Toxic-Septic Abortion and its Severe Complications, Frequently Lethal

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The complexity of medical and social aspects of human reproduction is well-known. Social, economic factors, family, culture, legal institutions, political and religious convictions condition the psychology of the individual and his attitude towards reproduction. Abortion was seen over time as a sensitive multi-faceted issue. It is a demographic issue, as too many abortions led to imbalances in population structure, birth rate decrease and prevalence of older ages over younger ones and is the main cause of maternal mortality. It is an economic issue because abortions led to lower production capacities and extended leaves of absence. By its lethal risks, infertility involved, extrauterine pregnancies, miscarriages, mostly in younger women, abortion is a topical medical issue. With regard to the mentality it determined in relations between sexes, it is also an ethical issue. This subject matter is tackled as there are scores of induced septic abortions, maternal deaths and severe complications, which shows that women need to be made aware of all the risks and implications of abortion. This study comprises the analysis of 23 cases of septic abortions admitted in Clinic of Obstetrics and Gynecology from January 2011 to December 2015. In relation to age, septic abortion is most frequently met in young women, its rate decreasing with age; the largest number of cases was met in the age group 25-29 years, with a peak at 25 years, correlated to the period when intercourse is most intense. Complications of toxic-septic abortion depend on the nature of toxicity, dose, local intrauterine maneuvers, virulence of germs, body resistance and timely treatment. Immediate complications are often the cause of death, the late ones frequently generate local sequelae: chronic genital diseases, amenorrhea, infertility, uterine synechiae.

Keywords: Induced abortion, aggression, hemodynamic disorders, uterine gangrene

Abortion is the most obvious expression of the moral collapse of a people, as it is an act of aggression committed against the most innocent and defenseless creatures; abortion is an emotional issue; it is a highly sensitive and controversial topic. Are there any situations in which abortion is a correct solution? The woman has the right to decide what happens to her body.

Ovulary facts which lead to abortion are morphological anomalies of gametes, chromosomal changes in egg number, form, configuration: polyploidy, monosomy, trisomy, loss of one or both sexual chromosomes, loss (deletion) or gain of chromosomal fragments (insertion, translocation). Other ovulary causes are: malformations of embryo or placenta, functional enzymatic deficits of placenta or yellow body leading to insufficiency of hormonal secretion which block the development of uterus and egg.

Maternal factors that may determine an abortion are local and general. Local factors are represented by endometritis, which prevent normal nidation and the development of the grafted egg, malformations, uterine tumors conducive to difficulties in development because of compression or lack of extensibility, uterine deviations, cervical insufficiency leading to lack of pregnancy contention. General factors are acute and chronic infectious diseases, endocrine, degenerative diseases or immunologic abortion by Rh or blood type incompatibility.

External environment factors may determine in the pregnant woman's organism disorders that may cause intrauterine death of fetus or uterine contractions, followed by miscarriage. Some of the most important factors of this type are nutrient deficiencies shown in lack of energy, biocatalysis and neoformation elements, impossible to synthetize by maternal organism, exogenous intoxications, traumas.

Induced abortion leads to the death of the fetus in the uterus, egg decollation or expulsive uterine contractions. There are various abortive procedures that determine a variety of lesions and accidents. Abortive substances are not acting unless they are taken as a toxic dose, conducive to a poisoning syndrome. Vegetal decocts of oleander, parsley, wormwood, juniper, laurel, hollyhock, mineral substances, medicines (quinine, drastic purgatives, potassium permanganate, polymicrobian vaccine). Abortion can also be triggered by methods designed to dilate the cervix, to decollate the egg or to start uterine contractions. Metallic dilatators, sounds, spindles, crochets, wires, plant stems are used. Caustic liquids are injected: soapy water, detergents, alcohol, iodine tincture, acids, antiseptics.

A characteristic trait of such maneuvers is the high rate of infectious complications. Any incomplete abortion may be considered potentially infected due to the following factors: open cervix, lack of cervical mucus, presence of blood and necrotic tissues in uterine cavity, possibility of its rapid infection by vaginal flora, perturbations of the defense mechanisms in endometrial and cervical mucous membranes.

Septic abortion means the presence of the clinical tableau of systemic infection with the starting point – pregnant uterus. Toxic-septic abortion presupposes the presence of severe septic and toxic intoxications with the infected egg as starting point, exteriorized by the necrobiotic palette at the entry gate, massive hemolysis, hepatofrenic manifestations, toxic cerebral, myocardic, pulmonary complications.

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The clinical tableau of the infection starting in uterus is highly severe. Microbial aggression in abortion defeats and surpasses anti-infectious defense barriers.

