Discussion
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The present study was conducted in the Department of Medicine, M.L.B. Medical College, Jhansi to study the "THE EXTENDED CLINICO LABORATORY PROFILE OF MALE PARTNER IN INFERTILITY IN BUNDELKHAND REGION".

51 patients were included in the study.

The study shows that out of 51 males of an infertile couples investigated, 23 males (45.09%) showed abnormal sperm count. Thus 45.09% males of infertile union in the study showed abnormal semen as a cause of infertility. Out of these 23 couples, in 12 couples (23.52%) some defect was also found in the female partner. So, a exclusively male cause only was found in 11 (21.56%) cases.

This compares with the W.H.O. study which showed that in developed countries the male factor is found in 33% cases. A male factor exclusively was found in 22% cases while both partner of a couple were found have a defect in 21% of couples only. Data from Mumbai & Kashmir showed that the male factor was found in 18% & 22% respectively.

Thus in the study abnormality was found in higher 45.09% of cases as compared to 33% in developed country.

The reason for this difference can lie basically in the quality of population studies. Bundelkhand region is specially recognized as a very backward region both economically and socially and this is projected in high prevalence of infectious diseases specially T.B. etc. The nutrition in this region
is also very poor as is reflected by a greater incidence of malnutrition and anemia.

As per table 1, as parameters are analyzed it is seen that maximum number of patients sought medical attention in the age group of 26-30 and between 2-7 years of marriage, the age group of 26-30 years is also the age of maximum reproductive capacity. It is also seen that mean age of subjects in the study was 28.6 ± 3.2 years which seems rather high.

As per table 2 it is evident very few 1 (1.96%) of the subjects reported for infertility within 2 years of marriage. Maximum number of subjects reported after 5-7 years of marriage.

Thus, this may reflect the tendency of couples especially males to prevent themselves for investigation quite late because of hesitation, taboos and a misconception that female is mostly responsible for infertility.

As per table 4, the study revealed that majority of patients were of primary infertility (80%) and only 20% cases were of secondary infertility. The study conducted by WHO showed a figure of 84% for Asia and 79.3% for developed countries. These data differ a lot from Africa where primary infertility forms only 40.8% of total infertile couples.

Thus couples with secondary infertility tried to have a baby for longer time before presenting them self for investigation. The low incidence of secondary infertility in the study may not reflect its actual incidence. Couples with one child who subsequently became secondarily infertile adapt to this situation and will not seek medical attention than a couple who never has conceived. A survey report by WHO showed that only 11% of secondary
infertile women were interested in investigations as compared to 40% of primary infertility.

As per table 7, in the study of semen analysis, oligoasthenozoospermia was the major abnormality in 35.29%, of cases. Next in line was azoospermia in 21.7% of our cases.

In the study we have found that low count and poor motility occurred almost in parallel. Thus count and motility may be reflector of estimates of same basic pathology.

In the study we did not find any patient with significantly abnormal sperm morphology. WHO in its world wide study gave this figure to about 0.6%. We could not find any case of abnormal sperm morphology probably because of our small study size. This incidence of abnormal sperm morphology is much less frequently diagnosed then in the past this is because of much better understanding of normal variation in sperm morphology.

A very high incidence of pus cells in the semen were found in the study (26%) which may reflect the increased prevalence of genital infection in this region. Pus cells is good indicator of genital infection as a cause of infertility as expressed by the fact that patient with significant pus cells in semen had abnormal semen quality.

We have found idiopathic testicular failure (maturation arrest) in 2 out of 51 cases (3.98%). It is similar to world wide data provided by WHO, which published a figure of 10% for developed countries, 7% for Africa and 8% for Mumbai city in India.
The study also provided for evaluation of obstructive azoospermia which was found in 2 out of 51 cases (3.9%). WHO has given a 1% for world and 4.2% for Africa.

Conhaire et. al. stated that if testicular volume and FSH is normal, testicular Biopsy is needed to reach a confirmed diagnosis. Testicular Biopsy was not done in all our cases to confirm the diagnosis and only an estimate was done.

It is rarely that one finds completely normal spermatogenesis in biopsy. However, all over cases suspected of having obstruction had low to low normal semen volume. Upto 4% of the study subjects satisfy the WHO criteria for diagnosis of male accessory gland infection. Confirmed S.T.D. was found in 2 cases. Since these groups are overlapping it would be important to consider total S.T.D. related causes which would include confirm S.T.Ds. Many cases of obstructed azoospermia are caused by S.T.D. Thus 13 cases (25.4%) in the study had S.T.D. related causes for their infertility. In the study 1 case had history of mumps in childhood.

