Original Article

Etiology of Primary Amenorrhoea: A study of 50 cases

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ABSTRACT

Background: Amenorrhoea is one of the commonest reasons for referral of female patients to a gynaecology clinic. It is subdivided into primary and secondary. The etiology of primary amenorrhoea is complex.

Objective: The aim of this study was to determine the etiological factors of primary amenorrhoea and to find out the mean age at first presentation.

Design of Study: Descriptive Study.

Place and Duration of Study: This Study was conducted in the department of Obstetrics and Gynaecology Foundation University Medical College Fauji Foundation Hospital Rawalpindi, from 1st January 2005 to 31st December 2007.

Materials and Methods: 50 girls who reported to gynae outpatient department with the complaint of primary amenorrhoea were included in the study after informed consent. Detailed history, clinical examination and investigations (transabdominal ultrasonography, hormonal profile including serum FSH, LH & prolactin, karyotyping) were recorded in proformas for analysis.

Results: A total of 50 girls reported to gynae OPD with complaints of primary amenorrhoea over a period of 24 months with the mean age of 18.5 years at initial presentation. Almost half of the girls (48%) with normal secondary sexual characteristics had anatomical defects, Rokitansky's syndrome being the commonest, while those with absent secondary sexual characteristics had constitutional delay as the commonest cause.

Conclusion: Mean age at first presentation is late. Anatomical causes are the commonest. Turner's syndrome is relatively uncommon in our patients.

Key Words: Primary Amenorrhoea, Transabdominal Ultrasonography, Hormonal Profile (FSH, LH, Prolactin), karyotyping

INTRODUCTION

Amenorrhoea is one of the commonest reasons for referral of female patients to a gynaecology clinic. It is subdivided into primary and secondary. Primary amenorrhoea is defined as failure of onset of menstruation by the age of 14 years in girls without secondary sexual characteristics (SSC) or by the age of 16 in girls with normal SSC [1, 2]. It is a rare disorder and the quoted international incidence is 0.3 %.[3]. The etiology of primary amenorrhoea is complex. At the initial visit of the patient thorough clinical evaluation and endocrine tests can help to established the diagnosis in most cases [4, 5]. In addition assessment of pubertal development is an essential part [6]. A careful evaluation is necessary not only to treat the patient but also for the support and counselling of the patient and the family.

The commonest cause is physiological i.e. constitutional delay. However this diagnosis should only be made after exclusion of other pathological causes [7]. The most common pathological cause associated with normal SSC is an anatomical abnormality of vagina (1 in 4000 women)[1] and that associated with absent secondary SSC are Turner's syndrome (1 in 2000-3000 girls), hypothalamic-pituitary dysfunction and chronic systemic illnesses [8]. Overall it is estimated that endocrine disorders account for approximately 40% and developmental defects for 60% of the cases of primary amenorrhoea[9]. A systematic approach can help to determine the common causes of primary amenorrhoea and also helps to reach the diagnosis in a cost effective manner.

We conducted this study to look for the common causes of primary amenorrhoea in our setup and to know the mean age at first presentation as this problem occurs at such a delicate, sensitive age that if not handled properly can lead to permanent physical as well as psychological disability.

MATERIALS AND METHODS

This study was conducted over a period of two years from 1st January 2005 to 31st December 2007 in the department of obstetrics and Gynaecology Foundation University Medical College Fauji Foundation Hospital Rawalpindi. All patients who reported to gynae clinic with complaint of primary amenorrhoea were included in the study.

At the initial visit of the patient a detailed history especially regarding growth and development , family history and age of menarche in siblings was taken. This was followed by a thorough physical examination

including general physical examination with special reference to weight, height and secondary sexual characteristics (development of breast, pubic and axillary hair and growth spurt) and abdominopelvic examination for the presence of abdominal gonads, any mass and the development of external genitalia. The next step was to perform transabdominal ultrasonography (TAS) to look for the presence or absence of uterus and gonads followed by hormonal profile (serum FSH, LH and prolactin) and karyotyping. All findings were entered in a proforma for detailed analysis.