The pregnancy condition produces an immuno-depression necessary to maintain ovulary hemo-allograft. In the pregnancy area, decidual cells produce protein fractions type alpha $_2$-glicoprotein that would cover white cell and macrophages immunogenic receptors, impairing the immune response to various antigenic aggressions.

On this state of immune deficiency, massive and brutal invasion of virulent germs following abortive maneuvers, vascular lesions produced by irritating substances inserted, retentions of ovulary tissues create exceptional conditions for mostly anaerobic microbial development.

Germ infection of the pregnant uterus may have two sources: endogen source represented by saprophyte or pathogenic germs that colonize the cervical vaginal area and the exogenic source by inserting in the uterine cavity a wide range of germs further to various aggressions against its content. In cases of aggressions against the uterine cavity, vaginal pH changes from acid to alkaline, with a decrease in lactobacilli and an increase of aerobic and anaerobic germs.

Uterine content by its particular traits is an excellent culture medium for intense germ proliferation.

The increase of stasis and blood viscosity conduces to sludge, platelet aggregation on vascular wall, with release of platelet and tissue thromboplastin, microclot formation – disseminated intravascular coagulation, which amplifies shock by excitation of vascular nervous terminations.

Endotoxin acts directly on membranes of cellular organelles – lysosomes, with release of lysosomal enzymes that produce cell self-destruction.

In the immune-competent system, immune reactivity lowers significantly by leucopenia, decrease of phagocytic capacity, decrease of non-specific anti-infectious immune substances – interferon, properdin.

In infectious shock, all metabolic lines are affected. In toxic-septic shock the energo-dependent transfer is altered with efflux of potassium, with the modification of the relation of ionic concentration between extracellular and intracellular space, with water and sodium passage to cells.

Hemodynamic perturbations affect tissue perfusion and oxygenation and direct action of toxin on cells produces severe alterations, temporarily reversible of most organs.

Pathologic process starts often as a necrosing endometritis that extends at the surface and in depth affecting to various degrees the myo- and peri-myometral structures. Extension to myometrium leads to changes in color, consistence, vascularization, culminating with micro-abscess formation or destructive necrotic lesions. One of the most severe forms of genital infection is uterine gangrene, located in various parts of the uterine body or in the isthmus.

When infection spreads by blood, septicemia occurs; when gram-negative germs are involved, endotoxic sepsis occurs.

Experimental part

Material and methods

This study comprises the analysis of 23 cases of toxic-septic abortion admitted to the Clinic of Obstetrics and Gynecology from January 2011 to December 2015.

Severe or less severe accidents, immediate and late pathologic consequences, general or genital, are the consequence of clandestine, criminal abortion, performed in empirical conditions, and also of miscarriage and legal abortion, performed in a surgical environment. The difference lies in the proportion and nature of complications. Abortion never occurs without risks.

The rate of toxic-septic abortion registered in studies cases is comparable with the one in literature.

Toxic-septic abortions were studies based on the following criteria: higher temperature over 39°C; high-volume modified metrorrhagia; lombo-abdominal and pelvic pains; septic or toxic condition; visceral disorders.

The following parameters were taken under study: age, social environment, parity, etiology, symptomatology, treatment, evolution.

Result and discussions

Related to age (table 1), toxic-septic abortion is more frequently met in young women, its rate reducing with age. The largest score was met in age group 25-29 years, with a peak at 25 years correlated to the time when intercourse is most frequent. Under this age, the rate is low and over this age the rate is still high, with small oscillations.

Table 1

RATE OF TOXIC-SEPTIC ABORTION DEPENDING ON AGE

Age	Case no.	Rate
20-24 years	4	17.4%
25-29 years	11	47.8%
30-34 years	6	26.0%
35-39 years	1	4.3%
40-44 years	1	4.3%

As toxic-septic abortion is mostly met in young women, it affects to a certain extent demography. Even if a large number of cases are saved, most of them get infertile, with their reproductive health damaged for life. A high rate is met in women with inappropriate family conditions, prone to family conflicts, in single, divorced women or widows, which creates the need for more prophylactic and awareness-raising measures and education for family mentality restructuring and reinforcement.

Most hospitalized patients come from urban areas (18 cases, 78%), where hygiene, labor, food and sanitary education are favorable.

Etiology was determined in 8 cases (34%). It is a low rate, considering that knowing etiology is essential to manage antibiotic treatment efficiently targeted on involved germs and their sensitivity.

All patients studied are mothers to one or several children, most of them having two.

