

## MATERNAL MORTALITY FROM SEPSIS

by

KAMALA SIKDAR,\* M.B.B.S., D.G.O., M.O., M.R.C.O.G.

and

MUKULIKA KONAR,\*\* M.B., D.G.O., F.R.C.O.G.

International statistics have shown a decline in genital infections as a cause of maternal deaths, but in our country sepsis remains still the most important cause of maternal mortalities. In the series of Engineer and Lakshmi (1976), Guha (1972) and Heera and Das (1973), the incidences of maternal deaths due to sepsis were 20, 15.1 and 13.8 per cent respectively. Chandok and Devi (1973) are of the opinion that deaths due to sepsis outnumbered all other obstetric causes and have shown an incidence of 29% maternal deaths. In Eden Hospital where approximately 9000 confinements take place yearly with a maternal mortality rate of average 8/1000 births, sepsis re-

undertaken to analyse the maternal deaths due to sepsis and to find out the role of avoidable factors to reduce the maternal mortality rates.

### Material and Methods

During three year period, 1975-77, there were a total of 26638 births in Eden Hospital, 232 or 193 maternal deaths including or excluding abortions occurred. The aggregate maternal mortality rate was 8.8 and 7.29/1000 births including and excluding abortions respectively. During this period there were 44 maternal deaths due to sepsis amongst 232, either following abortions or delivery.

### Observations

TABLE 1  
Yearwise Number and Incidence of Maternal Deaths due to Sepsis

Year	Total No. of Maternal deaths including abortion	Deaths due to Sepsis	Percentage of deaths due to Sepsis	Main causes of deaths during this period no. and % (232-100%)
1975	90	17	18.88%	Sepsis 44 (19.96)
1976	93	19	22.89%	Jaundice 38 (16.38) Toxaemia 36 (15.55)
1977	59	8	13.55%	Haemorrhage 31 (13.36)
Total	232	44	18.96%	Others 83 (35.35)

mains one of the major causal factor of maternal mortality. Hence this study is

Table I shows that sepsis still remains the major cause of maternal deaths. However, during 1977, when total maternal deaths were comparatively fewer than previous 2 years, the percentages of deaths due to sepsis also declined

\*Registrar.

\*\*Director-Professor, Dept. of Gynaec. & Obstet. Medical College, Calcutta.

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(13.55%). This finding suggested that in this hospital the number of annual maternal deaths was directly related to the deaths due to sepsis except in epidemics when Jaundice overshadowed sepsis as major cause of maternal deaths, as in 1975.

Table II shows that more than 2/3rd (68.18%) of maternal deaths due to sepsis followed septic abortions. During this period there were 509 cases of septic abortions in this hospital. Amongst these 30 cases of septic abortion mortalities, 28 admitted definite interferences outside and 2 other cases, though denied the fact yet were having signs of fulminant genital infection suggesting previous interferences. Thus criminal abortions still remains one of the major causes of maternal deaths due to sepsis. There were 12 deaths due to puerperal sepsis among 88

cases of treated in this hospital. Two deaths due to sepsis also occurred after M.T.P. among 13089 cases during these 3 years.

Higher percentages of deaths due to sepsis occurred in age groups below 20 years and above 30 years compared to total hospital admissions.

Higher incidence of deaths was observed amongst 4th and higher gravidas, compared to total hospital admissions. The higher percentages of septic deaths in the grandmultis may be due to the fact that these group of patients attempt illegal abortions more frequently over and above their preferences for home delivery at term.

Duration of pregnancy in postabortal septic cases were mainly below 12 weeks of gestation.

