International Journal of Pediatrics and Genetics
Vol. 3 No. 2 (2025)
ISSN: 2995-5483

Antispermantibody Level and Relationship with Some Parameters in Patients with Oligo asthenoteratozoospermia

Waleed A. H.
Open Educational College / Najaf, Ministry of Education, Iraq,
alkhfafwlyd@gmail.com

Abstract: OligoAsthenoteratozoospermia is a form of male infertility, affecting the quality of sperm motility and leading to decreased fertility rates. Current diagnostic and therapeutic methods fail to solve most infertility problems. Samples were collected from the Infertility Center at Al-Sadr Teaching Hospital, and the results showed that infertile individuals had significantly higher levels of Antispermantibody and Interleukin 17. The results indicated that the amount of testosterone FSH, LH, decreased significantly. The parameters had a direct correlation with testosterone. It can be said that the negative effect of Antispermantibody has a negative impact on men in terms of fertility, due to low levels of testosterone, weak immunity, or changes in sperm quality, which may lead to reproductive problems.

Key word: Oligo Asthenoteratozoospermia, Antispermantibody, FSH, LH, testosterone hormone and IL17.

Introduction:

OligoAsthenoteratozoospermia is a form of male infertility that affects the quality of sperm motility and leads to decreased fertility rates (1). Current diagnostic and treatment methods fail to solve most infertility problems (2). Combined clinical and static examination leads to the identification of some cases of oligospermia and sperm abnormalities (3).

The diagnostic value is particularly important for fertility, as semen characteristics have something special compared to other male groups, and using an extreme standard search for features that have not been previously searched for in such males with oligospermia and sperm abnormalities, we find many important things (4). Antisperm antibodies (ASA) are proteins of the immune system that usually target sperm by affecting the sperm, which leads to decreased fertility in males (5). They are usually found in patients who suffer from oligospermia and sperm abnormalities, a condition characterized by low sperm count and abnormal sperm shape (6). ASA levels usually play a very important role in influencing reproductive outcomes (7).

High levels of ASA are associated with decreased sperm count, sperm motility, and abnormalities (8). ASA may lead to sperm aggregation, which reduces the number of motile and fertile sperm (9). ASA levels are associated with sperm morphology abnormalities, which may be due to immune damage (10). Increased levels of ASA are associated with a higher proportion of sperm with defects in the head, middle, or tail (11).

Acetic acid can impair sperm motility by interfering with the structure of the sperm tail, making motility ineffective (12). Sperm associated with acetic acid show decreased progressive motility, which affects the possibility of fertilization (13). Studies suggest that men with high levels of acetic acid may have increased sperm DNA fragmentation, which may affect embryo development and pregnancy success rates in assisted reproductive technologies (14,15). Some research suggests that

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ISSN: 2995-5483

men who are positive for acetic acid may have altered levels of testosterone and FSH, possibly due to immune-related testicular dysfunction (16,17).

Acetic acid can reduce success rates of intrauterine insemination due to poor sperm motility (18). Intracytoplasmic sperm injection (ICSI) bypasses the effects of ASA by injecting sperm directly into the egg, making it a preferred treatment for ASA-related infertility (19,20).

Methodology:

This study included 60 male patients diagnosed with OligoAsthenoteratozoospermia who attended the infertility Center, Al-Sadr Medical City, Najaf, Iraq.

All patients in this study were diagnosed by specialized physicians. The ages of the study participants ranged from 19 to 44 years. The study was conducted from February 2024 to October 2024.

Statistical analysis

Statistical analysis is often used to analyze quantitative data and provides methods for data description and simple inference for continuous and categorical data. In this study, all data are presented as mean ± standard deviation.

The statistical analyses were performed using SPSS (version 26) and using dependent t-tests (two-tailed) and independent t-tests (two-tailed) for normally distributed variables, . $P < 0.05$ was considered statistically significant.

Ethical approval:

Before the samples were taken, all of the patients who were going to be part of this study were properly informed and gave their verbal permission. The Committee on Publication Ethics at the Al-Sadr Hospital.

Results:

Through laboratory tests of infertile men, it was found that there was a significant decrease in Sperm Concentration, Sperms Progressive Motile, and Sperm Normal Morphology. There was also a significant decrease in Testosterone Hormone, Follicle-stimulating Hormone, and Luteinizing Hormone, but there was a significant increase in Antisperm Antibody Level and Interlukin 17 Level.

