Motile sperm (Figure 2). They concordantly increased with the proportion ejaculatory abstinence and seminal fluid volume, and integrity and seminal vesicle function. Seminal fluid volume and motility are concordant with seminal vesicle function and is concordant with seminal vesicle function on the male gametes’ ability to achieve a pregnancy. Biomarkers such as the assessment of fructose and TAC may be particularly useful in diagnosing seminal vesicle function and spermatozoa production under gonadotropic control, fructose consumption by spermatozoa, fructose value was corrected (cFRU) by multiplying it with the logarithm of sperm concentration:

\[
\text{Corrected fructose (cFRU)} = \frac{\text{Fructose} \times \text{Log(sperm concentration)}}{\text{FRU}}
\]

Total antioxidant capacity was also assessed using a commercial kit (Fructose Assay Kit, Cayman Chemical) and the optical density was measured at 405nm. A threshold of 1800nmol/ml TAC was adopted. To predict the ability of spermatozoa to fertilize and participate in embryo development, we assessed the reproductive performance of couples undergoing IUI in relation to seminal cFRU and TAC levels. Clinical pregnancies were considered positive when at least one fetal heart beat was detected on their 7th week ultrasound.

Table 1. Semen characteristics of 134 men as well as seminal TAC and fructose

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>All Patients</th>
<th>IUI Cycles</th>
<th>Male Age (yrs ± SD)</th>
<th>Abstinence (yrs ± SD)</th>
<th>Seminal fluid volume (mL ± SD)</th>
<th>Sperm concentration (×10^6/mL ± SD)</th>
<th>Motility (%) ± SD</th>
<th>Morphology (A%) ± SD</th>
<th>Motility (µg/mL ± SD)</th>
<th>TAC (mM ± SD)</th>
<th>cFRU (mg/mL ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>41</td>
<td>100</td>
<td>37.5 ± 5.3</td>
<td>3.9 ± 1.7</td>
<td>3.2 ± 1.4</td>
<td>0.5 ± 0.3</td>
<td>2.5 ± 1.1</td>
<td>0.0079 ± 0.003</td>
<td>1862.6 ± 193.6</td>
<td>3.2 ± 1.4</td>
<td>3.02 ± 1.58</td>
</tr>
</tbody>
</table>

Figure 1. Corrected fructose, seminal TAC, and motility.

Figure 2. Corrected fructose, seminal TAC, and motility.

Figure 3. Corrected fructose below and above threshold of 1800nmol/ml.

Figure 4. Corrected fructose and full clinical outcome.

Figure 5. Seminal TAC and full clinical outcome.

Conclusions

A group of 41 men were treated in 100 IUI cycles with their female partner (35.9 ± 5 years) and reported a clinical pregnancy rate of 15.0%. The average cFRU was 3.02 ± 1.58 mg/ml and the average TAC was 1862.6 ± 193.6 nmol/ml (Table 2). There were no significant differences among male and female ages as well as sperm parameters between couples who achieved clinical pregnancy (n = 15), and those who did not (n = 26). However, cFRU and TAC in the successful outcome group were both remarkably higher than those that failed (P = 0.02 and P = 0.002, respectively) (Figure 4 and 5), even after controlling for an eventual female factor (≤ 35 years) (P = 0.02).

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.