Original Article

Role of Assissted Reproduction Technologies In Isolated Teratozoospermia

Shabnum Sibtain[1], Hushmukh[2], Anil Gudi[3], Amit Shah[4], Roy Homburg[5]

[1]Clinical fellow subfertility, [2]Embryologist [3,4]Consultant, [5]Professor
Homerton University Hospital, Homerton Row, London E9 6SR, United Kingdom.

Correspondence: *Dr. Shabnum Sibtain*
Clinical fellow subfertility, Homerton University Hospital Homerton Row, London E9 6SR, United Kingdom.
Email:s_sibtain@hotmail.com

Abstract

Objective: aim is to determine whether IUI, IVF or ICSI improves the probability of fertilization and live birth in couples with isolated teratozoospermia.

Study Design: retrospective Study.

Place and Duration: the study conducted from 2009 – 2010, review of notes at fertility unit at Homerton University Hospital, London.

Methodology: sixteen couples with isolated teratozoospermia having morphology ≤5% normal with no other factors affecting female partner were studied. All 16 couples had IUI and 15 couples had IVF.

Result: twenty five percent of the couples conceived. All with IVF and none with IUI factors which were taken into account were age, ethnicity, type and duration of subfertility and lifestyle. Homerton hospital provides services to diverse and multi-cultural east end of London.

Conclusion: this study demonstrated that IVF may benefit couples with isolated teratozoospermia.

Keywords: Teratozoospermia, Subfertility, IVF.

Introduction

Teratozoospermia is a condition characterized by presence of sperms with abnormal morphology that affects male fertility. These abnormally shaped sperms negatively affect fertility by reducing sperm motility and preventing sperms from adhering to the ovum. The aim of our study was to evaluate the benefit of IUI or IVF on conception rate in the spouses of teratozoospermic men (without any other defect leading to subfertility in such couples).

Methodology

The couples in this study were 37.5% Asian, English 18.7%, European 18.7%, African 12.5% and Turkish 12.5%. Age distribution was 25 - 30 years in 6.24%,

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31 - 35 years in 25%, 36 -40years in 43.5%, 41 -45 years in 25%. 87.5% couples had primary subfertility and 12.5% had secondary subfertility. Duration of subfertility was 1 -3 years in 50% of couples, 4 -6 years in 31% and 7-10 years duration of subfertility in 19% of couples. Informed written consent and approval from institutional ethical committee were obtained. Regarding lifestyle, 25% smoked 5 -15 cigarettes /day and 37% had moderate alcohol intake. The occupation was mainly driving and office work.

All these 16 couples had 3 cycles of IUI none resulting in pregnancy and 15 couples had IVF. None of them had ICSI.

Results

Twenty five percent of the women amongst these couples became pregnant. All conceived with IVF, none conceived with IUI. They all conceived with the first cycle of IVF. Fifty percent of these couples the women of whom conceived had secondary subfertility and 50% had primary subfertility. Seventy five percent of these couples had subfertility of 1 -3 years duration and 25% had subfertility of 5 years which was secondary subfertility.

Discussion

The literature was searched for the outcome of isolated teratozoospermia with assisted reproduction. The search strategy was MEDLINE and research articles .There were not many studies found in literature. But those available have been described here.

In a study by Grigoriou et al,[1] one thousand six hundred and forty one IUI cycles were performed in 615 couples. They were categorized in three groups of normozoospermia, teratozoospermia and male factor infertility. Live births per cycle were significantly reduced in isolated teratozoospermia group compared to normozoospermia group, with exception of the first IUI attempt where the outcome was comparable. In that study the cumulative live birth rate after 4 IUI was significantly lower in teratozoospermia as compared to normozoospermia group,[1] which supports our study.

In a retrospective cohort study in an academic fertility center 872 IUI cycles in 440 couples were analysed. Couples were divided into three groups, normozoospermia isolated teratozoospermia and male factor infertility. These three groups were similar with regard to female age, female infertility factors and ovarian response after hormonal stimulation. The overall cumulative live birth rate after four cycles was 41.5% and was significant increase in normozoospermia group (52.8%) compared to isolated teratozoospermia group (33.4%) and male factor infertility group (31.4%).[2] Again it shows the difficulty of conception in teratozoospermia, like in our study.

In a prospective randomized study 32 couples (T group) with isolated teratozoospermia (morphology <9% normal) ,and the second group 36 couples(C group) with normal semen parameters (morphology > 9%) were included .In both groups 50 cycles of IVF were performed .There was no difference regarding the age, duration of infertility ,stimulation protocol , catheter used for embryo transfer and different sperm parameters .A statistically significant difference between teratozoospermia and normal groups respectively was observed regarding fertilization rate 69.2 and 79.4 % ($P<0.05$) and pregnancy rate per cycle 12.% and 42% ($P<0.01$). In

cases of moderate teratozoospermia ,fertilization rate appeared normal (78.6%)but conception rate remained low.[3] These results do not support our study.

In a retrospective analysis of 535 cycles in a large university based fertility center. There was no statistical difference in fertilization, fertilization failure, pregnancy and live birth rates in the first and second IVF cycle when comparing couples with isolated teratozoospermia (<5%normal morphology) to those with normal semen analysis.[4] (in our study 25% of the patients conceived with first IVF cycle).

Furthermore no improvement in these outcomes was noted in that study when ICSI was used to treat the teratozoospermia group.[4]

In a retrospective analysis of 2144 consecutive cycles in 3 groups of patients, outcome of in-vitro fertilization and embryo transfer treatment cycle, no statistical significant difference was found between the two groups of patients with regard to percentage of patients achieving the normalized median fertilization rate or higher, (group I >14% normal forms and group 2 with >4% normal form) . There was a statistically significant lower chance of achieving this rate in group 3 (<4 % normal) (P<0.005).[5] The low IVF results in sperm mortality <40% of normal is comparable to our study.

A systematic review and meta-analysis of data from the literature from the years 1986 to 2009 identified 31 studies and 4 met the inclusion criteria. Isolated teratozoospermia was not associated with a statistically significantly decreased probability of pregnancy with assisted reproduction. [6] Our limited study differs from these results.

It seems from literature search that assisted reproductive technologies do not offer significant benefit for isolated teratozoospermia. Many variables may influence success rates of IUI treatment [7,8,9] It seems logical to deduct that sperm quality has to be one of the main determinants to predict IUI success. [10] Though some studies have shown that IUI may be an option for couples with isolated teratozoospermia, but it was not the case in our study, it may be as the number was too small in our study. However IUI in the spontaneous cycle carries fewer health risks and can be the first-choice treatment.[11,15] One adequately powered multicentre trial showed no evidence of effect of IUI in natural cycles compared with expectant management. [12] The effectiveness of IVF relative to expectant management and IUI alone remains unproven as well.[13,14] Literature recommends that couples need not be subjected to the unnecessary cost and risks of the treatments as IVF and ICSI, as they do not have a major impact on isolated teratozoospermia. Evidence also shows that smoking adversely affects sperm quality to some extent, however, because of the scarcity of studies, its effect on in-vitro fertilisation outcome is not known.[16] Other lifestyle modifications in subfertile men, such as refraining from moderate alcohol and caffeine consumption, are controversial. No studies were found regarding the role of assisted technologies for isolated teratozoospermia versus no treatment .Further studies need to cover this aspect as well.

Conclusion

It seems from our study at Homerton hospital that IVF may benefit couples with isolated teratozoospermia. The drawback of the study is that the number recruited was small. Further bigger

studies need to be conducted. IVF may be a way forward for couples with isolated teratozoospermia.

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