RESULTS

A total of 50 girls reported to gynae OPD with complaint of primary amenorrhoea over a period of 24 months with the mean age of 18.5 years at initial presentation (Table No. I). The characteristics of our study population revealed that 96% were married, family history was positive in 10% and majority belonged to lower socioeconomic class (Table No.2).
Regarding the etiological factors almost half of the girls (48%) with normal SSC had anatomical defects (Fig I), Rokitansky's syndrome being the commonest (Fig II) while those with absent SSC had constitutional delay as the commonest cause (Fig III).

Table I: Mean age, weight & height (n=50)

	Mean	Range
Age (yrs)	18.5	12-31
Weight (Kg)	51.6	36-65
Height (cm)	157.2	147.3-167.6

Table II: Characteristics of study population (n=50)

Characteristics		Number	percentage
Marital Status	Married	1	2
	Unmarried	49	98
Education	Students	40	80
	Uneducated	10	20
Family history	Positive	5	10
	Negative	45	90
Socioeconomic Status	Lower Class	34	68
	Middle Class	15	30
	Upper Class	1	2

DISCUSSION

Primary amenorrhoea is a rare disease[3]. A total of 40945 patients attended gynae clinic in two years and 50 patients (1.2%) had primary amenorrhoea. The reason for high frequency is that our hospital is a tertiary care referral hospital and many patients are referred to us from periphery for specialist care. A local study also quoted a high frequency 0.75% for the same reason[9].

Figure No.1: Distribution according to SSC (n=50).

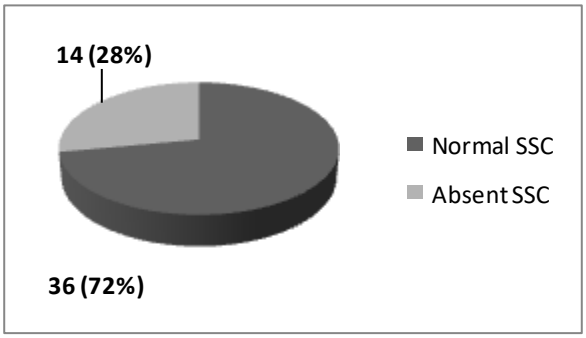


Figure No.2: Anatomical defects (n=50)

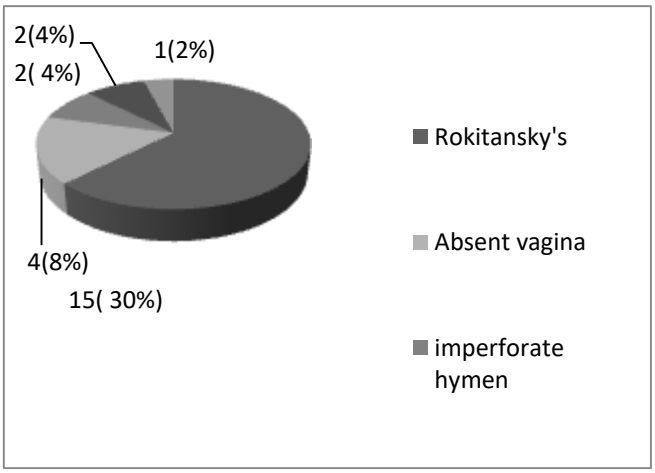
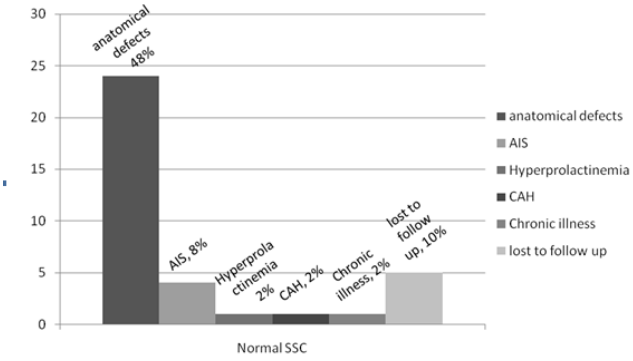


Figure No.3: Etiology of Primary Amenorrhoea (Normal SSC) (n=50)



Causes of primary amenorrhoea should be evaluated in the context of the presence or absence of SSC[10]. In our study population 36 (72%) had normal SSC and 14 (28%) had absent SSC. Our findings were favoured by a local study in which around 70% of the patients had developed SSC[11]. Our results showed that mean age at first presentation was late (18.5 years). This is probably

due to two reasons. Firstly these young girls belong to poor families and are unable to reach the hospital due to lack of transport. Secondly they are attended at first hand by quacks and general practitioners and are often misdiagnosed. An age range between 15-25 years at first presentation was also observed in different studies[11].

