

EVALUATION OF "METHYLENE BLUE" AND OTHER COMMON TUBAL PATENCY TESTS IN INFERTILE WOMEN

by

UMAKANTA NANDA,* M.S.

and

SUDHAKAR RATH,** M.D.

The problem of infertility is equally important to a gynaecologist even in this age of population explosion. A lot of research is going on to solve this real problem and by far the greatest emphasis is now given to the study of the role of tubal factor which is thought to be causative in about 60 per cent cases either alone or with other factors (Llewellyn Jones, 1967). Various tests are practiced for the study of tubal patency. The commonly used ones are Rubin's test, kymography, hysterosalpingography, Speck (phenolsulphonphthalein excretion) test and a recent test with methylene blue (Ansari, 1969).

The present study was undertaken to evaluate the diagnostic values of the common tubal patency tests like Rubin's test, kymography, hysterosalpingography and the MB test. A preliminary report of this study was presented in the XVIIth All India Obstetrics & Gynaecological Congress, 1972 (Nanda and Rath, 1972).

Material and Method

This paper deals with the study of 150 infertile women (100 primary + 50

secondary), 18 to 42 years age attending the infertility clinic of the Obstetrics and Gynaecology Department of V.S.S. Medical College Hospital, Burla during the period August, 1970 through March, 1972. The duration of infertility was 2 to 20 years. Only cases where complete study could be done were included.

The MB test was carried out as described by Ansari (1969). About 20 ml. of diluted methylene blue was injected into the uterine cavity through a uterine cannula and aspiration of the pouch of Douglas was done after 5 minutes of injection, and again, after 10 minutes by changing the posture of the patient from side to side, if no dye is aspirated in the first attempt. This was performed usually 2 to 3 days before the Rubin's test and endometrial curettage, after an antispasmodic (Hyoscine-N-butylbromide intramuscular-Buscopan) injection.

Kymography was done in the next cycle in the first week followed by the hysterosalpingography by next 1 to 2 days, using 40% Diaginol Viscous (M & B) as the contrast media. An antispasmodic (Buscopan) was used before 10 minutes in all cases.

Results

The results of Rubin's test are given in Table I.

*Professor & Head.

**Clinical Tutor.

Department of Obstetrics & Gynaecology,
V.S.S. Medical College & Hospital, Burla, Sambalpur, Orissa.

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TABLE I
Results of Rubin Test

Total cases	Both tubes positive	One tube positive	Total positive	Negative
150 (100%)	66 (44.0%)	25 (16.6%)	91 (60.6%)	59 (39.4%)

The MB test was taken positive if aspiration was more than 2 ml. in the first aspiration and positive but limited if less than 2 ml. or successful in second aspiration after 10 minutes and negative if unsuccessful even in second aspiration. The

results of the present series are given in Table II.

Similarly, the results of kymography and hysterosalpingography are given in Table III and Table IV respectively and the comparison of all the four tests in Table V and Table VI.

TABLE II
Results of MB Test

Total cases	Positive	Positive but limited	Total positive	Negative
150 (100%)	85 (56.6%)	13 (8.7%)	98 (65.3%)	52 (34.7%)

TABLE III
Results of Kymography

Total cases	Positive	Positive after initial spasm	Total Positive	Negative
150 (100%)	87 (58.0%)	14 (9.3%)	101 (67.3%)	49 (32.7%)

TABLE IV
Results of Hysterosalpingography

Total cases	Both sides positive	One side positive	Total positive	Negative
150 (100%)	89 (59.3%)	17 (11.4%)	106 (70.7%)	44 (29.3%)

TABLE V
Comparison of Results from Different Tests

Test	Positive	Negative
Rubins test	60.6%	39.4%
MB test	65.3%	34.7%
Kymography	67.3%	32.7%
Hysterosalpingography	70.7%	29.3%

TABLE VI
Comparison of Negative Results Obtained by Different Authors

Authors	Rubin's test negative	Kymo-graphy	Hystero-salpingo-graphy negative	MB negative
Feiner (1942)	35.5%	—	42.2%	—
Sharman (1944)	—	38.0%	37.7%	—
Solan (1964)	—	31.0%	23.0%	—
Gromadzki <i>et al</i> (1965)	42.0%	—	—	—
Jeffcoate (1967)	24.0%	—	29.4%	—
Ansari (1969)	—	—	—	41.6%
Jhaveri <i>et al</i> (1972)	80.0%	—	—	—
Dass <i>et al</i> (1972)	23.5%	—	28.0%	—
Present series	39.4%	32.7%	29.3%	34.7%

Discussions

In the present study, Rubin's test was negative in 39.4 per cent cases whereas this was 35.5 per cent in the series of Feiner (1942), 42.0 per cent of Gromadzki *et al* (1965), 24.0 per cent as reported by Jeffcoate (1967), 80.0 per cent by Jhaveri *et al* (1972) and 23.5 per cent by Dass *et al* (1972). This low recording of negative results by Jeffcoate (1967) is due to repeated attempts to pass air or gas, three times in each case before declaring the cases to be negative. Moreover, between the second and third attempts, the cervix was slightly dilated. The high percentage (80.0%) of negative results of Jhaveri *et al* (1972) is probably due to observation by different persons and mostly depending on evidence of sub-diaphragmatic air on screening.

Kymographic tracings indicated negative results in 32.7 per cent cases of the present series and are comparable to the work of Solan (1964).

Hysterosalpingography in the present series revealed blockage in 29.3 per cent cases, but this blockage was noted in 42.2 per cent by Feiner (1942), in 37.7 per cent by Sharman (1944), 23.0 per cent by Solan (1964) and 29.4 per

cent by Jeffcoate (1967), and 28.0 per cent by Dass *et al* (1972). The better figure in the present work is due to X-Ray under fluoroscopy and the use of better contrast media and cannula for sealing the cervical canal and routine use of antispasmodic and is comparable to the series of Jeffcoate (1967) and Dass *et al* (1972). The results of Solan (1964) were still more satisfactory because he performed the tests under fluoroscopy and took the help of a 24 hour film in most of the cases before finalising the true status of the tubes.

In MB test 34.7 per cent cases came to be negative, which is little less than the results of Ansari 1969 (Table VI). This might be due to increased number of cases in present series and the routine use of anti-spasmodic.

The results are similar in 74 per cent and dissimilar in 26 per cent cases in the present series, when Rubin's test and hysterosalpingography are only considered. This is comparable to the findings of Jeffcoate (1953) who found dissimilarity in 25 per cent and of Dass *et al* (1972) with dissimilarity in 27 per cent, whereas Rubin (1932) reported a much lower in-

cidence of 12.8 per cent discrepancy. Further when we consider the results in all the four tests done in the present series the similarity was observed only in 56 per cent and it was dissimilar in 44 per cent. This shows that each test has its limitations.

Conclusions

From the above study, it can be commented that all the tests are complementary but not competitive. Hence, one test can not replace the other. Reliability of MB test ranks third when compared to hysterosalpingography and kymography (Table V). Thus, it is superior to Rubin's test and in a developing country like ours, where facilities for hysterosalpingography and kymography are not available in all the institutions, the advantage of the simple MB test should be taken before subjecting the patient to a more costlier investigation.

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