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Original Articles

Spectrum of Adolescent Female Genital Tract Anomaly in a Tertiary Hospital

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Abstract

Objective: *To identify the spectrum of adolescent female genital tract anomaly in a tertiary-level hospital.*

Methodology: *It was a cross-sectional descriptive study conducted in the Obstetrics & Gynaecology department of Mymensingh Medical College Hospital over six months from October 2019 to April 2020. Here, 30 adolescent females with genital tract anomalies were selected after fulfilling the inclusion criteria by a non-random purposive sampling. The common variants of genital tract anomaly were identified. Associated renal anomaly was also detected. Statistical analysis was done by using SPSS V21.0.*

Results: *Among 30 patients, majority (20) were in the early adolescent group (10-14 years) and unmarried (83.3%). The presenting complaints varied from non-establishment of menstruation in most (70%) of the cases to cyclic pelvic pain and severe lower abdominal pain (56.7%), progressive pelvic lump (23.3%), dysmenorrhea (20%) and difficulty in sexual intercourse (16.7%) in other cases. The spectrum of genital tract anomalies was found to be imperforate hymen (36.7%), cribriform hymen (10%), mullerian agenesis (30.0%), transverse vaginal septum (6.7%) etc. The ultimate mode of diagnosis was mainly clinical in 16 patients (53.3%) and ultrasonography of whole abdomen in 30% of cases. Associated renal anomaly was found in 6 cases (20%). The management approach was surgical in 20 (66.7%) patients with additional counselling.*

Conclusion: *Adolescent female genital tract anomalies commonly become evident around puberty, mostly with menstrual problems and cause a variety of symptoms. Hence, their comprehensive understanding and thorough evaluation are of utmost importance.*

Key words: *Female genital tract anomaly, Adolescent, Imperforate hymen, Mullerian duct anomaly, Transverse vaginal septum, renal anomaly.*

Introduction:

Female genital tract anomaly results from embryonic mal-development of the mullerian or paramesonephric ducts.[1] The direct cause of these anomalies are unknown but they are usually multifactorial caused by different combinations of genetic error, familial incidence and teratogenic event.[2] Minor abnormalities bear little consequence, but major abnormalities usually lead to severe impairment of the menstrual and reproductive functions.[3]

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Though rare, the overall prevalence of female genital tract anomalies is 4-7% in general population and even higher in selected populations.[4] These anomalies may occur in isolation or can be more complex involving multiple genital organs and often associated with complex syndromes.[5] The embryological development of the female reproductive system is closely related to the development of the urinary system, and anomalies in both systems may occur in up to 30% of the patients.[6]

Adolescent genital tract anomaly usually presents around puberty as these conditions typically affect the internal reproductive tract without affecting the appearance of the external genitalia.[7] Perturbations of the normal development of the vagina and hymen may lead to obstruction of menstrual flow manifesting as primary amenorrhoea with or without hematometra or hematocolpos, cyclic pelvic pain, progressive dysmenorrhea, urinary retention etc. and the non-obstructive variety usually presents in late period with difficulty in sexual intercourse or reproductive failure.[8] The management aims at restoring the reproductive and sexual function and normalizing genital anatomy with surgical or non-surgical approach[9] and also alleviating psychological concerns.[10-11]

Genital tract anomaly in adolescent girls is a challenging group of conditions. But data regarding adolescent female genital tract anomalies are minimal. Hence, this study was conducted to observe the genital tract anomalies in adolescent females attending a tertiary-level hospital and to share the experience regarding their evaluation and management.

Materials and Methods:

This cross-sectional descriptive study was conducted in the Obstetrics & Gynaecology department of Mymensingh Medical College Hospital from October 2019 to April 2020. The study population were adolescent females with genital tract anomalies admitted into the inpatient department or attending the outpatient department during the study period. A total of 30 adolescent females were included in the study by purposive sampling. The inclusion criteria were female adolescents between 10-19 years of age with genital tract anomalies confirmed clinically or sonographically or by examination under anaesthesia. Those who did not fulfil the age limit or who were diagnosed incidentally during operative procedures were excluded from the study. Data were collected by history, clinical examination, investigations and treatment records using a case record form. Statistical analyses were carried out by SPSS version 21.0. The mean values and standard deviation were calculated for continuous variables. The quantitative observations were indicated by frequencies and percentages. The data were then presented using tables, graphs, charts, etc.

