

Case
ReportReproductive
MedicineUnraveling the Etiologies of Bilateral
Testicular Hypoplasia, Prostatic
Calcification and Varicocele Grade III in
Azoospermic MaleKumar C SHARATH ^{1,*}, G SREENIVASA ², PT CHAITRA ², Malini S SUTTUR ²

ABSTRACT [ENGLISH/ANGLAIS]

We report a multiple pathological conditions associated in azoospermic male with bilateral testicular hypoplasia, prostatic calcification and varicocele condition. These features are primarily confirmed through conventional semen analysis followed by genetic analysis, biochemical tests and trans-rectal ultra sound scanning. We hypothesize that these associations could be due to hormonal imbalance, genetic factors and environmental factors more of life style and diet.

Keywords: Testicular hypoplasia, prostatic calcification, varicocele, azoospermia

RÉSUMÉ [FRANÇAIS/FRENCH]

Nous rapportons une des conditions pathologiques associées à plusieurs hommes azoospermiques avec hypoplasie testiculaire bilatérale, la calcification de la prostate et de l'état varicocèle. Ces fonctions sont principalement confirmée par l'analyse semence conventionnelle suivie d'une analyse génétique, des tests biochimiques et trans-rectale de numérisation ultra sons. Nous émettons l'hypothèse que ces associations pourraient être dus à un déséquilibre hormonal, des facteurs génétiques et facteurs environnementaux plus de style de vie et l'alimentation.

Mots-clés: Hypoplasie testiculaire, la calcification de la prostate, varicocèle, azoospermie

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INTRODUCTION

Infertility is a world wide problem affecting people of all communities, though the cause and magnitude may vary with geographical location and socio-economic status. Infertility is the inability of a sexually active, non-contraceptive couple to achieve pregnancy in one year [1]. Human male fertility is normally assessed on the basis of a semen profile [2]. Analysis of pedigree, chromosomal studies, biochemical and hormonal analysis, examination of the status of internal sex organs and molecular analysis of both blood and semen is very essential to find out the etiology of individual infertile condition. In this view an attempt has been made to dissect the etiology of multiple conditions associated in azoospermic male through conventional and advanced techniques.

THE CASE

Here we report a rare case, wherein a 35 year old patient was referred for preliminary diagnosis of infertile condition for the inability to have a child with no history of erectile dysfunction or any other symptoms. Physical examination of the patient exhibits normal secondary sexual characters but both the testis are small in size. Later he was subjected for conventional semen analysis and the examination of internal sex organs through transrectal ultrasound scan (TRUS).

A conventional semen analysis was carried out along with microscopic examination, to check the physical and chemical profile of the semen. Physical examination of the semen was abnormal with green tinge colour, pH 8.3, decreased volume of semen and absence of coagulation.

Sperm count was nil which confirms the azoospermic condition. A very high level of leucocytes around 3×10^6 was observed through microscopic examination (Table 1). Biochemical analysis of semen plasma is carried out to identify which of the accessory reproductive organ is dysfunctional. The accessory glands produce specific secretion for each gland which can be used as markers to determine glandular function. These markers include fructose as seminal vesicle marker and citric acid as prostate marker (Table 2). The results obtained from biochemical markers made us to study trans rectal scan of internal organs.

Clinical examination and small part of ultrasound scan was used to study testis and varicocele. The normal testicular volume ranges between 15 to 20cc whereas the volume of the right testis was recorded as 5.95 cc and left testis as 7.88cc confirms testicular hypoplasia with minimal fluid collection around them in the present case report (Figure 1). Real time Colour Doppler study of genital organs with Trans rectal scan (TRUS) indicates shape and position of prostate as normal with volume of 13.5 cc. which lies in the normal range. Calcification is observed linear in the mid line of prostate gland (Figure 2). The normal size of seminal vesicle lies in the range $1.3 \text{cc} \pm 0.37 \text{cc}$ [3] but in the present study right seminal vesicle was slightly dilated and the volume of right seminal vesicle was recorded as 2.41 cc and left vesicle was normal as 1.64cc. (Figure 3). Along with these condition bilateral varicocele palpable grades III was evident (Figures 4 and 5).

