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Short Communication

Analysis of Human Sperm to Predict Sperm DNA Damage Using HRM-qPCR

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ABOUT THE STUDY

A male's semen as well as the sperm contents is evaluated using a semen analysis, commonly known as a seminogram or spermiogram. It is carried out to assess sperm quality, whether for people desiring conception or to confirm the effectiveness of a vasectomy. It is common practice to estimate male fertility using standard semen characteristics; However, it has not been determined if the 2010 World Health Organization (WHO 2010) standards are more accurate predictors than the 1999 thresholds. Sperm DNA Fragmentation (SDF) was used as a measure of male fertility in sub fertile males to address this problem [1].

The Youden Indices (YIs) of all potential thresholds were computed using Receiver Operating Characteristics (ROC) curves and compared to one another and to the corresponding YIs of ideal thresholds in order to evaluate the predictive ability of the 1999 threshold with the 2010 cutoffs. The progressive motility and vitality measures had the largest area under the ROC curves of all the standard semen parameters, and their respective 2010 manual YIs were comparable to their optimum YIs. However, both of the WHO guidelines' thresholds for sperm concentration and total sperm count showed low YIs, significantly different from the corresponding ideal YIs [2].

The appropriate YIs for each manual's normal morphology cutoffs and their corresponding YIs were different from one another. In predicting SDF, the 2010 threshold for progressive motility and vitality out-perform the 1999 thresholds, although the accuracy of the cutoff values for sperm concentration, total sperm count, and normal morphology may still need to be improved [3].

For example, criminal investigations depend heavily on identifying the biological source of bodily fluid evidence from crime scenes, particularly in situations involving sexual assault. In Brazil, just 8% of cases involving sexual offences are resolved, which is still a low number. Prior to DNA analysis, forensic analysts are required to determine whether semen is present in sampled from crime scenes. This procedure might aid in understanding the dynamics of the incident [4].

Conventional tests to check for sperm and PSA were run on the cloth cutouts, and the findings were negative. After two years of storage, we processed the fabric samples for genetic analysis, using an automated approach to isolate the genetic material. Using the Rotor Gene *Q-5Plex* HRM apparatus, the Real-time PCR analysis was performed to use the SOLIScript 1-step SolisGreen (SolisBiodyne) kit and finally apply to the *TGM4* (Transglutaminase 4) gene. The melt curve findings showed that human semen was present in the samples that were being examined. The a-STR and Y-STR markers after the HRM-qPCR test had been observed. Each of the findings was helpful for the criminal investigation, which resulted in the identifying of the crime's perpetrator.

CONCLUSION

The reality that patients with the Human Immunodeficiency Virus (HIV) live long lives is one of modern medicine's greatest successes. This amazing truth also implies that a male may have the illness and be involved in a relationship where having children is desired, posing potentially fatal hazards to the mother and the kid. The European DNA Profiling group (EDNAP) held a third joint exercise on RNA/DNA co-analysis for bodily fluid identification and STR profiling. Twenty participating laboratories used an RNA extraction or RNA/DNA co-extraction technique to examine 20 saliva and semen stains, four dilution series, and, if desired, real or fake casework materials of human or non-human origin. The connection between increased sperm DNA fragmentation and DNase activity linked to microbial infection of incubated bovine frozen-thawed spermatozoa. When compared to plasmid incubated in similarly prepared non-infected bovine diluent supernatant, electrophoresis analysis of plasmid pBR322 incubated for 30 min at 37°C with culture medium of the diluent of iced centrifuge tube bovine semen straws infected with bacteria showed clear evidence of DNase activity.

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