

SINGLE DOSE OF TINIDAZOLE IN PROPHYLAXIS OF INFECTIONS FOLLOWING ABDOMINAL HYSTERECTOMY

by

(Mrs.) BANANI DE,* M.B.,B.S. (M.U.)

and

(Mrs.) MANJU GITA MISHRA,** M.B.,B.S., D.G.O., M.S. (Pat.)

Tinidazole is a nitroimidazole derivative having the following empirical formula 1-(2-(ethylsulfonyl)-2 methyl-5 nitroimidazole.

The present study was undertaken to see the effect of a single oral dose (2 gm) of Tinidazole on infection following hysterectomy. Several studies have indicated that anaerobic bacteria play an important role in gynaecological infections. *In vitro* studies have shown tinidazole to be bactericidal against *Bacteroides fragilis* in significantly lower concentration than metronidazole (Jokipii 1977 a). Tinidazole is rapidly absorbed from the gastro-intestinal tract. A single dose of 2 gm produced a peak serum value of 50 μ g./ml (Monro 1974) which compares favourably with the *in vitro* bactericidal concentration of 2 μ g./ml for *B. fragilis* (Jokipii 1977 b). The peak serum concentration is achieved within 1 to 2 hours after oral administration. The serum concentration declines slowly and biological half life of Tinidazole is 13 hours (Monro 1974), a bactericidal serum concentration may be produced for 2 to 3 days with one single dose.

Anaerobic mixed flora have been isolated

* Clinical Assistant,

Department of Obstetrics & Gynaecology,
Nalanda Medical College & Hospital, Patna.

** Assistant Professor.

Accepted for publication on 16-7-81.

in 70 per cent of soft tissue infections (Ledger 1975). Encouraging results have been found with metronidazole in the prophylaxis of anaerobic infections (study group 1974 and 1975). With the continued use of metronidazole during the past 17 years, no anaerobic microbes resistant to it have developed, similar results are to be expected for Tinidazole.

Material and Methods

One hundred eighty five patients who had elective abdominal hysterectomy at Nalanda Medical College Hospital, Patna between January 1980 to June 1981 were taken for study. Patients were divided into two groups. Ninety patients received Tinidazole and 95 served as control. Patients who were receiving antibiotics or other chemotherapy were not included in the present study. None of the subjects had any infection before the operation. A single dose of 2 gm tinidazole was given on the night before the operation so that the interval between the administration and operation was 12 to 15 hours. All patients had vaginal swabbing with betadine on the morning of operation.

All operations were done in one unit and by the same technique. Pre-operative catheterization was not done as a routine. Patients were observed for purulent vaginal discharge or discharge

from abdominal wound, urinary tract infections were noted. Febrile morbidity was defined as a temperature of 38°C on two post-operative days excepting the first post-operative day (Mattingly 1977).

Result and Observations

The above Table shows the surgical procedures adopted in the two groups.

Overall mortality in control group was 30.3% where as in tinidazole treated group over all mortality was remarkably low.

TABLE I
Age of Patients

Age in years	Control Group		Tinidazole Group	
	No.	%	No.	%
<40	18	18.94	16	17.8
40-50	58	61.1	56	62.2
51-60	15	15.8	15	16.7
60	4	4.2	3	3.3

Majority of our patients were in age group of 40-50 years in both the series.

About 45 to 49 percent of cases were of fibromyoma and endometriosis in the two groups.

In control group about 79% patient had to stay in the hospital for more than 10 days where as in Tinidazole group 77.8% patients were discharged before 10 days.

