Sperm DNA fragmentation abnormalities in couples with recurrent miscarriage - worth screening for?

G. Sacks¹,², M. Leach², J. Aitken³

1. IVFAustralia; 2. UNSW; 3. University of Newcastle

Introduction

Previous studies have described an association between poor sperm quality and a history of recurrent miscarriage, although it is not clear which test is best, and whether there is benefit in more expensive screening for DNA fragmentation. This study aimed to define the prevalence of sperm DNA fragmentation abnormalities in couples suffering from recurrent miscarriage.

Methods

Between 2010-12, couples with a history of recurrent miscarriage (>3 first trimester miscarriages) were investigated comprehensively for known causes (karyotype, uterine, antiphospholipid syndrome, thrombophilia) and also by semen analysis including DNA fragmentation (Sperm Chromatin Structure Analysis (SCSA). Sperm abnormalities were analysed in relation to demographic data as well as other causes. Statistical analysis was performed on SPSS software with significance taken as p<0.05.

Results

There were 108 couples with a mean sperm DNA fragmentation index (DFI) of 12.39% (range 1.00-38.8). Using current IVFAustralia criteria 70.5% of men had
normal levels (<15%), 23% had high levels (15-30%), and 6.5% had very high levels (>30%). Couples with otherwise unexplained recurrent miscarriage had significantly higher DFI than those with other causes identified on routine screening (p=0.012).

Conclusions

This study of couples with recurrent miscarriage has defined a prevalence of very high DFI of over 6% of men (and 23% to have borderline high). Whilst it is not yet proven that sperm abnormalities can cause the syndrome of recurrent miscarriage, this pilot study provides a basis for intervention trials with antioxidant therapy.