Cytogenetic and pedigree analysis reveals neither chromosomal aberrations nor consanguinity in the family [4]. There was no history of infertility, recurrent pregnancy loss and still births. Abnormal dermatoglyphic pattern with extra loop in the thenar region not generally present in normal individuals is evident. Hormone analysis reveals functional status of accessory glands and endocrine secretion. The level of FSH and estradiol are close to normal range but the testosterone level is decreased (Table 2). Immunological analysis was done using antisperm antibody kit from Bioserve diagnostic gives the negative results indicating no association of immunological problems in the above said patient.

DISCUSSION

Infertility cases are reported mainly on different conditions like anatomical, genetical, endocrinological

changes, etc, whereas the present azoospermic case was associated with multiple pathological conditions which seem to be rare association [5]. Chromosomal and pedigree analysis was not significant but dermatoglyphic analysis reveals significant differences with an abnormal loop in the hypothenar region of the right hand. This could be due to polygenic nature of dermatoglyphic patterns and infertile condition. Functional and fully differentiated sertoli cells are critical for normal spermatogenesis. The possible risk factor in causing testicular hypoplasia could be damaged sertoli cells which produce decreased amount of Inhibin B which in turn decreases the negative feedback on pituitary leading to increased level of FSH. This increased FSH level is directly

TABLE 1

Table 1 shows semen analysis

	Observed	Normal
Physical examination		
Coagulation	Absent	present
Liquefaction time	Absent	20-30 min
Color	Green tinge	Grayish / white
pH	8.3	7.2-7.8
Volume	1 ml	1.5 - 4.5 ml
Microscopic examination		
Sperm Count	Nil	20 million/ml
White blood Cells	3×10^6	2×10^6
Amorphous particulate	1	≤ 2

TABLE 2

Table 2 shows biochemical and hormonal analysis

	Observed	Normal
Biochemical Analysis		
Fructose	2.24 μ mole/ Ejaculate	13 μ mole/ Ejaculate ^[6]
Citric acid	2 mg/ Ejaculate low \downarrow	10 mg/ Ejaculate ^[7]
Hormonal assay		
Estradiol	19.0 pg/ml	20 million/ml
T3	0.5 ng/ml	0.49-2.02 ng/ml
T4	50.1 ug/dl	48-116 ug/dl
TSH	0.2 ul U/ ml	0.29-6.92 ul U/ ml
FSH	4.3 ml U/ml	1-14ml U/ml
LH	2.1 ml U/ml	0.5-5.6 ml U/ml
Prolactin	5.5 ng/ml	4.0-12.0 ng/ml
Testosterone	1.5 ng/dl	2.0-6.9 ng/dl

proportional to the sertoli cell damage that indicates the severity of testicular damage. In the present study though the testosterone level is decreased FSH and LH levels are normal which indicates that testicular hypoplasia is not due to sertoli cell damage.

FIGURE 1

Figure 1 shows the bilateral hypoplasia of right and left testis of the patient. The volume of the right testis is 5.95 cc and left testis is 7.88 cc indicates testicular hypoplasia.

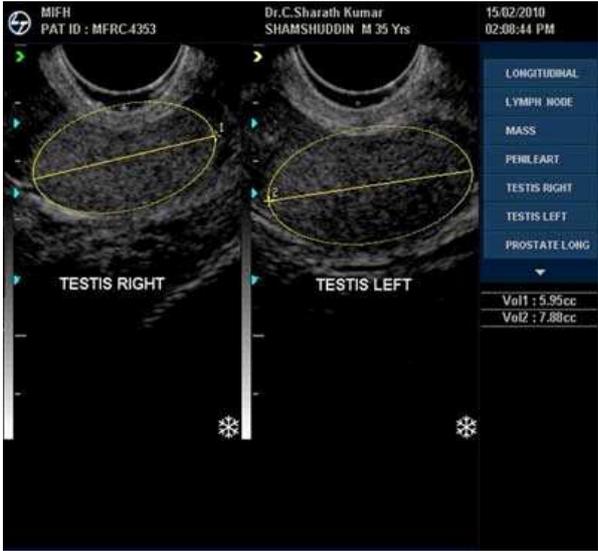


FIGURE 2

Figure 2 shows linear calcification in the mid line of prostate gland of the patient. Arrow indicates calcification in right and left prostate glands.



