

Evaluation of the role of human chorionic gonadotropin therapy in the management of retractile testes in children

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Abstract

Background and objective: Retractable testis is relatively common in pediatric population. This study followed up boys with retractile testis to investigate the natural course and the need for hormonal therapy and surgical treatments.

Methods: A total of 110 boys aged 1.5-10.1 years (mean: 3.2 years) diagnosed as retractile testes, 67 (60.9%) unilateral and 43 (39.09%) bilateral. The mean follow-up period was 4.9 ± 1.3 years. The diagnosis is confirmed on history and examination and ultrasound was made for measuring the size of the testis.

Results: A total of 47 (42.72%) cases received human chorionic gonadotropin (17 bilateral and 30 unilateral). Response occurred in 32 boys (68.1%), 12 bilateral and 20 unilateral. Failure of response occurred in 15 boys (31.9%). Fourteen of 110 boys (12.72 %) were referred for orchiopexy, including 1 of 12 (8.3%) of bilateral cases and 2 of 20 (10%) of unilateral cases who responded to human chorionic gonadotropin injection, 2 of 5 bilateral cases (40%) and 1 in 10 unilateral cases (10%) in those did not respond to treatment. In those who did not receive treatment, orchiopexy was performed in 6 of 26 bilateral cases (23.1) and in 2 of 37 unilateral cases (5.4%).

Conclusion: Although testicular descent was achieved by short-term hormone therapy, the study revealed that there is no significant statistical difference for the need for orchiopexy between those received and those did not receive human chorionic gonadotropin.

Keywords: Retractable testes; Human chorionic gonadotrophin; Orchiopexy; Testicular ascent

Introduction

A retractile testis is a normally descended testis that move outside of the scrotum but it can be brought down manually into the scrotum during physical examination without pain or tension on the spermatic cord and remain in the scrotum for a while after release.^{1,2} The upward movement of the testis is by the action of the cremasteric muscle reflex. The function of cremasteric muscle is to regulate the temperature of the testis in cold weather by elevating the testis to become closer to the body core temperature. The cremasteric muscle is most active in children especially between

2-7 years.³ Retractable testis is relatively common in pediatric population; the prevalence is recorded as 1.68% in children up to 14 years.⁴

Although the retractile testis is believed as a benign entity descending at puberty and needing no further treatment, there are many reports showing tubular degeneration in the retractile testes causing future infertility problems.⁵⁻¹⁰ Ascending testes (acquired cryptorchidism) can develop in 6-32% of retractile testis cases carrying the same risk of complications occurring in congenital cryptorchidism.^{11,12}

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Histological changes (tubular degeneration, germ cells maldevelopment) are present in retractile testes and ascending testis in a nearly similar degree as in undescended testis.¹³⁻¹⁸ The size of retractile testes is significantly affected as compared with normal testes.¹⁹ The presence of retractile testis in the inguinal region for prolong period with higher temperature than the scrotal position is the main cause of complications that may affect future fertility especially in bilateral cases.^{20,21} Management methods for retractile testis remain controversial, La Scala and Ein reported that boys with retractile testis need periodic follow-up.⁸ In 1988; Elder JS recommend the usage of HCG in the treatment of retractile testis.²⁷ Ashcraft mention that retractile testis can be differentiated from cryptorchidism by HCG administration meaning that the response of retractile testis to HCG is well established.²⁸ It has been reported that retractile testis is accompanied by histological changes and abnormal semen analysis during follow-up when patients with retractile testis became adults.^{17,20} Testicular maturation requires 2- 4°C lower temperature than the normal core body temperature of and a normal scrotum can meet such a requirement by protrusion, the temperature of the inguinal canal exerts an adverse effect on testicular maturation as a retractile testis goes up because it is close to the core body temperature. Therefore, it is essential to examine testicular volume during the follow-up period. If there is any decrease in testicular volumes, surgical correction will be required and it has been reported that a shrunken testis can recover to the normal level of testicular volume after surgical correction.^{29,30}

