REPRODUCTIVE ENDOCRINOLOGY

Male fertility influenced by *FSHB* and *FSHR* polymorphisms?

A genetic polymorphism disrupting transcription of the β subunit of follicle-stimulating hormone (FSH- β) has an adverse effect on male reproductive parameters. The team of researchers reporting this finding also discovered that men with polymorphisms in the genes encoding FSH- β (*FSHB*) and its receptor FSH-R (*FSHR*) are more severely affected than those with a mutation in only one of these two genes.

Signalling by FSH through FSH-R is required for development of the testes and for maintaining sperm production during adulthood. Although the *FSHR* 2039A>G polymorphism has been linked to changes in reproductive parameters in women, no such association has been observed in men. However, the *FSHB* -211G>T polymorphism has been linked, in men, to reduced serum FSH levels and reduced sperm production.

The researchers analyzed the records of 1,213 men presenting with couple infertility of undefined cause who were treated at the Centre of Reproductive

Medicine and Andrology, University of Münster.

All men were screened for the *FSHB* -211G>T and *FSHR* 2039A>G polymorphisms. Serum levels of FSH, leuteinizing hormone (LH) and testosterone were measured, testicular volume was determined and sperm count was calculated.

In line with the results of previous studies, the presence of the *FSHB* -211G>T polymorphism resulted in significant reductions in FSH level, FSH:LH ratio, testicular volume and sperm count. Men in this group who were homozygous for the mutation had a 34% reduction in sperm count in comparison with those who had two *FSHB* -211G alleles.

Although no significant associations were observed between *FSHR* 2039A>G and reproductive parameters, the presence of *FSHR* 2039G in men with the *FSHB* -211T polymorphism increased

the severity of the adverse effects conferred by this polymorphism.

Additionally, the team noted that the effects of both polymorphisms were additive, with homozygotes being more affected than heterozygotes. The men who were homozygous for both *FSHB* -211T and *FSHR* 2039G alleles, therefore, had the lowest testicular volumes.

The researchers suggest that approximately 45% of men seeking reproductive treatment could respond to therapy with FSH and that screening for *FSHB* and *FSHR* polymorphisms could identify men likely to respond to FSH therapy.

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Original article Tüttelmann, F. *et al.* Combined effects of the variants *FSHB* -211G/T and *FSHR* 2039A>G on male reproductive parameters. *J. Clin. Endocrinol. Metab.* doi:10.1210/jc.2012-1761