

Original Research Article

Undescended testis varying presentation - Clinical research study

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Abstract

Background: This study focus on the varying presentation, hormonal influence, and biochemical marker for a series of patient with undescended testis and their influence over descend and imaging modality and various diagnostic approaches towards the undescended testis.

Materials and methods: Patients who had attended vinayaka mission medical college, karaikal with the complaints of absence of testis and infertility included in this study and it is a prospective clinical study which was carried from 2014 – 2016 June. All treatment modality were carried out according to the diagnosis confirmed by both clinically and imaging after obtaining concern from the patients.

Results: all hormonal and bio chemical marker were taken for all the patients and they were evaluated. In that testosterone showed little on lower side with patients with infertility, insulin like 3 peptide was on lower side for more than fifty percent of patient mainly who were in adolescent age. In patients whose presentation of testis can't be assessed by either clinical and ultrasonography diagnostic laparoscopy was done and testis were found out.

Conclusion: Testosterone has significant effect in descend of the testis and mainly in the patients with infertility. Insulin like peptide 3 can be used as a prognostic marker to assess the viability of the testis and diagnostic laparoscopy remains gold standard invasive diagnostic tool where the testis is not seen clinically and imaging.

Key words

Undescended testis, Testosterone, Insulin like peptide 3, Diagnostic laparoscopy.

Introduction

The two phases of transabdominal and inguinoscrotal descent which occur approximately during the first and last thirds of gestation respectively where Androgens play a role in both of these processes but particularly with respect to enabling the testis to traverse the inguinal canal in the final phase of descent [1]. The transabdominal phase of descent is under the control of insulin-like 3 (INSL3), a product of the Leydig cells. Definitive evidence of its role in rodent testis where descent is illustrated by the phenotype of bilateral cryptorchidism in *Ins13*^{-/-} null mice [2]. Experiments in the animals where suggest that the androgens mediate which effect via the release of calcitonin gene-related peptide by the genitofemoral nerve, but the direct evidence of such a mechanism is lacking in humans. In this article we discussed the three cases out of twenty cases which were occurred in the single family tree [3]. Insulin-like 3 and hormonal status were assessed and influence of this substance in the descend and how it varies according to the age were discussed.

Materials and methods

Patients who were attended the vinayaka mission hospital with the complaints of absence of testes and infertility were included in this study with age from 5 years to 40 years male All 42 cases were treated by authors personally in their teaching institution from 2014 to June 2016 and the diagnostic and treatment protocols analyzed individually after clinical examination, imaging modalities like ultra sonogram and in difficult cases diagnostic laparoscopy was carried out in some of the patients, after obtaining the concern patient subjected to the study. Patients having any syndromes associated with the infertility or absence of testis like klinefelter syndrome are excluded from this study. Biochemical marker and imaging modality are used to evaluate the patient and treatment modalities have been carried out according to the results.

Results

CASE 1:

33 Years old male patient presented with the complaints of absence of right testis in scrotum came to the surgery opd .History of infertility for 3 years present, History of absence of right testis since birth, past history was no significant. Personal History Mixed diet, Alcoholic for 8 years, Sleep was Normal. Family history of similar complaints seen in two of his Nephews. On Inspection Right scrotum was ill developed, Left scrotum was well developed. On palpation Genitals – Right testis not palpable, scrotum empty, left testis palpable. Ultrasonography impression: Grade 1 fatty liver, No significant abnormality. Investigations were tabulated. We planned for a diagnostic laparoscopy and proceed.

CASE 2:

15 year old male patient came to surgery OPD with the complaints of absence of testis in the scrotum left side since birth .History of swelling present in the left inguinal region. Past history has no significant. Family history of similar complaints present in the younger brother and maternal uncle. On Inspection Right side scrotum was well developed, left side ill developed. On palpation swelling of size 3 x 2 cm present on the left inguinal region, mobile, no warmth, non-tender, soft in consistency, skin around the swelling was normal, Genitals: right testis palpable, left testis not palpable. Investigation was tabulated, Ultrasonography impression: hypo echoic mass 2.2 x 1.8 cm present over the right inguinal region which is suggestive of testis.

CASE 3:

14 year old male patient came to surgery OPD with similar complaints of his elder brother with absence of right testis in scrotum since birth. On Inspection Right scrotum is well developed, left scrotum is well developed. On palpation swelling of size 3 x2 cm present over the root of the right scrotum which is not tender and no warmth, Left testis was palpable. Investigations were tabulated. Under spinal anesthesia under aseptic precaution skin crease incision was made over right inguinal region testis pulled with chord

structures and fixed with the scrotum, right orchidopexy done.

