THE PROBLEM OF SEPTIC ABORTION IN TANTA UNIVERSITY HOSPITAL A CLINICAL AND BACTERIOLOGICAL STUDY

By

GAMAL EL-DIN Y. EL-KHOLI (M. Ch. CAIRO)

Assistant Prfeessor of Obstetrics and Gynaecology

and

ADEL M.A. ABBAS (Ph. D. ENGLAND).

Assistant Professor of Medical Microbiology

From the departments of Obstetrics and Gynaecology and Medical Microbiology, Tanta Faculty of Medicine

The wide use of contraceptive and the legalization of abortion have reduced the number of patients admitted to hospitals with abortion as a result of intervention in many countries (Purnadre, 1967 and Teitze, 1971). In Tanta University Hospital, the incidence of septic abortion admitted to the department of Obstetrics since 1971 to 1973 was progressively increasing (table 1). This fact has provocated us to study the problem of septic abortion in this hospital that drains a wide area of the Middle of the Delta.

MATERIAL and METHODS

During the last year (1973), our department received 141 cases of septic abortion. They were submitted to thorough clinical examination. Swabs were taken from the uterine cavity or the cervical canal and sent for bacteriological examination. In addition, blood culture was performed also for 22 cases complicated by septic shock before adminstriation of antibiotics. Septic abortion was diagnosed with fever of at least 38.5oC, an offensive or purulent discharge or signs of obvious pelvic infection (Macourt, 1960). Shock is considered septic if the adminsistration of fluid and blood to correct the presumed hypovolaemic hypotension does not raise the blood pressure (Little, 1967). All patients were multiparae except 12 cases (8.5 %) who ware primigravidae. The number of pregnancies were ranging from (4—13). All

patients claimed to be married. Duration of pregnancy was from 8—14 weeks in 110 cases (77.8%) and from 14—24 weeks in 28 cases (19.7 %) and one case: 26 weeks (1.7 %). Age was between 17—42 years. All denied any intentional intervention. Abortion was threatened on admission in 9 cases (6.3 % inevitable : 65 cases (46 %), inomplete 64 cases (45.4 %) and complete 3 : cases (2.3 %). The nine cases of threatened abortion ended into inevitable inspite of medical treatment. Conctraception was practiced by 93 patients (65.9 %) before the current pregnancy. Pills used by 61 patients (65.5 %) and conventional methods by the rest. The patients in this series were classified into three clinical stages according to Little (1967) and Purnadre (1967) : stage (1) : infection is localized to the uterus : 93 cases (65.9 %), stage II : infection has spread to the adnexae, 33 cases (23.4 %) and stage III, general peritenitis, 15 cases (10.7 %). In all cases antibiotics were given immediately in the form of chloramphenicol, streptomycin and pencillin and changed only if sensitivity tosts showed more appropriate antibiotics. Fluids and blood were given according to the need of the patient. Blood pressure, pulse, tomp. and amount of urine every hour were theroughly observed. In stage (1), the uterus was evacuated within 6—12 hours after the initiation of the above treatment. Surgical evacuation was resorted to if the size of the uterus below 12 weeds and by pitocin drip if above 12 eweks.

In stage II and III antibiotics were continued till the infection became localised. This took 3—7 days and then the uterus was evacuated. In one case, intraperitoneal abscess was drained by suprapublic incision 8 days after admission. In cases complicated by septic shock metaraminol and hydrocortisone were added to the above treatment aiming to maintain the systolic B.P. above 100 mm Hg to maintain excretion of urine. No surgical intorference was carried on until the shock was controlled. In 4 cases vasopressor was not effective and the uterus was evacuated surgically. In two cases the shock improved and other two cases died within few hours. Acuto renal failure suporvened in 6 cases (27.2%) of the 22 cases of septic shock. Nanitol–iuretic therapeutic test was applied to them after correcting the shock. Two cases responded and the severe oliguria was relieved. But in 4 cases, oliguria persisted and were considered as acute tubular necrosis or renal cortical necrosis. Restriction of fluids, anabolics and bicarbonates were given, yet one case only responded to treatment and passed gradually into the polyuria and the, the recovery phase. Other three cases died from uraemia.

