The role of epigenetics in male infertility

Tara Akhtarkhavari\textsuperscript{1}, Farkhondeh Behjati\textsuperscript{2*}

ABSTRACT

Introduction: Human male infertility is a complex medical condition within which not only the genetic factors but also, epigenetic factors play an important role. For many years the contribution of epimutations was neglected and in comparison with other relying causes of male infertility, the field of epigenetics is rather young and more studies are still needed to explore various effects of epigenetic alterations on human male infertility, consequently a review study was performed.

Material and methods: This study was done on more than 50 papers that were indexed by Pubmed before June 2016. The literature review was conducted by the following keywords: Epigenetic male infertility, epimutation male infertility, epigenetic azoospermia, epigenetic oligospermia, epidrug male infertility, and next generation sequencing male infertility.

Conclusion: Recent studies have identified various epigenetic factors that involved in male infertility including abnormal histone modifications, aberrant chromatin remodeling, irregular microRNAs, unusual protamine modifications and hypermethylation in promoter region of several genes.

Current available medications are not capable of solving all cases of infertile men specially those who are reported as idiopathic cases that accounts for 15 to 25 percent of all patients. Epigenetics is one of the recently identified causes of this condition and understanding the exact mechanism of epigenetic factors in male infertility enables us to develop new epidrugs for this condition in the near future.

Keywords: Male Infertility, Epigenetic, Genetic, Oligospermia

\textsuperscript{1} MSc, Sarem Cell Research Center, Sarem Hospital, Tehran, Iran.
\textsuperscript{2} PhD, Sarem Cell Research Center & Department of Medical Genetics, Sarem Hospital, Tehran, Iran; Professor of Medical Genetics, Genetic Research Center, University of Social Welfare and Rehabilitation sciences, Tehran, Iran.

* Corresponding Author, Email: fbehjati@gmail.com