Characteristics of our patients showed that majority were unmarried and belonged to lower socioeconomic class. This is due to the reason that primary amenorrhoea is a disease seen in adolescent age group when mostly girls are unmarried and the reason for majority being from lower socioeconomic class is that our hospital is entitled for the families of retired army servicemen who have worked in lower ranks up to the level of subedars and have low income after retirement.

Our main objective was to determine the etiology of primary amenorrhoea. The most common pathological cause associated with normal SSC is an anatomical abnormality of vagina (1 in 4000) varying from the more common imperforate hymen to relatively rare absent vagina[1, 8]. Our results also confirmed that girls who had normal SSC, anatomical abnormality was the commonest (48%) i.e. almost half of our study group. This was followed by androgen insensitivity syndrome (AIS) seen in 8%, congenital adrenal hyperplasia, chronic medical illness and hyperprolactinemia in 2% each. Asifa and Shazia[12] also quoted a very high incidence of anatomical defects 46.15% and even much higher (61.1%) in another local study[13]. However an Indian study reported an incidence of 37.5% in their population[14]. Amongst the anatomical causes Rokitansky's syndrome (the congenital absence of Mullarian ducts) is said to be responsible for 15 % of patients with primary amenorrhoea[15]. The etiology involves activation of antimullerian hormone causing malformation of female genital tract[16]. In contrast our study showed a much higher frequency (30%). Few other studies have also quoted a much less frequency (1in 5000)[17].

A patient with primary amenorrhoea and an XY karyotype who has breast development and minimal or no pubic and axillary hair, the diagnosis is AIS. If testes are present they must be removed because of high risk of malignant potential[18]. AIS was present in 8% of our patients that is exactly the same as in a study conducted in Hong Kong[19]. However, Shazia[13] quoted a frequency of 11% and a Mexican study showed 10.7% of their patients with AIS[20].

Imperforate hymen and congenital uterine abnormalities were less commonly seen in our patients (4% each). This does not correlate with other studies that reported a more common frequency of imperforate hymen[11].

Chronic debilitating diseases e.g. uncontrolled diabetes, malignancy, end-stage kidney diseases may lead to anovulation and amenorrhoea[21]. In our study one patient has uncontrolled diabetes and presented with amenorrhoea. Other rare causes were congenital adrenal hyperplasia and hyperprolactinemia.

The other group of girls having absent SSC had constitutional delay as the commonest cause (14%). This observation is favoured by Folch and Seldmeyer[15, 16]. Ovarian failure, a rare cause of primary amenorrhoea could be due to resistant ovary syndrome[22]. It is seen in 6% of our study population in contrast to study of Noshaba and Razia who failed to find ovarian failure in their patients[9]. However few cases of ovarian failure have been reported in other studies[23].

Turner's syndrome (45 XO) is the most common form of female gonadal dysgenesis. Characteristic physical findings are webbing of the neck, widely spaced nipples and short stature. Mosaicism occurs in 25% of patients with Turner's syndrome[24].

In our study the frequency of Turner's syndrome was low (4%) and same was the frequency of hypogonadotrophic hypogonadism. However it was high in the study of Naushaba and Asifa Ghazi (10.52% and 30.78% respectively)[9, 12].

CONCLUSION

We concluded that mean age at first presentation was late in our patients and anatomical cause was the commonest cause of primary amenorrhoea.

The diagnosis is traumatic for both girls and their parents because there is fear of loss of fertility, feminity and self esteem. These young girls are in a true emotional crisis about being different from friends and family. So a systematic approach is essential to reach a correct diagnosis and counselling in a sympathetic way is an essential component of management.

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