TABLE II  
Deaths due to Sepsis in Relation to Abortion or Delivery

Types	1975	1976	1977	Total & Percentage
<i>Postabortal</i>				
(1) Septic abortion (Criminal—28) ( " — 2 (?)	12	12	6	30 (68.18%)
(2) Following M.T.P.	—	1	1	2 (4.54%)
<i>Puerperal sepsis</i>	5	6	1	12 (27.28%)
Total	17 (38.63)	19 (43.18)	8 (18)	44 (100%)

TABLE III  
Duration of Pregnancy

	Upto 12 weeks	13-28 weeks	29-36 weeks	27-40 weeks	Total and percentage
Including abortions (44)	17 (38.63)	15 (34.08)	2 (4.55)	10 (22.74)	44 (100%)
Excluding abortions (12)	—	—	2 (16.67)	10 (83.33)	12 (100%)

TABLE IV

*Interference Admission Interval in Abortion (30) and Puerperal Sepsis cases (9) and (2) Methods of Interferens in Abortion Cases*

No. of cases	2-7 days	8-38 days	Illegal abortion (30)		
			Oral	Vaginal	Evacuation
Total—39 (Excluding MTP—2, hospital Confinements —30 puerperal sepsis)	17 (43.58%)	22 (56.42%)	7 (25%) *Positive (2) Doubt- ful	15 (53.57%) 28 cases —2	6 (21.43%)

Amongst 39 (88.63) of interferences, only 2 cases (6.6%) were admitted within 3 days after interference, rest of them (93.4%) were admitted between 4 to 60 days.

Forty-one cases (93.1%) of total 44 were unbooked and 39 (88.63%) cases belonged to poor family. Definite history of interferences was obtained in 28 cases of abortions and also in 9 (75%) cases of puerperal sepsis all these 9 cases were confined outside. In 2 other cases of septic abortions, the history was rather indefinite though the patients were admitted with frank signs of fulminant sepsis. Remaining 3 cases of puerperal sepsis (25%) were confined in the hospital, 1 at the emergency room before admissions, another had history of repeated catheterisation in labour outside, and the last one had premature rupture of membrane, 7 hours prior to her seeking hospital admissions.

Most of the patients died after 7 days of admissions. 77.2% of deaths were due

to septicaemia and peritonitis (Table V).

#### *Vaginal Swab Culture*

In 41 cases (93%), reports were available. *E. coli* was present in 18, *Klebsiella* in 11, *Staphylo alba* (coagulase negative) in 5, anaerobic streptococci in 3, *Pseudomonas* in 4 cases.

#### *Treatment*

In 26 cases (58%) treatment was conservative. Evacuation was done in 4 cases (9%), posterior colpotomy in 10 (22%), posterior colpotomy and evacuation in 1 (2.28%), laparotomy was necessary in 2 cases (5.2%) and in one other case (2.28%) laparotomy was combined with repairing of uterine perforation. These treatment schedules were undertaken according to suitability of the cases. Fourteen cases of post abortal sepsis were treated conservatively, in 1 posterior colpotomy followed by evacuation was undertaken. In 10 cases of

TABLE V  
*Causes of Death*

Total No. of cases	Septicaemia and peritonitis	Renal failure	Hepatic failure	Bacteraemic shock	Pulmonary embolism (2)
44 (100%)	34 (77.2%)	3 (6.8%)	1 (2.3%)	5 (11.4%)	1 (2.3%)

septic abortions posterior colpotomy was also done, in 4 other cases evacuation was undertaken.

In another case laparotomy was done when uterine and intestinal perforations were repaired. Amongst 2 cases of M.T.P., one was treated conservatively and in other laparotomy was undertaken. Amongst 12 cases of puerperal sepsis, only 1 underwent laparotomy with drainage of pus other 11 cases received conservative treatments.

Besides surgery, antibiotics were used freely. Chloromycetin and streptomycin in combination in 15 cases (34%), Gentamycin in 10 cases (22%), Penicillin, streptomycin and Septran in 6 cases (13%) and chloromycetin alone in 3 cases (7.8%).

