Comparison of the SwimCount Home Diagnostic Test with Conventional Sperm Analysis

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Abstract

The objective of this study was to use a home test kit (SwimCount®) as to sperm quality test for measure the male fertility. A total of 324 semen samples were included and analysed using Makler counting chambers and compared to home test kit readout. Before counting the number of Progressive Motile Sperm Cells (PMSC) using Makler counting chamber, 0.5mL of the sperm sample was added to the SwimCount® (SC) test device. Test results were read and categorized as low, normal or high PMSC concentration. The mean concentration of our sample was 15.5 million of PMSC per mL. Approximately 23% of the samples had a PMSC semen count per mL below the threshold of 5 mill/mL, considered by subnormal concentration by World Health Organization (WHO). An area under curve of 0.95 was obtained when the home test performance was compared with traditional semen analysis performed in standard IVF lab. An accuracy of 95% is in the range of excellent agreement. A good balance between the sensitivity and specificity were obtained at a cut off value of 10.6 mill PMSC per mL, which gave a sensitivity and specificity of the 88.1% and 93.3%, respectively. The cut of value of 10.6 million PMSC per mL was obtained in this study, correlate to 10.6/1.6 = 6.6 mill PMSC per mL, which is very close to the 5 mill/mL cut of value proposed by WHO. The results confirmed the usability of the test as a screening device for male factor infertility home kit.

Keywords: Male fertility; Semi-quantitative; Sperm analysis; Sperm count; Sperm home test; Sperm motility

Introduction

Male fertility is determined by measuring several parameters according to World Health Organization (WHO 5th ed., 2010), however the concentration of progressive motile sperm has been established as predictive parameter for estimating fertility in sub- and fertile couples [1,2]. According to WHO criteria, to couple that achieve a pregnancy in a maximum 1 year, semen sample should contain at least 15mill motile and immotile, spermatozoa per mL, and that 32% of these spermatozoa should be progressive motile (WHO 2010). Nowadays, semen analysis is a basic tool to investigate male factor infertility. On the basis of the spermiogram, couples are provided information on the management of the infertility treatment. Approximately 10-15 % of couples are suffering infertility, and semen analysis became the first approach for male factor infertility diagnosis. Many men find is it stressful and displeasing experience to make a semen sample in the clinic and the possibility to test the semen quality at home would possibly lead more men to test their semen quality at home and thus bypassing the waiting time if the semen quality is compromised. The couple could contact a fertility clinic to get help immediately and be treated while the woman is still young of age. Many people try to get pregnant at home for too long and if home semen quality test with reliable results is available, this would inevitably reduce the time to pregnancy. Poor sperm quality is a key factor behind the problems many couples experience when trying to conceive. Since