Discussion

Articles regarding hereditary undescended testis were reviewed .in all articles insulin like peptide factor plays a major role in familial undescended testis, For all three cases insuling like peptide and insulin like growth factor and complete hormonal profile were taken [4]. Comparing Insulin like peptide and insulin like growth factor ratio Insulin like peptide – 3 were on lower side in three patients [5]. Circulating levels of INSL3 are higher in boys at puberty, are undetectable in girls and are lower in boys with undescended testes. Insulin like growth factor has no significant role in this case series [6]. In **Table -**

1 all the bio chemical markers were tabulated for each case in which the testosterone and insulin-like 3 were significant [7]. In Case 2 one adolescent patient has normal testosterone but in the lower side which shows the influence of hormone over the descend of the testis and in all three cases according to the table 2 insulin like 3 is within normal limits but it should be on the higher side for both of the adolescent patient case 2 and 3 which shows the influence of descend in this patient, various treatment apart from surgical approach hormonal therapy is available for undescended testis which was widely practiced in European nations, insulin like 3 peptide can be used as a prognostic marker or for evaluation of descend of testis respond to various therapy mainly in the adolescent patients [8].

Table – 1: Different hormone levels in all 3 cases.

	Case 1	Case 2	Case 3	Normal range
Insulin like peptide – 3	130.6 ng/ml	404.1 ng/ml	327 ng/ml	220 – 927 ng/ml
Insulin like growth factor	234.0 ng/ml	308.0 ng/ml	282.7 ng/ml	193 – 731 ng/ml
FSH	14.58 mIU/ml	5.09 mIU/ml	8.96mIU/ml	1.4 – 8.1 mIU/ml
Luteinising hormone	7.82 mIU/ml	0.53mIU/ml	4.42mIU/ml	1.5 -9.3mIU/ml
Prolactin	10.06 ng/ml	4.85 ng/ml	7.04ng/ml	2.1 – 7.7ng/ml
Testosterone	540.6 ng/dl	60.66 ng/dl	300.57ng/dl	28 -1110ng/ml

All hormonal profile was taken for the 42 patients in that patients who are in the age of 5 to 10 years were on the lower side or normal. 19 patients who were at the age of 18 to 40 years in adolescent age group and adults the testosterone were on the lower side. So testosterone has significant effect over the descend of the testis in the discussion of three patients testosterone was on the normal limits in case 2 and 3.in case 1 in the adult patient testosterone was on the lower side which shows its significance [9]. Different treatment modalities were carried out for 42 cases, treatment modality was changed according to the varying position of the testis which was confirmed by imaging and thorough clinical examination [10].

In these 42 patients infertility was seen in 21 patients in the 25 married patients so infertility was seen in more than seventy five percent of the

married patients with undescended testis [11]. Testosterone was seen on the lower side in these twenty one patients, insulin like peptide 3 were also done for these patients who were on the normal side but it was on the lower side so it has little significant effect on the infertility and in adult patients, but testosterone has a significant effect on the infertility which was discussed in lots of literature. Follicular stimulating hormone was done for all patients, only in eight patients which was on the lower side that also seen in the patient who had infertility that also not having significant effect on this study, luteinizing hormone was normal in all the patients which has no significant effect on descend of the testis in this study [12]. According to the literature insulin like peptide 3 will be on the higher side in the adolescent patients. In this study insulin like peptide 3 were on the lower side in the adolescent and some patients which shows some

influence on the descend of the testis In 36 patients in this study. In controversy to the literature INSL 3 were on the lower side in these three patient it was on the lower side for all three patients and one adult has infertility irrespective of varying position of the testis [13]. Position of the testis varies in all forty two patients; in these 9 patients position was intra abdominal in which all non invasive imaging modality and clinical finding were inconclusive in which the diagnostic laparoscopy prevails the upper hand in all these nine patients and orchidectomy was done laparoscopy And in those 9 patients 8 patients were on the adult age group and one patient was on adolescent age group [14]. In these three patients one patient had intra abdominal in position and diagnostic laparoscopy was done proceeded with laparoscopy orchidectomy which was unilateral and other testis was in the scrotum. Diagnostic laparoscopy prevails as a gold standard invasive modality for clinically impalpable and ultrasonography [15]. In rest of the patient testis were in varying position such as inguinal region, root of the scrotum. In this patients who were in the adolescent age and were the testis is viable, orchidopexy were done for those patients. In patient were clinically and ultrasonographically atrophied testis orchidectomy was done. And other side testis was preserved in most of the patient. In this study only 4 patients had cryptorchidism in that 3 patients underwent orchidopexy and in one patient one side orchidopexy and other side orchidectomy was done. In these forty two cases only these three cases occurred in the single family tree. Patients were subjected to the genetic counseling in JIPMER, Pondicherry and followed up [16, 17].

Conclusion

In forty two cases insulin like peptide 3 was on lower side in most of the patient which shows significance. Testosterone hormone has more influence on the patient with infertility and treatment modalities were carried out according to the varying position and according to the clinical and image finding and in most of the

cases. In that Three cases Insulin like peptide is on the lower side which indicates it has some influence over the descend of the testis with a familial history. Diagnostic laparoscopy remains the definitive investigative modality for undescended testis when there is no significant clinical finding. Testosterone plays one of the significant roles in this case series. Insulin like peptide – 3 can be used as a prognostic marker in hormonal therapy to assess the viability of the testis.

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