#### Discussions

Sepsis alone caused 44 (18.9%) deaths during 1975-77 in Eden Hospital amongst 232 maternal deaths from all causes. Rao (1978) reported percentages of maternal deaths due to sepsis at different teaching institutions of India. For Bombay (1975), 16, Madras (1975), 27, Delhi (1970), 24 and Madurai (1972), 27. Further Pandit *et al* (1978), Motashaw *et al* (1978), Kotwani and Dhawan (1978), Kochhar and Shrivastava (1978) and Panda *et al* (1978) reported 20.12, 10.9, 10.5, 21.7 and 42.2% maternal deaths due to sepsis (Puerperal and Postabortal) in their respective series from Bombay, Delhi and Berhampur for the years between 1969 to 1974. Percentages of maternal deaths due to sepsis in other countries are also reported by Rao (1978); for Japan, 5.07, England and Wales, 13.4, Mexico, 7.7. In rural India (Rao 1978), the percentages of maternal deaths due to sepsis are far lower than in the teaching institutions, (0.46%) of India probably due to admis-

sions of high risk and moribund cases of septic abortions after criminal interferences in these hospitals.

In the present series septic abortions were responsible for 12.9% maternal deaths (30 amongst 232), all of whom died after illegal interferences. During this period 509 cases of septic abortions were admitted, the mortality therefore was 6 per cent. Both the percentages of maternal deaths due to septic abortions and deaths in relation to admitted cases of septic abortions were considerably high in this series. Kochhar and Shrivastava (1978) and Magar and Sathe (1978) reported 13.3 and 5.3% maternal deaths respectively due to induced abortions. Further Krishna *et al* (1978) and Sitaratna (1978) reported 11.1 and 7.2 deaths amongst hospitalised cases of septic abortions in their respective series. These deaths are definitely avoidable if due precautions were undertaken to avoid unwanted pregnancy or abortions were properly carried out. However, it is expected that judicious uses of antibiotics with adequate surgery will spare the lives of these patients. The failures of antibiotics pointed to their limitations, which may be accounted for by the facts that even to-day many patients take hospital admissions very late, when they are heavily infected or after inadequate treatment. The problem of drug resistance also add to this menace. Early surgical interventions may save some of these lives. Though these are usually practised in hospitals, yet the late admissions with low general conditions of the patients and widespread infection sometimes compelled to defer active managements. The remnants of products of conceptions in late admission cases are the sources of infections and endotoxin, which are lethal to the mother. As al-

ready mentioned popularisation of Abortion Laws in future will help to reduce the numbers of illegal abortions and its consequences.

In this series, puerperal sepsis was responsible for 12 (5.17%) deaths, 9 of whom (75%) were admitted after home confinements, while other 3 (25%) confined in the hospital. In these 3 patients repeated vaginal examinations and/or catheterisation were undertaken prior to admissions, which might have introduced infections. Devi *et al* (1978), Kochhar and Shrivastava (1978), Panda *et al* (1978) and Magar and Sathe (1978) also reported 25, 8.4, 14.75 and 3.8 per cent maternal deaths due to puerperal sepsis in their respective series. Patients of higher age groups as well as of high parity are at a greater risk. Preferences for home confinements in grandmultis perhaps predisposed to more maternal deaths due to puerperal sepsis as aseptic condition is likely to be less observed there. Deaths in 2 cases of M.T.P. were very unfortunate when all aseptic measures were undertaken. However, deaths in the hospitalised patients again pointed out the limitations of modern day antibiotic therapy. Failure of antibiotics to control either post abortal or puerperal sepsis suggested that microorganisms are gradually becoming resistant or the infections are changing their bacterial flora as suggested by Rao (1978) for pelvic infections. However, delay in starting the treatment, chronicity of the infections as well as limit of penetration of individual antibiotics may also hamper the ultimate result. Therefore besides proper antenatal, intranatal and postnatal managements, vigorous measures should be adopted to maintain proper asepsis in

labour as failures with antibiotics are on the rise.

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