RESULTS

Table (1): The number of cases of abortion and incidence of septic abortion admitted to Tanta University Hospital during 3 years period (1971—1973). Table (11): microorganisms detected from cultures of the uterine cavity and cervical canal. Table (III): Bacteriological study of uterine and blood cultures taken from 22 cases of septic shoock. The offending bacteria were most sensitive to Geporan, Kanamycin and chloromycetin. Complications encountered were mainly : septic shock, 22 cases (15.6%) gangrene of the skin of one limb secondary to vasopressor administration in the saphenous vein, one case (0.7%) and death : 8 cases (5.6%). Causes of death were : septic shock (5 cases) and renal failure (3 cases).

TABLE I

Incidence of septic abortion in the last three years admitted to Tanta University Hospital

Year	No. of abortion	No. of septic abortion	%
1971	941	107	11.3
1972	962	134	13.9
1973	913	141	15.4

TABLE II

Microorganisms identified in Uterine and Cervical Cultures in 141 cases of septic abortion

	No.	%		No.	%
Streptococcus pyogenenes	4	2.8	Pseudomonas pyocyanae	18	12.8
Streptococcus faecalis	3	2.1	Streptococcus and Staphyl	36	25.6
Staphylococcus pyogenes	14	9.9	Strepto. and pyocy.	13	9.2
E. Coli	12	8.5	Strepto, and Coliform	8	5.6
Bact, Coli	17	12.7	Staphyl. and Micrococcus	9	6.4
Bact. proteus	5	3.5	Strept. and Dephtheroid	2	1.2

TABLE (III)

Results of Blood and Uterine Cultures in 22 cases of Septic Shock

Blood culture	Uterine Culture	No. of cases	%
E. Coli	E. Coli	4	18.1
B. Proteus	B. Proteus	2	9
B. Coli	B. Coli	4	18.1
— —	Strept. & Colif.	6	27
— —	E. Coli	1	4.5
— —	B. Proteus	1	4.5
— —	Ps. pyocyanae	1	4.5
— —	Ps. pyocyanae	3	13.6
		22	100

DISCUSSION

The major causes of septic abortion is instrumentation in an attempt to terminate an unwanted pregnancy (Knapp *et al.* 1960). Infection of a retained blighted ovum consequent to threatened abortion may be a rare cause (Little, 1967). Pure medical conditions complicated by abortion were noted in only less than 1% of the febrile abortion cases and consists of typhoild, infective hepatitis, acute pulmonary tuberculosis and pyolonephritis (Purnadre, 1967). In our series, all cases are due to instrumentation but this should be considered as an opinion or impression rather than a research conclusion.

The incidence of septic abortion in all types of abortion is variable in different reports : 7% (Purnadre, 1967), 8.9% (Deane and Russel, 1960), 25% (Macourt, 1966). In our hospital it was 11.3 (1971) and reached 15.4% (1973).

The most common organisms detected in uterine and cervical cultures in septic abortion were variable in different series : *B. Coli* and *Hoemolytic streptococci* (Purnadre, 1967), *E. Coli* (Deane and Russel, 1960) and in our series *streptococcus pyogenes* and *staphylococcus pyogenes* (25.6%), *Pseudomonas pyocyanae* (12.8%) and *B. Coli* (12.7%). The most common microorganisms detected in uterine and blood cultures in our series of septic shock was *E. Coli* (18.1%). This is in agreement with Deans and Russel (1960) and Woodard (1962).

