CONTRIBUTIONS OF THE THESIS

PhD student: NGUYEN DAC NGUYEN
Training Institution: Hue University of Medicine and Pharmacy - Hue University
Thesis title: ***"Evaluation of the the impacts of oxidative stress on male reproductive functions and the results of antioxidant therapy".***
Specialization: Obstetrics and Gynecology Code: 9 72 01 05
Scientific Supervisors: Assoc. Prof. LE MINH TAM
Prof. CAO NGOC THANH

CONTRIBUTIONS OF THE THESIS

This is the first study in Vietnam to use the method of measuring the oxidation-reduction potential in semen to determine the state of oxidative stress in semen and at the same time initially evaluate the effectiveness of the antioxidant regimen to improve sperm quality and sexual function of patients. Some new results obtained through research are:

- Oxidative stress was detected in the semen of 60.7% of patients. The value of the oxidation-reduction potential (ORP) balance was 1.08 mV/million sperm/mL.
- Seminal oxidative stress was higher in individuals with varicocele.
- Low sperm density had a higher rate of oxidative stress than the group with normal sperm density (80.6% vs. 28.3%, $p < 0.001$). ORP values showed a positive correlation with the percentage of sperm with head abnormalities, percentage of sperm with midpiece - tail abnormalities, and a negative correlation with sperm concentration, slow progressive motility, normal sperm morphology, and the number of sperm with a medium halo.
- The ROC curve determined the cutoff tvalue for ORP to differentiate cases with abnormal sperm concentration as 1.62 mV/million sperm/mL, with a sensitivity of 82.20% and specificity of 66.20%.

For objective 2, the study evaluated the results of antioxidant therapy on some sperm quality indicators. Some results obtained from the research:

- The antioxidant regimen over 3 months improved sperm quality, as demonstrated by several semen analysis parameters: sperm motility, percentage of sperm with normal morphology, and sperm concentration. The group of patients with abnormal semen analysis had an improvement in the rate of sperm with normal morphology and the rate of motile sperm. The group with oxidative stress in semen had an improvement in sperm concentratiton. The group with various abnormal combinations of sperm quality indicators had an improvement in sperm concentration.
- The antioxidant regimen significantly improved sperm DNA stability, as evidenced by an increase in the number of sperm with big halo, together with a reduction in sperm with small halo, sperm with no halo, degenerated sperm, and sperm DNA fragmentation. For the abnormal semen group, the sperm DNA fragmentation index decreased from 26.93±13.58% before treatment to 18.69±10.54%; $p<0.001$.
- The antioxidant regimen helped reduce oxidative stress in semen, as shown by the reduction in the oxidation-reduction potential balance after treatment (2.64 ± 3.43 mV/million sperm/mL before treatment vs. 1.47 ± 1.56 mV/million sperm/mL after treatment; $p<0.001$).
- After treatment, patients have improved sexual function shown on the IIEF-15. The individual characteristics of IIEF-15 have marked improvement after treatment: erectile ability; sexual satisfaction; sexual desire; comprehensive sexual satisfaction.

The study has provided the first data in Vietnam on assessing oxidative stress in infertile men's semen and identifying adverse effects on sperm quality. The study has contributed more evidence to the world's general medical literature on the aspect of oxidative stress on reproductive function in men.

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Scientific Supervisors **PhD Student**

Assoc. Prof. LE MINH TAM Prof. CAO NGOC THANH **NGUYEN DAC NGUYEN**