

Androgens and androgen receptor in male fertility

Chawnshang Chang

University of Rochester Medical Center

Male infertility affects approximately 10-50% of all couples. Numerous studies have demonstrated that androgen-androgen receptor signaling pathway is required for normal spermatogenesis. While some of the patients with male infertility syndrome show relatively elevated levels of serum androgen, most of infertile men have a normal serum androgen level. Thus, much attention has been paid to mutations in androgen receptor.

Since androgens execute their actions through androgen receptor, mutations and variations in androgen receptor have been studied. The length of the glutamine residue expansion in the polymorphic region of androgen receptor has been a center of controversy to explain male infertility for the last decade. Since no clear conclusion has been made for the relationship between male infertility and length of glutamine residue expansion in androgen receptor, variations in the length of glutamine residue may not be the only explanation of male infertility.

Androgen receptor mutations so far identified from patients with male infertility syndrome show various phenomena in androgen receptor transactivation. Some of the mutations show little change in androgen receptor transactivation, while most of mutations show decreased transactivation without changes in binding affinity to androgens. Molecular studies that can link these mutations to impaired spermatogenesis in the patients with male infertility syndrome need to be further studied. Mutations in the non-polymorphic region of androgen receptor can explain a minor portion of male infertility.

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