TABLE II
Surgical Diagnosis in the Two Series

Diagnosis	Control Group		Tinidazole Group	
	No.	%	No.	%
Fibromyoma	32	33.7	30	33.3
Endometriosis	16	16.8	15	16.7
Dysfunctional uterine haemorrhage	13	13.7	14	15.6
Tubo-ovarian mass	13	13.7	14	15.6
Unhealthy Cx	17	17.9	13	14.4
Endometrical carcinoma	2	2.1	2	2.2
Malignant ovarian tumour	2	2.1	2	2.2

TABLE III
Operative Procedures

Surgery	Control Group		Tinidazole Group	
	No.	%	No.	%
Total hysterectomy	28	29.5	25	27.8
Total hysterectomy with bilateral salpingo-oophorectomy	50	52.6	45	50.0
Total hysterectomy with bilateral salpingo-oophorectomy and cuff of vagina	2	2.1	2	2.2
Total hysterectomy with appendicectomy	15	15.8	18	20

TABLE IV
Post Operative Mortality in the Two Groups

	Control Group		Tinidazole Group	
	No. of cases	Percentage	No. of cases	Percentage
Fever ranging from 101° to 104°F	11	11.5	2	2.2
Urinary tract infection	7	7.3	4	4.4
Purulent vaginal discharge	9	6.3	1	1.1
Abd. wound infection	3	3.1	Nil	Nil
Pelvic peritonitis	2	2.1	Nil	Nil

TABLE V
Hospital Stay in the Two Groups

No. of days	Control Group		Tinidazole Group	
	No.	%	No	%
8-10	20	21.1	70	77.8
10-15	50	52.6	15	16.7
More than 15	25	26.3	5	5.5

Comments

The oral single dose of 2 gm. of tinidazole substantially reduced infections following hysterectomy. The antibacterial spectrum of tinidazole and results of the cultures suggests that this was due to a reduction in anaerobic mixed infection. This was supported by numerous studies (Ledger 1975; study group 1975; Ohm and Galask 1976).

There were 2 patients with febrile morbidity (2.2%) in the tinidazole group and 12 (12.6%) in the control group. Karhunen *et al* in 1980 tried single dose of tinidazole in 70 patients and got similar result. One patient in the tinidazole group and 6 in the control group had purulent vaginal discharge. Pus culture was done in cases of control group and the predominating growth was mixture of anaerobic organisms. All infections were treated with a combination of ampicillin, amoxycillin, Gentosporine, metronidazole and Tinidazole. Urinary tract infection

were found in patients in control group and four in the treated group. Tinidazole group had no abdominal wound infection.

Remarkable improvement in post-operative morbidity has been seen in the present series (7.7%). The results reported by Karhunen *et al* (1980) are almost identical to our results.

In tinidazole treated group 77.8 per cent of the patients were discharged from the hospital within 10 days whereas in Control Group only 21.1 per cent of patient were discharged within the same period and more than 50 per cent had to stay in the hospital for 10 to 15 days and about 26 per cent had to remain in bed for more than 15 days and thus increased the hospital load.

The over all cost of antibiotics was greatest in the control group. It requires further study to see whether bacterial resistance to tinidazole develop.

Conclusion

A single dose of 2 gm Tinidazole was given to patients on the night before going for elective hysterectomy. The post operative morbidity rate is highly reduced with this simple regime. Single dose procedure is simpler to use it requires less antibiotic, shortness the hospital stay and thus minimises treatment cost.

References

1. Jokipii, A. M. M. and Jokipii, L.: Chemotherapy 23: 25, 1977 a.

2. Jokipii, L. and Jokipii, A. M. M.: J. of Antimicrobial Chemotherapy. 2: 571, 1977 b.

3. Karhunen, M., Koskela, O. and Hannelin, M.: Brit. J. Obstet. Gynec. 87: 70, 1980.

4. Ledger, W. J.: Am. J. Obstet. Gynec. 123: 111, 1975.

5. Moro, A. M.: Current Medical Research and opinion. 2: 130, 1974.

6. Maltingly, R. F.: Ti Linde's Operative Gynaecology 5th edition P. 214, 1977.

7. Study group: Lancet. 2: 1540, 1975.

8. Study group: J. Antimicrobial Chemotherapy. 1: 393, 1974.