Biochemical analysis of the semen indicates the dysfunction of the accessory reproductive glands and increased oxidative stress which in turn damages spermatogenesis. In the present case study low levels of citric acid indicate prostatic dysfunction and it was confirmed through TRUS as prostatic calcifications. Calcifications are of different types, where primary calcification develops in the acini of the prostatic parenchyma due to calcification of corpora amylacea, and are small round or ovoid bodies seen in the lumen of the prostatic acini, which may be derived from desquamated epithelial cells and proteinaceous material. Secondary prostatic calcification is due to benign prostatic hyperplasia or carcinoma, or as a consequence of infection. The high level of leucocytes of about 3×10^6 was observed which could be due to vigorous growth of bacteria in prostate gland due to prostatic calcification and prostatic stones.

Low content of fructose, in combination with low semen volume, Ph 7.0 and azoospermia could be due to a total obstruction of the Wolffian ducts or agenesis of Wolffian ducts [6]. But obstruction or agenesis of Wolffian ducts is not seen in the present study but low content of fructose could be due to inflammation in the vesicles is supported by dilated seminal vesicle.

Apart from these possible risk factors, varicocele increases the risk of azoospermia by inhibiting the spermatogenesis in referred infertile patient [7]. But molecular analysis is suggestive to find out the molecular etiology of this multiple condition.

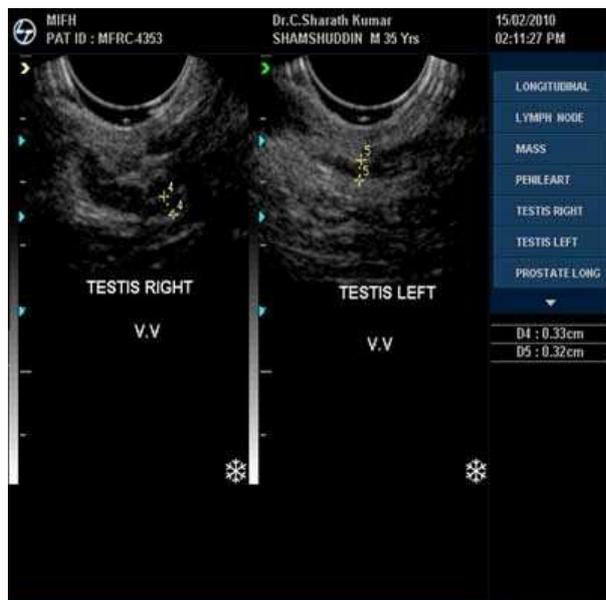
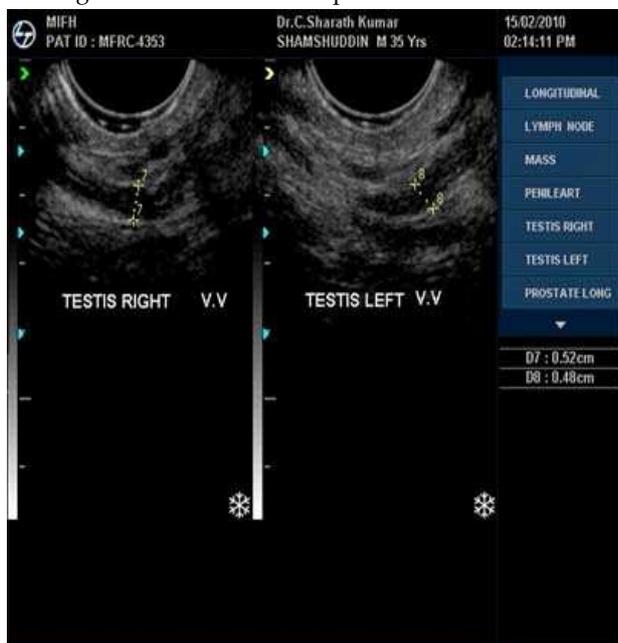
FIGURE 3

Figure 3 shows the seminal vesicle was slightly dilated and the volume of right seminal vesicle was recorded as 2.41 cc and left vesicle was normal as 1.64cc



FIGURE 4 and FIGURE 5

Figures 4 and Figure 5: Bilateral varicocele palpable grade III of right and left testis of the patient

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CONFLICT OF INTEREST

No conflict of interest was declared by the authors.

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