Table (4-1): Comparison among infertile male OligoAsthenoteratozoospermia male infertility and Fertile Normospermic in seminal fluid parameters.

Semen and Sperms Parameters	**Control group N=30**		OligoAsthenoteratozoospermia **N=60**	**P value**
Volume (ml)	3.35±0.12		1.66 ± 0.07 **	**p < 0.05**
pH	6.9±0.02		7.0±0.03	**p < 0.05**
Sperm Concentration (Sperm/ml.)×10^6	64.22±2.15		7.19±0.58 ***	**p < 0.05**
Sperms Progressive motile (%)	70.23±1.68		19.32±1.4 ***	**p < 0.05**
Sperm normal morphology (%)	68.82±1.5		20.5±1.3***	**p < 0.05**
Round cell concentration ×10^6 cells	1.19±0.07		2.1±0.18	**p < 0.05**

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The results inside the table represent mean± Std. Error, * Denotes significant (P <0.05)

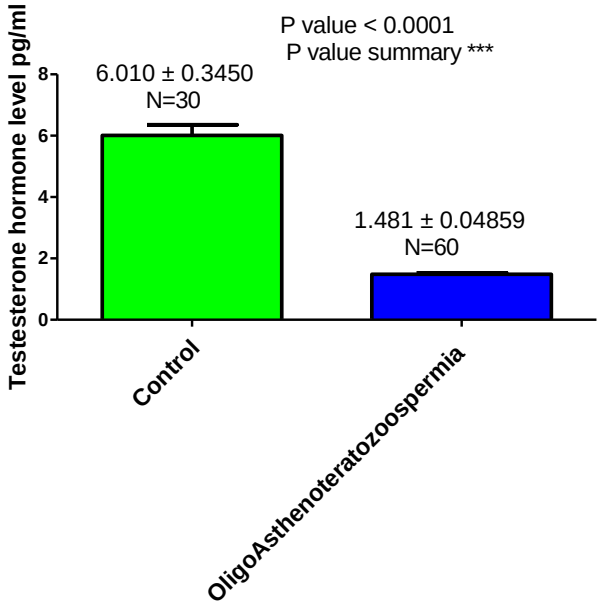

FIGURE1. Comparison of Testosterones hormone level in the serum between men with Oligo Asthenoteratozoospermia compared with control group., difference later indicates significant (p < 0.05)

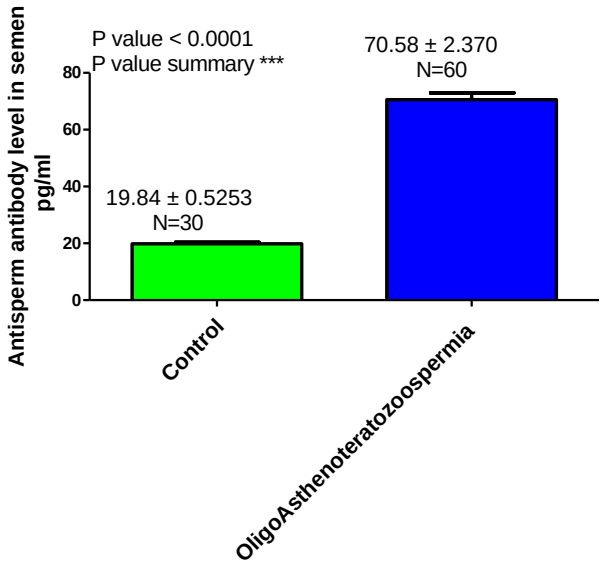

FIGURE2. comparison of Antisperm antibody level in the serum between men with OligoAsthenoteratozoospermia compared with control group., difference later indicates significant (p < 0.05)

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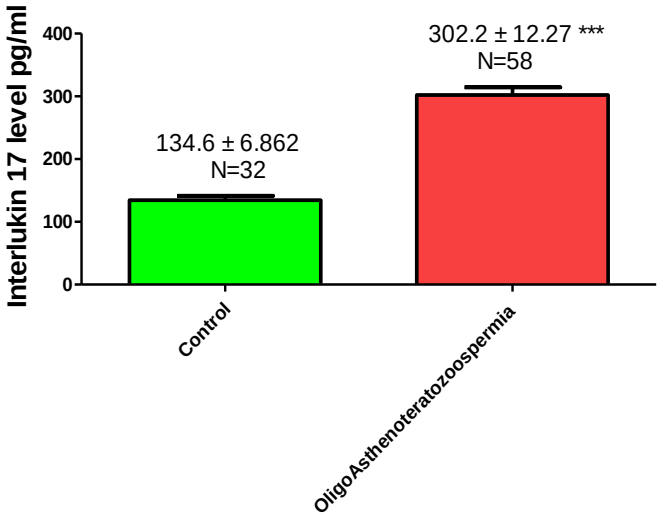

