Gynecology and obstetrical conditions requiring intensive care admission

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ABSTRACT

Objective: Gynecological admissions to the surgical intensive care unit vary from the obstetrical cases. Pregnant women are of prime age and can tolerate the pregnancy and delivery well. There are certain rare conditions or complications, which make the pregnant women's life pass through a critical time. These are dealt with in a high dependency area, which is short of the intensive care unit. In King Khalid University Hospital there is no such arrangement, so the mildly affected and critically ill patients together are cared for in the surgical intensive care unit. The objective of this study is to study the gynecological and obstetrical conditions requiring intensive care admission in King Khalid University Hospital, surgical intensive care unit.

Methods: All obstetrical and gynecological patients who were admitted to the surgical intensive care unit were included. The demographic particulars, reason for admission, the course of the surgical intensive care unit stay and outcome were studied.

Results: During the study period of 3 years, there were 83, (100%) obstetrical and gynecological admissions to the surgical intensive care unit. Two (2%) cases were due to anesthesia complications. The majority of causes of admissions were due to obstetrical (n=63, 76%) complications or combination of medical and surgical conditions. Gynecological admissions comprised only 18 (22%) cases. There was no mortality in the group studied.

Conclusion: Management of major obstetrical emergencies and gynaecological patients require an understanding of medical conditions' influence on the patients, and the physiological changes of normal and abnormal pregnancies. Intensive care unit management is an essential part in raising the level of patient care; health personnel training and continuing health care education may be improved.

Keywords: Anesthesia, obstetrical, complications, management, gynecological, intensive care.

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Literature review on obstetrical and gynecological admissions to intensive care units, demonstrated a number of studies from Europe,[1-4] North America,[5-13] Australia,[14] Africa[15] and Asia.[16] The admission rate varies from country to country and quoted to be: 0.07% 0.12%, 0.26%, 0.3%, 0.9% of all deliveries for obstetric admissions.[5,9,10,13,15] The ratio in one study was 71% due to obstetrical and 29% for non-obstetrical complications.[9] In a study of mixed intensive care, the admission of gynecological and obstetric cases represented 14% of intensive care unit (ICU) admissions.[14] The risk factors for admission to ICU using the severity of the disease scoring estimated from the state of level consciousness on admission and simplified acute physiology score (SAPS) indicated the presence of past serious medical history, no maternal ward consultation and multiple pregnancy to be important in obstetric patients.[1] The maternal mortality quoted in literature varies from 21.7/100,000 deliveries in maternal fetal

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medicine ICU,[7] to 25% of intensive care admissions.[4] Ante-partum or postpartum hemorrhage, pre-eclampsia and coexistent medical or surgical diseases stand as the most common diagnosis on admission to intensive care with underlying pathology of acute lung injuries, respiratory failure, cardiovascular failure and sepsis.[4-6,11-15,17-19] The order between hemorrhage and hypertensive diseases of pregnancy alternate in order when data comes from developed or developing countries.[14,15] The objective of this paper is to study the gynecological and obstetrical conditions requiring post-anesthesia intensive care admission, in a large University teaching hospital, to assess the spectrum of diseases, intervention and outcome. This, to our knowledge, is the first report from the Kingdom of Saudi Arabia.

Methods. The records of all patients from the women's division of the hospital who needed intensive care management were reviewed retrospectively. The period extended from June 1994 to June 1997. The following data was obtained: maternal age, nationality, and presence of pre-existing diseases. The obstetrical patient was defined as any patient who was pregnant or up to one month postpartum. The gynecological patient was identified as the patient who had non-pregnancy related illnesses. The clinical history, the intensive care indication and the diagnosis for admission were determined and were recorded. The critical condition was categorized as obstetric, gynecological and anesthetic then sub-grouped under the pathological condition leading to the critical condition. Total days in the intensive care unit was also recorded. The need for monitoring mechanical ventilation and invasive monitoring or dialysis was recorded. Morbidity and mortality were recorded. Data is presented in mean and standard deviation, with student t-test for measured value with $p<0.05$ and Chi-square reported for comparison between obstetric and gynecological patients.