The proper management of retractile testes still controversial; some prefer surgical correction inform of orchiopexy others prefer conservative management either wait or see or hormonal therapy.²²⁻²⁵ Hormonal therapy in the form of human chronic gonadotrophin (HCG) or

gonadotrophin-releasing hormone is suggested for the treatment of the retractile testis before orchiopexy.²³ In general HCG treatment is regarded a safe treatment way; however, it may cause increase in penile size, painful erection, increase in pubic hair, and behavioral changes during the time of treatment and shortly after that.²⁶ This study followed up and observed boys diagnosed with retractile testis to investigate the natural course of retractile testis and to analyze the need and the appropriate time of surgical treatments.

Up to the researcher's knowledge no studies have been done on this issue in pediatric surgery department in Erbil city. Therefore, this study aimed to investigate the natural course of retractile testis and analyze the need for hormonal therapy and the appropriate time of surgical treatments.

Methods

A longitudinal study for 110 boys who referred and diagnosed as retractile testes in Pediatric Surgery Unit, Raparen Teaching Hospital over 7 years between March 2013 to March 2020.

There were 153 retractile testes, 67 (60.9%) boys had unilateral retractile testes and 43 (39.09%) boys were bilateral. In unilateral cases, 49 cases (73.13%) were on the right side while 18 cases (26.86%) were on the left side. The average age at referral was 3.2 years and the mean follow-up period for those with persistent retractile testis was 4.9±1.3 years. The diagnosis of retractile testis is confirmed depending on history and physical examination of the genitalia and inguinal region in a warm room as the child is placed in the frog-leg position and by gently milking from the inguinal region to the scrotum the testis is brought down in the scrotum. If the testis remains in the scrotal base for one minute without tension then the testis retract upwards on release, the diagnosis of a retractile testis was made. The examination was repeated two to three times before the final decision.⁶ Ultrasound was made for measuring the

size of the testis and comparing with contralateral side. Hormonal treatment in the form of HCG was started for 47 cases (17 bilateral and 30 unilateral) weekly through intra muscular injections of 750i.u for patients up to 6 years of age and 1500 i.u for boys thereafter for 6 to 9 consecutive weeks.. Each boy was re-evaluated 3 and 6 months after completing HCG course for response. Success rate defined by having testis inside scrotum at least 6 month after completing HCG course without any decrease in volume of the testis, surgery recommended when the testis no more can be brought down to the scrotum or when can't remain and ascends immediately up to inguinal region, when there is sign of testicular atrophy either by clinical examination or by ultrasound examination. The statistical package for the social sciences (SPSS version 23) was used for statistical analysis. Frequencies were calculated and presented in tables. Chi square test was used to compare between proportions. A *P*-value of less than 0.05 was considered statistically significant.

Results

There were 110 boys with retractile testis in this study, 67 (60.9%) having unilateral

and 43 (39.1%) of them with bilateral retractile testis, 47(42.72%) of the cases received Hormonal treatment in the form of Human Chorionic Gonadotropin (17 bilateral and 30 unilateral). Response to HCG administration occurred in 32 boys of 47 (68.1%), 12 bilateral and 20 unilateral, failure of the response to HCG administration occurred in 15 boys of 47 (31.9 %) (Table 1).

In this study a total of 14 of 110 boys (12.72 %) referred for orchiopexy including 1 of 12 (8.3%) of bilateral cases and 2 of 20 (10%) of unilateral cases who responded to HCG injection, in those didn't responded to treatment orchiopexy indicated in 2 of 5 bilateral cases (40%) and 1 in 10 unilateral cases (10%), in those who did not received treatment with HCG orchiopexy performed in 6 of 26 bilateral cases (23.1) and in 2 of 37 unilateral cases (5.4%). 6 out of 47 cases (12.76%) who received HCG needed surgery and 8 out of 63 cases (12.69%) who did not receive HCG needed surgery (Table 2).