Four cases were declared crimes, as leaves, alcohol, soap and detergent solutions had been introduced. Two of them dies two days from the abortive maneuver. The maneuvers were executed by the pregnant woman or by unqualifies persons, always leading to a complicated and severe abortion. In the other cases, the patients deny any abortive maneuver.

Clinical symptomatology comprised two categories of signs: signs related to genital apparatus damage (modified vaginal discharge, metrorrhagia, hypogastric pain) and signs that show the infection and intoxication of the organism, fever being the primary consistent sign and a septic or toxic condition being the second.

In the case of an abortion complicated by infection, there are three anatomical and clinical stages:

1st clinical stage, the infectious process is strictly located in the uterine content and does not exceed the endometrium; it is the case when at local examination a mobile and non painful uterus is felt, impalpable tender adnexes and tender vaginal cul de sac.

SYMPTOMS	CASE NO.	RATE
Metrorrhagia	23	100%
Fever	23	100%
Hypogastric pains	17	80%
Altered level of consciousness	15	70%
Hemorrhages	8	34%
Shivering	12	50%
Coetaneous eruptions	5	22%
Nausea, vomiting	12	50%
Jaundice	8	34%
Hepatomegaly	9	39%
Anuria	3	13%

Table 2
THE MAIN CLINICAL MANIFESTATIONS IN TOXIC-SEPTIC ABORTION AND THEIR RATE

PREGNANCY AGE	CASE NO.	RATE
11 weeks	6	26%
12 weeks	11	47.8%
13 weeks	4	17.4%
14 weeks	2	8.6%

Table 3
RATE OF TOXIC-SEPTIC ABORTION DEPENDING ON PREGNANCY AGE

2nd clinical stage, the process extends outside the endometer, to the myometer, adnexes, parameters, large ligaments; at local examination, it is noticed a painful uterus when felt and mobilized, palpable and painful adnexes, transformed in inflammatory tumors, sensitive cul-de-sacs.

3rd clinical stage is when the infectious process extends to the small pelvian cavity or to the entire peritoneal cavity.

Any stage may be associated to general phenomena, such as: septic shock, acute renal insufficiency, cardiac insufficiency, septic disseminations.

Metrorrhagia was present in all studies cases at a larger or smaller extent, characterized by sero-sanguinolent, sero-purulent to sanguinolent fluid, clots, changed color and fetid odor. One case only showed discharge of amniotic liquid. Four cases were accompanied by massive hemorrhage (17%).

Hypogastric and lumbar pain are another important symptom manifested as discomfort, persistent pain or painful uterine contractions, present in 80% cases. Fever was present in all cases studied varying from 38 -40°C, accompanied by shivering in 50% cases.

Patients' bodies were affected variably by infection, depending on germ virulence and specific body reactivity. At various degrees, there occurred altered level of consciousness, coetaneous eruptions, hemorrhages, hepatic or renal disorders in severe cases, with an alarming setting.

Local examination helped to establish the pathologic and clinical stage: 2nd stage - 17 (73%) cases, 3rd stage - 6 (26%) cases, out of which 2 cases of septicemia, 19 (82%) cases of septic shock requiring intensive care. Three cases of hepatorenal syndrome were transferred to Bucharest for dialysis and one case for the treatment of septicemia.

The bacteriological test: smear and culture for aerobic and anaerobic germs from of cervical secretion, carried out in 8 cases (34.78%), enabled us to determine the etiology and sensitivity of germs.

The hematological test: hemoglobin, hematocrit, parameters reflecting the importance of blood loss were low in all studied cases, ranging between 4.5g % and 13g %, the most common values being 9g and 10g% - 50%% of cases.

These low values show the importance of early correction of hematological imbalance in all cases of abortion. Although the increase of leukocytes with polynucleosis is known in severe infection, varying aspects from transient leucopenia to significant leukocytosis may be met in complicated abortion.

Efficient therapy should be applied early, constantly and complexly, adapted to each case depending on the evolution and stage. The treatment was applied in reanimation care. To provide the success of treatment, the patients had permanently their vein cauterized that enabled to administer drugs, perform reanimation constantly, collect samples for tests.

All needed lab samples were collected upon admission, including bacteriological cultures and the antibiogram.

The course of treatment aimed to treat primary lesions, the specific therapy involved gynecological and surgical resolution of the septic uterine outbreak depending on the pathological and clinical stage of abortion under complex antimicrobial treatment and rebalancing various systemic diseases through a series of nonspecific intensive care measures.

Antibiotic treatment comprised in most cases (13 cases, 56%), the combination of several antibiotics as the infectious syndrome often involves a plurimicrobial etiology resulting in a broad antimicrobial spectrum.