Results:

Table I shows the socio-demographic characteristics of the study population. Among 30 patients, 66.7% (20) patients belonged to the early adolescent age group between 10-14 years and 33.3% (10) patients belonged to the late adolescent group between 15-19 years. The mean age was 14.47±2.26 years with a range from 12 to 19 years. Majority (25 patients) of

Table-I

Socio-demographic characteristics of the study population

Variable	Frequency	Percentage
Age group (Years)		
Early adolescent (10-14)	20	66.7%
Late adolescent (15-19)	10	33.3%
Socio-economic condition		
Low socio-economic	8	26.7%
Middle socio-economic	14	46.7%
High socio-economic	8	26.7%
Marrital status		
Unmarried	25	83.3%
Married	5	16.7%
Type of attendance		
In patient	17	56.7%
Out patient	13	43.3%

them (83.3%) were unmarried. Around 14 (46.7%) patients belonged to middle socio-economic group and 8 (26.7%) patients belonged to each low socio-economic and high socio-economic group. Total 17 patients (56.7%) patients were admitted into the in-patient department and 13 patients (43.3%) attended the out-patient department.

The symptoms were shown in figure 1. Here, the presenting complaints were mostly non establishment of menstruation in most of the patients (70%) with cyclic pelvic pain and severe lower abdominal pain being the next ones in total 56.7% patients. The other symptom were progressive pelvic lump (23.3%), dysmenorrhea (20%) and difficulty in sexual intercourse (16.7%), urinary retention (13.3%) and difficulty in defecation (3.3%) patients.

The spectrum of anomaly listed in table II revealed 46.7% had hymeneal abnormalities, 36.7% had imperforate hymen and 10% had cribriform hymen. The other frequent variety observed was mullerian agenesis comprising 30.0%. The relatively less frequent varieties were transverse vaginal septum, longitudinal vaginal septum, uterine didelphys variety and cervical agenesis comprising 6.7%, 3.3%, 10% and 3.3% respectively.

Associated renal anomaly (Table III) was found in total 6 patients. The commonest renal anomaly observed was unilateral renal agenesis found in total 5 patients (16.7%). Out of them, 2 cases were associated with mullerian agenesis and 3 cases with uterine didelphys variety. Another renal tract anomaly was duplex kidney found in 1 patient (3.3%) of cervical agenesis.

Mode of diagnosis (Figure 2) in most of the patients were clinical examination 16 (53.3%) while 9 (30%) patients were diagnosed by ultrasonography of whole abdomen. The other modes of diagnosis were MRI of whole abdomen, examination under anaesthesia and laparotomy comprising 1 (3.3%), 1 (3.3%) and 3 (10%) patients respectively.

Regarding the management (Figure 3), 20 patients (66.7%) were treated surgically while 8 patients (26.7%) were treated conservatively and 2 patients (6.7%) were referred to higher center. All the patients were further counseled regarding their condition, outcome, chance of recurrence, sexual and fertility options.