The incidence of septic shock with septic abortion varies from 3 %(woodard, 1962) to 40% (Anderson and Kadner, 1961). In our series it reached up to 15.5%. Septic shock could be initated by any microorganisms (Thomas, 1954 and Zweifach, 1951). Gram positive cocci which elaborate an exotoxin as well as viruses, ricketlsia, spirochete, parasites or fungi lead to a circulatory shock in a minority of cases (weil and Shubin, 1967). In the great majoity of cases, septic shock is the result of gram–negative bacteria producing endotoxin (Spink, 1964). Septic shock is observed mainly in elderly patients and in pregnant women (Weil et al, 1964). Administration of antibiotics effective against gram positive but not gram negative bacteria results in uncompleted multiplication of the latter with increased chance of septic shock. (Well and Shubin, 1967). In our series, septic shock was induced by gram–negative bacteria in all cases except 6 (27.2%) that were induced by gram–positive bacteria. Shock of gram–positive bacteria is primarily due to vasodilatation and extravasation of fluid (spink, 1964). Shock due to gram–negative bacteria starts by transient vasoconstriction followed by decrease of vasomotor tone and increased vascular space, increased capillary permneability with loss of plasma volume then intravascular coagulstion and activation of fibrinolytic system (Spink, 1964, Morris, 1967 and Weil and Shubin, 1967). The greater incidence of septic shock with gram–negative than with gram–positive bacteria and the different pathogenesis and management of both types make bacteriological study of septic abortion of paramount importance.

Septic shock is often complicated by acute renal failure which freuqently determines its ultimate out come (Emmanuel and Katz, 1973). The etiology of the renal lesion is incompletely understood yet the commonest dominator in most cases seems to be renal ischamia due to hypotensive effect of over whelming infection (Martin and Nicholos, 1965). The first and second stages in the pathogenesis of this condition viz : prerenal failure and acute tubular necrosis if renal perfusion is corrected in due time, are reversible (Merrill, 1971). The third stage: renal cortical necrosis is usually irreversible except in a minority of cases where the necrosis may be limited and patchy and the patient then may survive albiet with marked reduced renal function (Boltom *et al.* 1973). In our series acute renal failure supervened in 6 cases out of 22 cases of septic shock (27.2%).

Purnadre (1967) favours extreme conservatism in the management of septic abortion (Knapp *et al.* 1966). Adcock and Haknson (1960) and Little (1967) advocate rapid ovacuation of the uterus after a short period of intensive antibiotics.

The basic treatment of septic shock besides, fluids, blood transfusion and antibiotics is vasopressors espocially metaraminal which mobillizes pooled blood, increases venous return and intensifies myocardial contractility (Cavenagh and Allen, 1966). The aim is to maintain the systolic pressure around 100 mm Hg to sustain filtration of urine, nevortheless the possibility does exist that beneficial effects are achieved at the cost of excessive vasoconstriction creating an additional comprise of effective blood flow (Weil and Shubin, 1967). Shock of gram-negative bacteria with evidences of intravascular coagulation, vasodilators as phentolamine (Lillehei and Maclean, 1959, Bradley and Weil, 1965 and Maclean *et al.* 1965) as well as heparin (Yoshikawa *et al.* 1971) are even more effective than vasopressors. Heparin in this situation is considered as life saving (Clarkson et al, 1969). Corticosteriods are also given to cases of septic shock on the assumption that it may alleviate adrenocortical insufficiency, block sympathemimetic effects of endotoxins, potentiato vasopressors and decrease clinical toxicity (Hartig, 1964).

Maternal mortality of septic abortion in India is 20% (Purnadre, 1967) while in Britain it is 0.78% (Knapp *et al,* 1960). In our series it reaches up to 5.8%. The causes of death in this series were septic shock, 5 cases (62.5% and acute renal failure 3 cases (37.5%). Mortality rate of acute renal failure in septic abortion is 50% (Freankillin and Herrill, 1960) while in our series it is 75%. There is no reliable way of protecting a patient against acute renal failure once septic shock occurs (Barry *et al,* 1961). Dialysis may have seved some of these patients if they are transferred to a well equiped ranal centre (Weil and Shubin, 1967).

All the patiónts in our series were married. They induced abortion for unwanted prognancy. Would expert practice of contraception prevent these abortions?

SUMMARY and CONCLUSION

1. Complete clinical and bacteriological studies were performed for 141 cases of septic abortion admitted to Tanta University Hospital during the year, 1973.