Results. During the 3-year period there were 63 (76%) admissions due to obstetrical causes, 18 (22%) admissions for gynecological patients and 2 (2)% admission due to anesthetic reasons to the surgical intensive care unit (SICU). The utilization rate is 0.48% for obstetrics, 0.32% for gynecology patients and 0.01% for anesthesia. The mean age was 30 ± 10 years for obstetric and anesthetic and 43 ± 14 years for gynecological patients ($p = 0.001$). Nationality of the majority was Saudi, 55 patients (66%) as compared with non-Saudi: 11 Arab patients (13%), 7 Asian patients (8%) and 2 African patients (2.5%). The obstetrical admission reasons were as follow: 20 cases (24%) due to peripartum hemorrhages 14 cases (17%) due to hypertension during pregnancy and due to the syndrome of hemolysis, elevated liver enzymes and low platelets (HELLP syndrome). Twenty-one cases, (25%) due to co-existing diseases namely respiratory diseases, diabetes mellitus, cardiac diseases, hernia repair, deep venous thrombosis and suspected pulmonary embolism, Morbid obesity post craniotomy delivery and fractured femur. Six cases, (7%) of problem pregnancy including ectopic pregnancies, molar pregnancy incomplete abortion and sepsis during pregnancy and delivery. Lastly there were 2 cases, (2%) of unusual events namely post cardiac arrest and anaphylactic shock during delivery. All the mothers and their infants survived and were kept in good condition. The gynecological patients constituted 18 patients (22%) of overall admissions the reasons were the severity of surgical condition such as cases of ovarian tumors or uterine conditions such as huge fibroids and post hysterectomy due to complications or the medical condition of the patient such as sterilization of patient with cardiac myopathy. Two (2%) of the ICU admissions were for complications of general anesthesia (GA). One patient, who had GA for manual removal of the placenta, and then prolonged neuromuscular blockade because of abnormal plasma cholinesterase. Another patient had severe laryngeal

Table 1 - Obstetrical causes for admission to SCIU at KKUH.

Reasons for admission	n	%*
Uncontrolled bleeding	**20**	24
Placental causes	14	
Cervical laceration	5	
Ruptured uterus	1	
Hypertension of pregnancy	**14**	17
Preeclampsia: Eclampsia	10	
HELLP Syndrome	4	
Coincidental disease and LUSCS	**21**	25
Medical conditions (RS, DM)	11	
Cardiac diseases	3	
Hernia repair	2	
PE & DVT	2	
Morbid obesity	1	
Carniotomy	1	
Fracture femur	1	
Problem pregnancy	**6**	7
Ectopic pregnancy	3	
Molar pregnancy	1	
Incomplete abortion	1	
Sepsis	1	
Unusual Events	**2**	2
Post cardiac arrest	1	
Anaphylactic shock	1	

SICU - surgical intensive care unit; KKUH - King Khaled University Hospital; HELLP - hemolysis, elevated liver enzymes and low platelets; RS - respiratory sickness; DM - diabetes mellitus; PE - pulmonary embolism; DVT - deep venous thrombosis; LUSCS - lower uterine segment cesarian section
*63 (76%) cases of a total of 83 (100%) cases; n - number

edema; following tracheal extubation she developed airway obstruction due to edema and required re-intubation of her trachea. Intensive care unit management of these patients was conducted by using some procedures not conventional to obstetrical and gynecological practice. These included radial artery lines for serial blood gases estimation (n=83), a period of mechanical ventilation, including weaning in SICU immediately after coming from theater (n=83). Central line catheter was inserted, for fluid infusion and monitoring of central venous pressure (n=65). Swan-Ganz catheter was used for pulmonary artery pressure monitoring (n=3), dialysis was also needed (n=1). No patient was admitted more than once and the median duration of stay in the SICU was one day, (range 1- 6 days). There were no maternal or intensive care deaths during the study period.