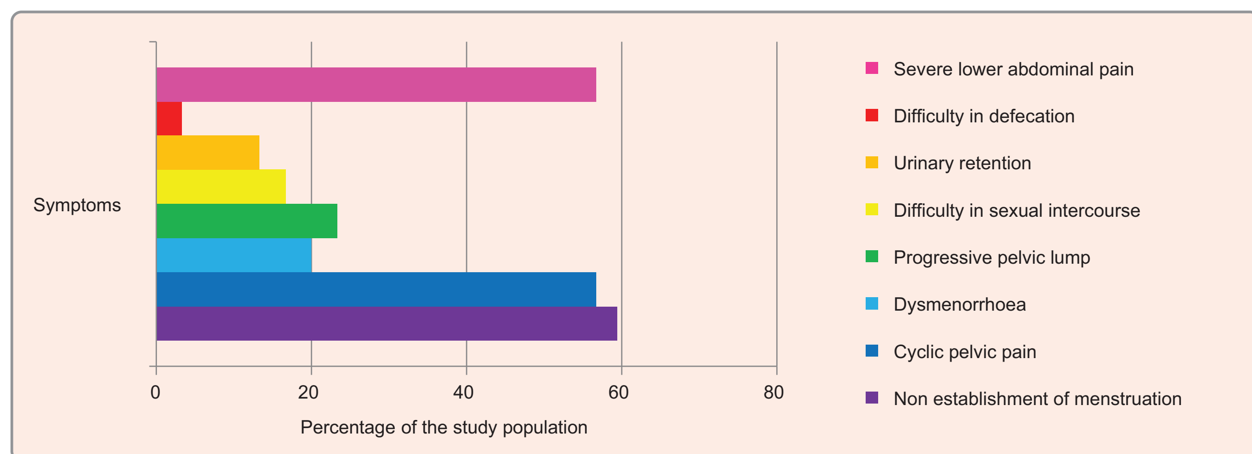

Figure 1: *Symptoms of study population*

Table-II

Spectrum of genital tract anomaly

Types of genital tract anomaly	Frequency	Percentage
Imperforate hymen	11	36.7%
Cribriform hymen	3	10.0%
Mullerian agenesis	9	30.0%
Transverse vaginal septum	2	6.7%
Longitudinal vaginal septum	1	3.3%
Uterine didelphys variety	3	10.0%
Cervical agenesis	1	3.3%

Table-III

Associated renal anomaly

Renal tract anomaly	Type of anomaly	Frequency
Duplex kidney (1)	Cervical agenesis	1
Unilateral renal agenesis (5)	Mullerian agenesis	2
	Uterine didelphys variety	3

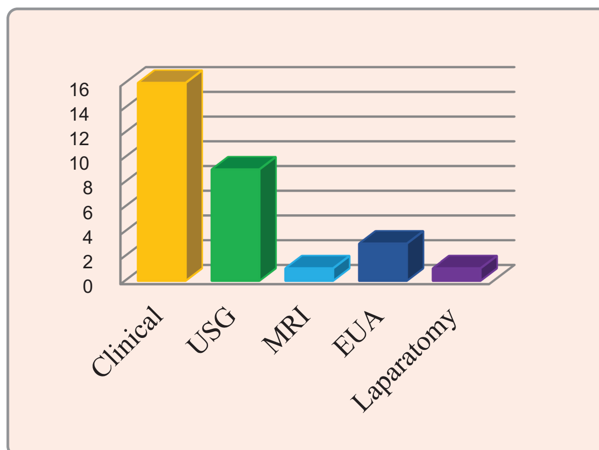

Figure 2: *Mode of diagnosis*

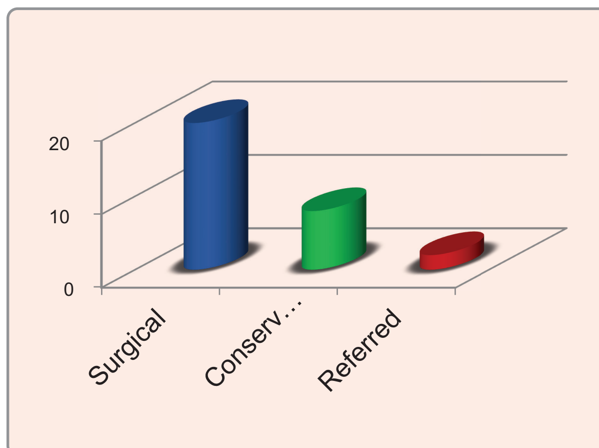

Figure 3: *Management*

Discussion:

Congenital malformation of the genital tract in adolescent girls is a jeopardizing condition as it affects their both physical and mental health.[3] Though considered rare, they are not that infrequent .[4] Genital tract anomaly detected in this period of budding sexuality confers a huge challenge to its proper diagnosis and management.[11] The aim of this study was to find out the spectrum of female genital tract anomaly in adolescents attending a tertiary level hospital and to identify the common variants, their mode of presentation, evaluation, associated renal anomalies, and management approach. In this study, 30 cases of female adolescent genital tract anomaly were observed over 6 months among which the majority (66.7%) belonged to the early adolescent group (10-14 years) with a mean age of 14.47 ± 2.26 years. Relevant studies[3, 7, 13] also found that adolescent genital tract anomalies commonly present around puberty during early adolescence.