FIGURE3. comparison of Interlukin 17 level in the serum between men with OligoAsthenoteratozoospermia compared with control group., difference later indicates significant ($p < 0.05$)

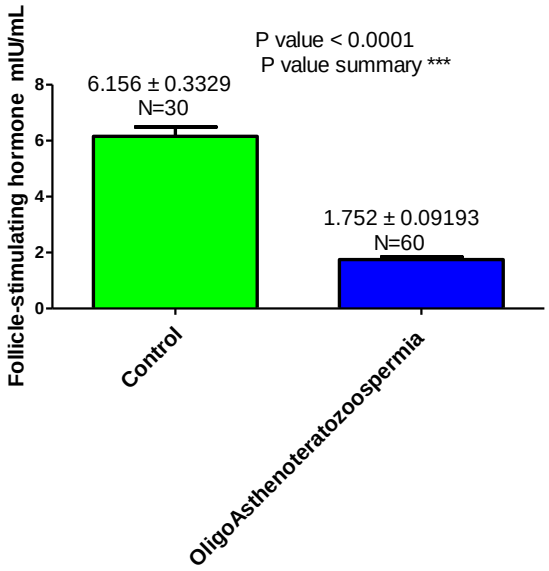

FIGURE4. comparison of Follicle-stimulating hormone level in the serum between men with OligoAsthenoteratozoospermia compared with control group., difference later indicates significant ($p < 0.05$)

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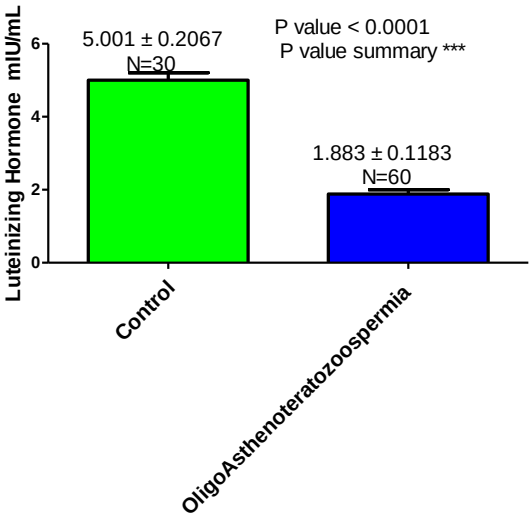

FIGURE5. comparison of Luteinizing Hormone level in the serum between men with OligoAsthenoteratozoospermia compared with control group., difference later indicates significant ($p < 0.05$)

Discussion:

Results showed decreased sperm count, motility, morphology, and number, and significantly decreased levels of testosterone, follicle-stimulating hormone, and luteinizing hormone. Infection may also contribute to infertility by affecting semen parameters, oxidative stress, and testicular function. Studies suggest that sperm counts in men are reduced by inflammation or direct damage to the testicles. Decreased motility is observed, possibly due to increased oxidative stress or structural damage to the sperm tail (21,22). An increased incidence of abnormal sperm morphology, including defects in the head and tail, may be observed. Infection results in increased levels of reactive oxygen species, which cause oxidative damage to sperm DNA, lipids, and proteins (23,24). Increased levels of antisperm antibodies, which interfere with hormonal regulation. Finally, sperm DNA fragmentation is common in infected men, reducing the likelihood of sperm fertilization and increasing the risk of embryo failure (25). Chronic inflammation can lead to an inflammatory response in the testicles or accessory glands, resulting in: Elevated levels of the cytokine IL-17 in the semen, which is toxic to sperm. This leads to structural damage to the seminiferous tubules and impaired spermatogenesis. Dysfunction of the hypothalamic-pituitary-gonadal (HPG) axis leads to decreased levels of testosterone, which is essential for spermatogenesis (26,27).

Conclusion

Infertility can significantly impact male fertility through multiple pathways, including oxidative stress, inflammation, and hormonal disturbances. Early diagnosis, effective treatment, and management of oxidative damage are essential to improve reproductive outcomes in affected men. Further research is needed to explore the precise mechanisms and develop targeted therapeutic strategies.

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