Discussion. The value of monitoring the reason for admission of obstetric or gynecological patients to the ICU can help in indicating the quality assurance of medical care. The peri-operative death rate in general cannot function as an indicator as the mortality is reduced due to development of new safe practices of investigation, therapy, anesthesia and intensive care. In our series, out of 13000 deliveries, 63 cases of obstetrics were admitted to the ICU (utilization rate of 0.5%). Out of 5460 gynecological cases, 18 cases were admitted (utilization rate 0.32%). Out of 18460 anesthetics only 2 cases were admitted (utilization rate of 0.01%). All these patients required continued cardio-respiratory support, mechanical ventilation of the lungs, monitoring, other system support, and intensive nursing care. This is a low figure utilization rate as compared with the quoted figures in similar studies. The reason for admission of obstetrical cases is of special importance in our study. Because it shows that hemorrhagic complication occupies 24% during delivery and 7% during pregnancy. Hypertension during pregnancy associated or not associated with HELLP syndrome amounts to 17%. The presence of a coexisting surgical condition or medical disease attributed to 25% of the cases. More than 50% of the illnesses necessitate lower segment cesarean section (LUSCS). This is contrary to Mabie and Sibai[5] who found in their study of 200 admissions of obstetrics that the reason was: hypertensive disorders of 46%, massive hemorrhage 10% and medical problems in pregnancy as 44%.

Intensive care unit management of these patients was conducted by using some procedures which are not conventional to obstetrical and gynecological practice. These reflect the choice of ICU staff and the degree of illness severity demanding the intervention, and differs from what is mentioned in literature.[5] In a smilar study of obstetric and gynecological patients admitted to the surgical ICU at King Edward VIII Hospital, Durban, South Africa,[15] it was found that the management of these critically ill patients forms a significant proportion of obstetric and gynecological practice. Also the study demonstrated that of all admissions to the ICU, 14% were for obstetric and gynecological patients. Of all eclamptic patients obstetrical admissions in the study period 24% were admitted to the ICU. The study concluded that obstetric and gynecological patients form a major workload of surgical ICUs and the majority of these patients were cases of eclampsia. As the management of such patients requires an understanding of the physiological changes of normal and abnormal pregnancies, therefore, they recommended that all large obstetrical units in developing countries should establish their own ICU in order that patient care, Health personnel training and continuing health care education may be improved.[5,15] In another study, in Australia, the ICU admission of obstetrical patients, due to anesthetic complications were studied.[2] There were 126 obstetrical admissions 16 (13%) of which were due to anesthesia complications 12 (9.5%) followed GA and 4 (3%) followed Regional Block (RB). Maternal mortality report stresses the importance of high standards of care to give the women a safe passage into motherhood.[3-5] The Department of Obstetrics and Gynecology has active antenatal clinics, gynecological clinics, surgical theaters and a maternity suit with delivery rooms and build-in obstetric theatre.

In our study there is a difference in mean age of obstetric and gynecological patients, which reflects the age of chronic gynecological diseases. The majority of patients needed overnight stay and they can be dealt with in a sort of intermediate care unit. The argument[20] for a high dependency care unit of obstetrics to admit seriously ill obstetric patients can face major problems; inability to use invasive monitoring like direct arterial blood pressure monitoring, central venous and pulmonary artery pressure and wedge pressure which is needed in some patients. On the other hand no midwives are available who can care for seriously ill patient as intensive care nurses. Lastly even in the presence of high dependency units still some seriously ill patients would need intense care unit admission.

We can conclude that seriously ill gynecological patients can be admitted to general-purpose intensive care units. As for obstetrical cases they may be accommodated in intermediate care units but those patients who need ventilation, arterial central and pulmonary artery pressure monitoring then an intensive care unit is needed.[21] We support the opinion of not denying the seriously ill patient in that group of patients intensive care facilities when an emergency happens. This should improve the survival rate, it also gives the obstetrician in particular a supporting facility during an emergency in his practice.

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