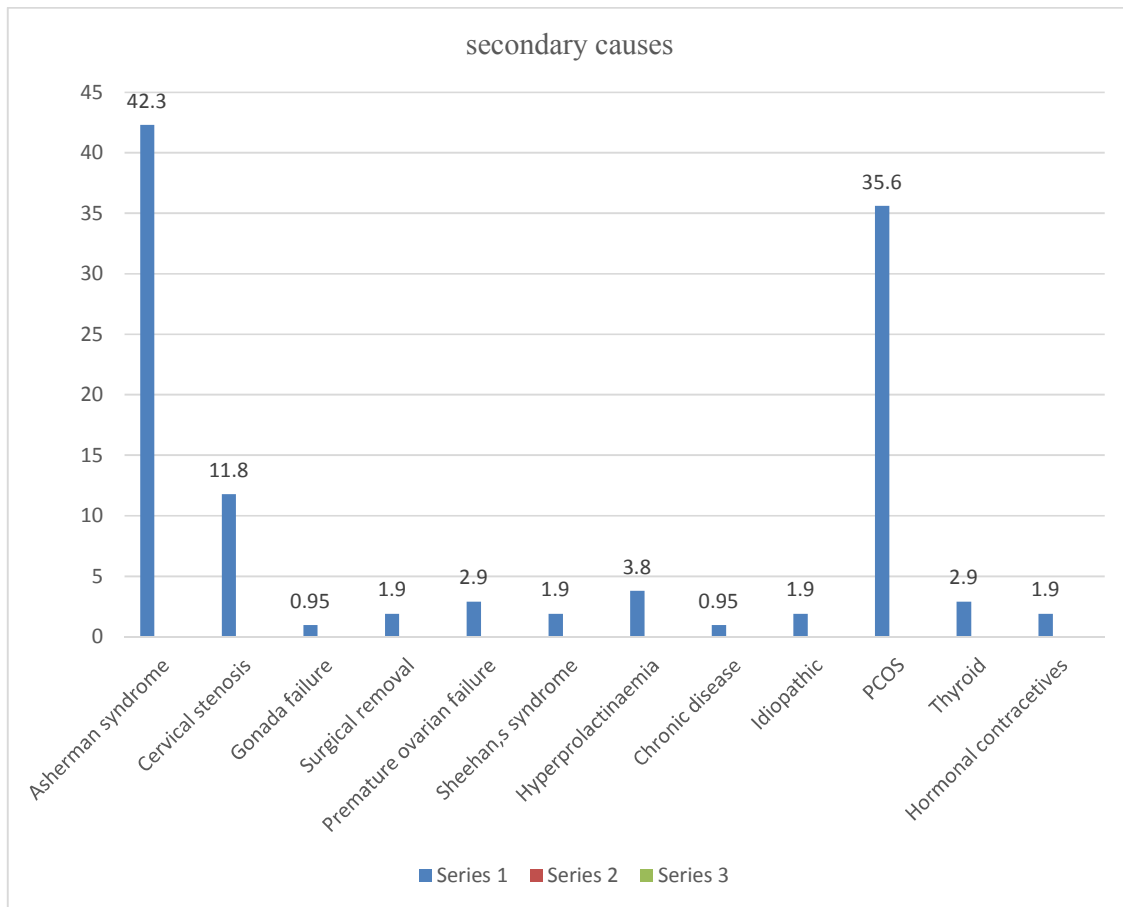
Fig. 2. Causes of secondary amenorrhea among respondents

4. DISCUSSION

In the study, amenorrhea account for 8% of all gynaeacological consultations among which secondary amenorrhea account for about ¾ (86%). The mean age of presentation for primary amenorrhea of 19.2 ± 2 years is comparable to a study from Korea (19.1± 4) [8] and India (19.2 ± 3) [1]. The minimum age at presentation in this study is 17 years and is far more than what was found in the Korean study of 11 years. This disparity is not unexpected because the average menarchial age in that country was found to be 12.4 years with 34.6% [13] of adolescents attaining menarche before the age of 12, while in Sokoto Nigeria, the mean age at menarche was found to be 15.26 years [14]. Therefore, most patients may not think of seeking for health care prior to the age of 15 years. In addition, poor health seeking behavior can be attributed to lack of awareness, and low educational status among the most affected patient can be a contributing factor to the relatively late presentation. More so,

majority (93.3%) of the patients are married because, the religious and cultural practices in our environment is such that girls are married out early some even before they attain menarche which lead to conception at the first ovulation. Such patients therefore, present mainly because they could not achieve pregnancy and/or they have problem with coital penetration.

The major cause of primary amenorrhea in this study is outflow tract abnormality/obstruction in 64.7%, of these mullerian agenesis (MRKH) was the most common accounting for 29.4% of cases. This finding is lower than the findings from Thailand (39.7%) [15] and India (65.7%) [16]. It is contrary to that of Korea and India that show gonadal agenesis in form of Turners syndrome as the most common cause of primary amenorrhea among 28.0% [8] and 35.7% [17]. respectively. It is therefore, possible that some genetic and environmental factors as well as availability of diagnostic facilities may contribute to these differences. Many studies have

demonstrated the presence of chromosomal abnormalities in patients with both primary and secondary amenorrhea, [18], but facilities for such studies are not available in our center and our diagnosis of amenorrhea rely mainly on history physical examination, few biochemical markers, buccal smear, ultrasound, hysterosalpingography and laparoscopy. thereby limiting the ability to fully evaluate all patients that present with amenorrhea.

The most prevalent cause of secondary amenorrhea in this study is Ashermans syndrome accounting for 42.3%. This finding differ with what was reported by the American society for reproductive medicine and the study in Korea [8] that showed polycystic ovary syndrome to be the most prevalent cause of secondary amenorrhea. This variation could be because the risk factors for Asherman's syndrome which are mostly pregnancy related complications that are more prevalent in our environment. While, factors associated with polycystic ovaries such as obesity type 2 diabetes mellitus are more prevalent in the developed countries. It is however, higher than the study conducted in Lagos where uterine synechia accounted for only 19% of the causes. In that study, hypothallamo-pituitary lesions accounted for majority of cases.

5. CONCLUSION

The most common cause of both primary and secondary amenorrhea. in our centre is outflow tract obstruction. Despite that, there is need to improve on evaluation tools to explore more causes so that such cases can be adequately managed.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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