In cases started with commonly infected abortion, the treatment with one antibiotic was initiated, with further good development (31% of cases). No treatment was administered to 3 patients (13.04%) who died.

Antibiotics were administered only through the parenteral route, making it possible to obtain effective concentrations taking into account that in case of abortion complicated by infection, the digestive tolerance is diminished until its disappearance, and there are digestive symptoms such as nausea, vomiting, and diarrhea.

In complex treatment of toxic septic abortion, surgical treatment is extremely important. The establishment of correct surgical treatment requires a detailed clinical, biological, local and systemic assessment of the case, with multiple assessment criteria. Surgery is the mandatory indication and where it is indicated correctly and on time, it is the only life-saving treatment.

The gynecological surgery used to eliminate the septic outbreak included: curettage, hysterectomy, subtotal hysterectomy with ovariectomy. Two cases required surgical reintervention after hysterectomy for postoperative peritonitis with broad peritoneal drainage.

There has been one death in 4 h after curettage in a case of tort, the abortive maneuver being performed with alcohol.

In 6 cases, there has been an unfavorable evolution after curettage that required surgery, total hysterectomy 1-3 days after curettage with multiple drainage of peritoneal infection. In one case, signs of general infection appeared, septicemia, and in another case, hepato-renal insufficiency installed requiring dialysis. Intensive care was continued after curettage in all cases. Uterine curettage in 50% of the cases was the therapeutic measure aimed to eliminate the septic outbreak.

In 9 (34%) cases, the outbreak of infection was eradicated by total hysterectomy and in 2 cases by subtotal hysterectomy. Hysterectomy was required from the beginning in 5 cases with severe clinical symptoms. It was also imposed in case of hepatorenal syndrome, coagulations disorders, as well as in tort cases where curettage is contraindicated.

In other 4 cases, the hysterectomy was applied in 2-3 days after curettage. After hysterectomy, 2 cases required surgical reintervention for broad drainage of peritoneal cavity, in complicated cases of postoperative peritonitis with later good evolution in one case and death in another case. All toxic-septic abortion cases require non-specific intensive care to rebalance body functions.

In therapy aimed to rebalance the cardiovascular system, the aim was to restore blood volume, encourage cardiac contractility and obtain peripheral circulation close to normal.

The recovery of blood volume was made by administration of infusion solutions. Alpha and beta blocking vasoactive drugs have a positive effect when associated to aggregated peripheral action of alpha-blockers with beta-blockers on the heart.

Corticosteroids were administered as a substitute treatment to stabilize membranes, for their direct pharmacodynamic effects and in the treatment of toxic-septic shock for direct endotoxin neutralization and alpha receptor protection.

The evolution of studied toxic-septic abortion cases was serious, linked to multiple complications: toxicoseptic shock, sepsis, generalized peritonitis. This unpredictable evolution has required intense therapeutic rebalancing measures that have not always produced good results mainly due to late presentation of patients. In cases with favorable evolution, healing was achieved after a long treatment.

Outside the demographic effect, cases of toxic-septic abortions produced high expenses to no positive outcome.

Some patients came back to the state before pregnancy; others were left with permanent sequelae: surgical mutilation by hysterectomy, amenorrhea, infertility, chronic liver and kidney failure suggesting the importance of early and correctly applied treatment due to illness severity.

Conclusions

Toxic-septic abortion is a condition that plays an important role in obstetric pathology, its frequency remaining quite high; specific to patients aged from 21 to 25.

Toxic-septic abortion is often a complication of abortion caused by dangerous means or substances harmful to the body, the toxic effect being linked with the effect produced mainly by gram-negative germs producing the endotoxic shock.

Toxicoseptic complications are severe and unpredictable; these appear 1-2 days after the abortive operation.

Symptoms of toxic-septic abortion include various aspects, the severity of abortion depends on the presence of visceral diseases it produces, liver and kidney disease are among most common.

Complications of toxic-septic abortion depend on the nature of toxicity, dose, local intrauterine maneuvers, virulence of germs, body resistance and timely treatment. Immediate complications are often the cause of death, the late ones frequently generate local sequelae: chronic genital diseases, amenorrhea, infertility, uterine synechiae.

Development and prognosis of toxic-septic abortion are serious, unpredictable, dependent mainly on timely referral to consultation, diagnosis and intensive care initiation.

Treatment of toxic-septic abortion will be individualized depending on the clinical condition of the patient, pathological and clinical stage of abortion.

Abortion leaves a deep wound in the soul of the woman by attacking the essence of her identity, that of being a parent and bringing life into the world. There are few women who have an abortion without considering their partner's desire.

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