Patent processus vaginalis was present in 2 cases during orchiopexy and family history of retractile testis was positive in 5 patients (4.5%).

The risk of becoming an ascending testis is about 10.90% (12 of 110 cases) (Table 3).

Table 1 Response to HCG by side (whether unilateral or bilateral)

Response to HCG	Cases who received HCG			P value
	Bilateral No. (%)	Unilateral No. (%)	Total No. (%)	
Yes	12 (70.58%)	20 (66.66%)	32 (68.09%)	0.827
No	5 (29.41%)	10 (33.33%)	15 (31.91%).	
Total	17 (100.0)	30 (100.0)	47 (100.0)	

Table 2 Need for orchiopexy in each of the study groups.

	Need for orchiopexy		Didn't need orchiopexy		Total		P value
	No.	(%)	No.	(%)	No.	(%)	
Bilateral							
Responded to HCG	1	(8.3)	11	(91.7)	12	(100.0)	0.405
Didn't respond to HCG	2	(40.0)	3	(60.0)	5	(100.0)	
Didn't take HCG	6	(23.1)	20	(76.9)	26	(100.0)	
Unilateral							
Responded to HCG	2	(10.0)	18	(90.0)	20	(100.0)	0.631
Didn't respond to HCG	1	(10.0)	9	(90.0)	10	(100.0)	
Didn't take HCG	2	(5.4)	35	(94.6)	37	(100.0)	
Total	14	(12.7)	96	(87.3)	110	(100.0)	

Table 3 Complication risk during follow up

Complication	Received HCG		Not Received HCG	
	No.	(%)	No.	(%)
Reduction in testicular size				
Yes	0	(0)	2	(3.2)
No	47	(100)	61	(96.8)
P value	0.218			
Ascending testis				
Yes	6	(12.8)	6	(9.5)
No	41	(87.2)	57	(90.5)
P value	0.590			
Total	47	(100)	63	(100)

Discussion

There are contradictory results concerning histological changes in a retractile testis. Some previous studies reported that the retractile testis had the histological structure of the normal testis,^{30,31} whereas recent studies have suggested that surgical correction is necessary to prevent histological changes if patients with retractile testis develop undescended testis.^{17,21,32} In our study because of risk of testicular damage and histologic change when retractile testis become undescended or when the size of the testis decreased during follow up period, treatment had been provided either with hormonal therapy or surgery.

The overall response of retractile testis to HCG treatment In this study (success rate) is 68.09%, which is near to response reported in previous studies by Sadik H. (74%).⁶ The risk of become ascending testis (undescended testis) in this study is about 10.90% (12 of 110 cases) , this result is much differ from study done by Hack WW, et al in which the risk of undescended testis was 1.5%. These results shows that testicular descent was achieved by short-term hormone therapy. However, this type of therapy failed to prevent the return to retractile testis in some cases during follow-up.

Decrease in testicular size occurred in 2 of 110 cases (1.81%) in those who didn't received HCG therapy and it has been reported that a shrunken testis can recover to the normal volume after surgical correction.^{29,30} This result implies that the appropriate decrease in the temperature around the testis after surgical correction allows for testicular maturation. The ratio of the boys who underwent orchiopexy in this study was 12.72%, previous studies showed that between 6.9% and 32% of boys with retractile testis require orchiopexy.^{8,11,12}

The limitations of this study include the lack of complete follow-up until the end of adolescence in some boys and the number of boys involved in the research was not

large enough and that the results do not reflect the progress of patients who failed to attend the follow-up. Future research can address such limitations by involving a larger number of patients in a multi-center study that would allow the investigation of more details concerning the natural course of retractile testis.

Conclusion

Although testicular descent was achieved by short-term hormone therapy, the study revealed that there is no significant statistical difference for the need for orchiopexy between those received and those not received HCG and it shows that retractile testis has a risk of become ascending testis so that close observation regarding testicular position, mobility, and volume through periodic follow-up is necessary until the testis in the normal position.

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Competing interests

The authors declare that they have no competing interests.

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