In our study, non-establishment of menstruation was the most frequent complaint (70%) with cyclic pelvic pain and severe lower abdominal pain being the next frequent ones (56.7%). Gumanga SK et al.[3], Kachhawa G et al.[6], Begum J et al.[14] and Baby HA[15] who also found the common presentations of adolescent female genital tract anomalies are to be primary amenorrhoea, cyclic pelvic pain, progressive pelvic lump, apareunia, dyspareunia, hematometra, hematocolpos etc. Regarding the spectrum, 14 patients (46.7%) had hymeneal abnormalities where 36.7% had imperforate hymen and 10% had cribriform hymen. The other frequent varieties were mullerian agenesis (30.0%), transverse vaginal septum (6.7%), longitudinal vaginal septum (3.3%), uterine didelphys variety (10%) and cervical agenesis (3.3%). Gumanga SK et al.[3] also found the hymeneal varities to be the commonest one. Begum J et al.[14] found the same variants with imperforate hymen being the commonest one and Baby HA[15] also found the same anomalies with mullerian agenesis to be the commonest one. Total 17 patients (56.7%) admitted in in-patient department had features of outflow tract obstruction and 13 patients (46.3%) attending the outpatient department had either non-establishment of menstruation or problems of sexual intercourse. Jennifer E et al.[13] also found that obstructive genital tract anomalies commonly present around puberty with primary amenorrhoea and pelvic pain or with progressive dysmenorrhea. Here, obstructive anomalies like imperforate hymen, cribriform hymen,

cervical agenesis or complex syndrome involving obstruction in hemiuterus of a didelphys uterus present with severe lower abdominal pain, progressive pelvic lump, primary amenorrhoea, hematometra, hematocolpos etc. which is in line with relevant studies[11, 16-21]. Some studies[14-15, 18-19] resembled our findings that showed non obstructive variety of vaginal septum presented with dyspareunia or apareunia. The associated renal anomaly was found in total 6 patients (20%), the commonest anomaly being unilateral renal agenesis (16.7%). Similar studies[12, 19, 22] also found renal agenesis to be the commonest associated renal anomaly occurring in didelphys uterine variety and mullerian agenesis resembling our study.

The ultimate mode of diagnosis in most of the patients were clinical examination in 16 patients (53.3%) and 9 patients (30%) were diagnosed by ultrasonography of whole abdomen. As most of the anomalies in this study were hymeneal or vaginal, they were mainly diagnosed by physical examination and mullerian agenesis was diagnosed by ultrasonography which is supported by the study of Elumalai et al.[23] Malini S et al.[24] who also found sonography to be both diagnostic and confirmatory in most of the cases. Ribeiro SC et al.[11] reveals that MRI or diagnostic methods other than ultrasonography are mainly needed to diagnose complex malformations. Spence J et al.[10] contradicted that physical examination is usually inconclusive in adolescent girls and sophisticated diagnostic modalities like sonography, MRI and even sometimes examination under anaesthesia or endoscopic procedure is needed to confirm the diagnosis. In our study, we needed MRI, Examination under anaesthesia and laparotomy for the complex cases of uterine didelphys variety. Regarding the management, majority (66.7%) were treated surgically along with proper counselling. Surgery was mainly done in patients who had isolated hymeneal abnormalities, vaginal septum or complex anomalies. Hymeneal abnormalities were treated by cruciate incision in hymen or by hymenotomy and for vaginal septum, excision was done. Among the 9 cases of mullerian agenesis, 7 were treated conservatively by giving symptomatic treatment and counselling, but one case was treated conservatively by vaginal dilation as she was married. Only one case of mullerian agenesis with associated renal agenesis was referred as it needed further evaluation and more definitive surgery. Among the uterine didelphys variety cases, 2 were OHVIRA (Obstructed Hemi Vagina Ipsilateral Renal Agenesis) syndrome and one case was its variant where there was unilateral cervical atresia. All 3 cases came with associated hematometra and hematosalphinx. Incision through the bulging to drain the blood along with laparotomy was performed accordingly. One case of cervical agenesis with duplex kidney was referred due to institutional limitation. These treatments were similar with relevant studies[3, 14-15]. As most of the patients and their family were distressed about their condition and worried about the future outcome, all were counselled further for psychological well-being. Some studies[3, 10-11] also described counselling to be an integral part in managing adolescent genital tract anomaly.

This study has its limitations for being conducted over a short period with a smaller population. The institutional resource limitation also limited the study.

Conclusion:

Adolescent genital tract anomaly has a broad spectrum with a wide range of presentation. But it commonly presents around puberty with menstrual problems. The evaluation of most of these anomalies can be done clinically with minimal diagnostic aid, and management is mostly surgical. However, the management should be complemented with proper counselling to improve the quality of life and prevent future complications.

Recommendation

Adolescent female genital tract anomaly depicts a serious burden on her health. Hence, its spectrum and presentation should be well-known to clinicians to evaluate, diagnose and manage it properly. Moreover, further in-depth study into the aetiology of genital tract anomalies and more research on the spectrum and management of adolescent genital tract anomalies in other centers are recommended.

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