Our results thus reflect a heavy load of infection as a factor for male infertility. This is not surprising as the incidence of T.B. and other infection is much higher in this region.

We did not find any cause of varicocele related infertility and congenital causes. Varicocele has been considered a very important cause of male factor infertility in studies worldwide ranging from 5.6% to 11% in Mumbai and developed countries respectively. The reason for these differences could be either a true lower incidence of varicocele in our country or a lower index of suspicion.
Lastly the most perplexing part of the etiology of male infertility were cases in which new etiological factors whatsoever could be identified in the presence of definite semen abnormality. In 43.3%. (10 out of 23) of cases no etiological factors were identified and were put into the category of "No demonstrable cause" of WHO. This figure in WHO study was 49% from the developed countries, 46% from Africa 53% from Mumbai. A lower % in the study need not necessarily mean that we were able to identify etiological factor in a comparatively higher % of patients. The difference were more likely possible because our criteria were much less strict and final diagnosis was made in lesser number of cases; e.g. in many of our cases the diagnosis was presumptive, but this does reflect the fact that world over male infertility is much less understandable problem and in a majority of cases the exact etiology remains unclear even after comprehensive testing.

We did not find antisperm antibodies in the serum or semen of any of our subjects. This was because we have used a much less sensitive biological method. Newer methods like immunobead test, test to detect secretory antispermatozoal IgA; SPM test, SCMC test would have been more sensitive.

Coming to infertile couples in which male showed a normal semen examination, many aspects emerged. In general the second semen sample was better than first. Comhaire et al working on the behalf of the WHO task force has found similar results.

We think that one reason for this was probably patient education. It has already been mentioned that abstinence increase sperm count also, we observe that the patient were much confident in giving sample for the second time than the first. Thus the second sample probably was collected in more efficient way,
without loss of much semen volume. All these factors could have caused these
differences in semen quality.

Another very important aspect is to highlight the importance of
evaluating at least 2 and if need arise more than 2 semen samples. This is
stressed by the fact 20% of our patient at some time gave a sample which was
categorized as normal when compared to any other sample given by him. WHO
also recommends at least 2 semen samples to be examined.

In the study the average sperm count of persons whose semen was
categorized as normal was 72.6±6.2 millions/ml.

This low sperm could be because of many factors like heat, wearing of
tight langots and dhotis, high incidence of smoking and tobacco chewing habits,
general malnutrition and high incidence of exposure to chemical pesticides in
this predominantly rural farming society.

However it was not possible to compare the incidence of these habits and
exposure among persons showing semen abnormality and those not having
normal sperm count because of small size of the study.

Next in line would be social factors. Although because being abstract we
could not measure these factors but it was clear that male, specially the
uneducated ones are very hesitant to present themselves for investigation before
their wives. Only when no abnormality was found in wives would some of them
volunteer for investigation. But it was also observed that education was
important. After taking these males into confidence, follow up was not difficult.
In a few instances when male of an infertile union married again and only when
this union was barren, he consented to be investigated, but even these cases are
amenable to patient education and social support.
And finally the most important aspect of a diagnostic work up of a infertile couple would be to offer them fruitful treatment. Idiopathic testicular failure 5.8% is untreatable. These subjects would have to be offered donor insemination or adoption. Donor insemination is now popular and has reasonable pregnancy rates of 10-15% per month over the first 6 months. Approximately 50% of women are pregnant by six months.

However, latest advanced techniques may be offered to these patients. Silber S.J. has reported 4 successful pregnancies out of 38 in such patients by testicular sperm extraction and ICSI. This technique can also be offered to other types of azoospermia Testicular atrophy by mumps also falls in this category.

Male genital tract obstructions and male accessory gland infections are potentially treatable by vasoepididymostomy, implantation of spermatoceles, microepididymal sperm aspirations, ICSI, MESA, TESE and IVF can be offered to these patients. The last 2 procedures have better success rate than the initial 2. Thus 9.8% of our infertile males are potentially treatable. Many of our cases in which no demonstrable cause was found could ultimately land in this category. However with new surgical advances repair procedures are also giving good results.

In this study all the men investigated for infertility had abnormal semen quality with etiology identifiable in a few cases only.