2. The incidence, pathogenesis and management of septic abortion, septic sheck and acute renal failure were discussed.

3. Bacteriological examination of all cases of septic abortion should be a routine hospital practice to define the offending microorganisms as management and prevention of serious complications as septic shock and acute renal failure depend to a large extent on this point.

REFERENCES

1. ANDERSON A. and HAKANSON, A.E. (1960) Am. J. Obst. Gyn., 79 : 516.
2. BARRY, K.G., COHEN, A., KNOCHOL, J.P., WHELAN, T.J. and BEISOL., M. J. (1961) New Egl. J. Med., 264, 1967
3. BOLTON, K., CAVALLE, T. and LEWIS E., (1973) J. Arch. Intern. Med., 131, 265.
4. BRADLY, E.C. and WOIL, M.H. (1965), Clin. Res., 13, 120.
5. CAVANAGH, M.D. and ALLEN, G.W. (1960) Am. J. Obstet. Gynec. 96, 913.
6. CLARKSEN, A.R., STAGE, R.E. and LAWRENCE, J.R. (1969) Ann. Intorn. Med,. 70, 1191.
7. DEANE, R.M. qnd RUSSEL, K.P. (1960) Am. J. Obst. Cynec. 79.
8. EMMANOUEL, D. and KATZ, A. (1973) Am. J. Obst. & Gynec. 117, 145.
9. FRANKILIN, S.S. and MERRILL, J.P. (1966) New Engl. J. Med. 262, 711.
10. HARTIG, A. (1963—1964) In Greenhill, J.P. (Ed.) Year Book of Obstetrics and Gynaecology, Chicago, Year Book Publishers.
11. KNAPP, R.C., PLATT, M.A. and DOUGLAS, R.G. (1960) Obstet. Gynec. 15, 344.
12. LILLEHEI, R.C. and MACLEAN, L.D. (1959) Arch. Surg. 78, 464.
13. LITTLE, B. (1967) in Marcus, C.C. (Ed.) Advances in Obatetries and Cynaecology, Volu, I., Williams and Wilkins Company, Baltimere P. 138.
14. MAC LEAN, L.D. DUFF, J.H. SCOTT, H.M. and PERETZ, D.I. (1965), Surg. Gynec. Obstet., 120, I.
15. MACOURT, D. (1966) : M.J. Australia, 2, 640.
16. MARTIN, W.J. and NICHOLOS, D.R. (1956,) Mayo Clin, Proc., 31 333.
17. MERRILL, J. (1971) in Strauss, M.B. and Welt, L.G. (Ed.) : Diseases of the kidney, second edition vol. I, Little, Brown and Company, Boston.
18. MORRIS, J.A. (1967) in Marcus, S.L. and Marcus, C.C. (Ed.) Advances in Obstetrics and Gynecology, Vol. I, William & Wilkins Company, Baltimore, P. 150.
19. PURNADRE, B.N. (1967) in Wood, C. and Waltors, N.A.W. (Ed.) Fifth World Congress of Gynecology and Obstetrics, Butter-worths, Australia, P. 741.
20. SPINK, W.W. (1964) The dilemma of Bacterial shock : with special reference to endotoxin shock. Royal College of Physicians of Edinburg, Publication No. 29 T. and A. Constable L & d. Great Britain.
21. THOMAS, L. (1954) Ann. Rev. Physiol. 16, 467.
22. TEITZE C, (1971) in Sloane, R.B. (Ed.) Abortion, Changing Views and Practkice,first ed., Grane & Stratton, Nrew York, P. 165.
23. WEIL, M.H., SHUBIN, H. and BIDDLE, M. (1964) Ann. Intern. Med., 60, 384.
24. WEIL, M.H. and SHUBIN H. (1967) Diagnosis and Treatment of shock, first ed., williams & wilkins Company, Baltimore pp. 96, 110, 156, 158, 166.
25. WOODARD, R. (1962) Obstet & Gynec. 19, 633.
26. YOSHIKAWA, T. TANAKA, K.R. and GUZE, L.B. (1971) Medicine, 50, 237.
27. LWEIFACH, B.W. (1958) Brit. J. Anaesth. 30, 466.