



ORIGINAL RESEARCH PAPER

Pediatrics

PROSPECTIVE STUDY OF HISTOLOGICAL CHANGES IN UNDESCENDED TESTIS

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ABSTRACT

Testis develops as an intra-abdominal organ and descends down into the scrotum. The descent of the testis is governed by multiple factors. The descent could get arrested anywhere along its pathway of descent. The two most important complications of undescended testis are infertility and malignancy. This study was designed to evaluate the histopathological changes in undescended testes with relation to age and location of the testis in testicular biopsies taken during orchidopexy, which can be helpful to prognosticate on future fertility. The indices that were looked for, were tubular fertility index, mean tubular diameter, sertoli index. The study showed that all testicular lesions were present in all locations from the intra-abdominal to the canalicular region and the changes start occurring as early as 10 months of life. This study suggests early orchidopexy for the management of undescended testis

Introduction

Testis develops as an intra-abdominal organ and descends down to the scrotum to avoid high intra-abdominal temperatures. This descent is facilitated by various factors like gubernaculum contraction and hormonal influences from foetal testicular interstitial cells. The failure to descend is multifactorial and affects the normal development of the testis^{1,2}. Patients with undescended testis present with empty scrotum. Infertility and malignancy are the most common long term side effects^{3,4}. Hence early intervention is necessary to avoid infertility and prevent the risks of malignancy. Changes in the histology of an undescended testis is a matter of debate. The present study aims at understanding the microscopic changes in an undescended testis in the paediatric age group.

MATERIALS AND METHODS

Testicular biopsies of undescended testis, either unilateral or bilateral undergoing orchidopexy were done on 21 children varying in age from 10 months to 10 years. Specimens were histopathologically evaluated with Hematoxyllin and Eosin stain. Semithin sections were also taken and studied to look for spermatogonia. Sections were studied in respect to Tubular fertility index- percentage of tubules containing germ cells, mean tubular diameter- measured on 50 tubules per cross section using the image analyser, Sertoli cell index- mean number of sertoli cells per tubule. These indices were classified into 4 types with reference values published by Nistal and Pagnigua as minimal alteration (type 1), marked germinal hypoplasia (type 2), severe germinal hypoplasia (type 3), immature sertoli cell hyperplasia with no germ cells (type 4)⁵.

RESULTS

Of the 28 biopsies studied none of the specimen demonstrated a normal histology of mean tubular diameter of more than 90 microns, tubular fertility index more than 50%. The earliest change in the histology was noted in a 10 month year old child demonstrating an early onset of change in the testicular histology. Type 1 lesions were noted in 6 biopsies, 8 in type 3 and 9 in type 4. Tubular hyalinization and calcification along with peritubular fibrosis were noted in type 4 lesions. There was no evidence of any tubule showing intra-tubular germ cell neoplasia.

DISCUSSION

Late descent of the testis hampers the normal testicular development. In this series all the four histological types of lesions were noticed in all the age groups and in all the location of the undescended testis. Type 4 lesions were noted in the higher age

group and were associated with microcalcifications, hyalinization and interstitial fibrosis. Absence of change in the testicular histology from birth until six months of life and smaller seminiferous tubules in undescended testis from 6 months to 3 years of life and progressive diminution of tubular diameter, absence of spermatogonia have been demonstrated in several studies^{6,7}.

The longer the testis stay outside of the scrotum, more the damages to the seminiferous tubules. Fertility rates if orchidopexy is done after 3 years have been shown at 13%⁸. Elder demonstrated that when orchidopexy is done by 18 months of age, the fertility was maximum⁹.

CONCLUSION

Our study demonstrated all the type of histological lesions were noted in all locations of testis. Changes occur as early as 10 months and hence the recommended timing of orchidopexy should be well before 1 year of life. Classification of prepubertal testis by their histologic type could possibly help us in grading the prognosis with regard to fertility.

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