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CROSS-SECTIONAL ANALYSIS OF DANGERS INHERENT WITH PRE AND POST PARTUM USE OF ANTI-COAGULATION THERAPY

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Abstract:

Background: *The rate of thrombotic mal-events is three-fold to five-fold greater during pre-partum and post-partum phases than at any other time in a women's life and thus many women receive anticoagulant therapy during pregnancy and puerperium, despite evidence suggesting that this therapy may pose grave danger to the well-being of the fetus and the mother.*

Objective: *This research hopes to highlight the dangers inherent (to the mother and fetus) with the pre-partum and post-partum use of anti-coagulation therapy.*

Methodology

This retrospective analysis is built upon the primary data, available in the hospital records, of 286 consecutive patients who received obstetric and gynecological care at Liaquat University Hospital, Hyderabad from July 2016 to December 2016. The records for screened for maternal or fetal complications and the data obtained was analyzed using SPSS v. 19.0 and MS Excel 360.

Results: *Maternal and fetal complications such as fetal bleeding, teratogenicity, bleeding at the utero-placental junction and major bleeding during obstetric surgery were observed among patients receiving anti-coagulation therapy during pregnancy. Osteoporosis was also a common complaint with numerous patients experiencing serious reduction in their bone density.*

Conclusion: *Anti-coagulation therapy, despite being useful, can be a cause of grave danger to the mother and fetus and thus great care must be taken to tackle the potential teratogenic effects of anti-coagulation therapy and deal with the dosing intricacies around the time of labor.*

Keywords: *Anti-coagulation therapy, Fetal bleeding, Fetal teratogenicity, Utero-placental junction bleeding, Osteoporosis, Pregnancy, Puerperium and Labor complications.*

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INTRODUCTION:

Hypercoagulable states in pregnancy are attributed to marked changes in hemostatic mechanisms that are brought about by a myriad of maternal and fetal hormones that invade mothers' body in quantities like never before. This is not reverted until a late eight postpartum weeks have passed [1]. It is a phase plagued with hiked probability of complications of thrombotic origin. The rate of thrombotic mal-events is three-fold to five-fold greater during pre-partum and post-partum phases than at any other time in a women's life [1] and thus many women receive anticoagulant therapy during pregnancy and puerperium, despite evidence suggesting that this therapy may pose grave danger to the well-being of the fetus and the mother [2, 3]. In addition to that a scarcity of published evidence proving the merit of anti-coagulation therapy or otherwise makes this matter worthy of debate and research. Owing to this lack of published evidence, dosage regimens of anti-coagulation therapy for pregnant women are not defined and often the dosage regimens for non-pregnant women are followed [4, 5]. Thus care-free use of anti-coagulation therapy, without keeping in mind, the dangers inherent with its use may do more harm than good.

The dangers inherent with the un-regulated use of anti-coagulation therapy during pregnancy and puerperium cannot be appreciated unless a firm understanding of the therapy and its components is developed. Warfarin is by far the commonest drug used to serve the purpose of anti-coagulation owing to its good bio-availability and the fact that its mode and duration of action are understood well. However, it is capable of freely passing the placental barrier and may result in a special type of embryopathy associated with warfarin use. The probability of such an embryopathy developing is twenty five to thirty percent anywhere from the sixth to the twelfth week of gestation. This fate can, however, be prevented if the use of warfarin is halted before the sixth week of gestation and patient is shifted on to oral anti-coagulation therapy till the twelfth week of gestation. The use of warfarin can be resumed after the twelfth week but only to be halted again before the thirty sixth week of gestation to avoid complications such as major obstetric bleeding at the time of delivery [6]. Apart from efforts directed at educating the health care professionals, it is only fair that the steps should be taken to raise levels of awareness among the patients as well so that they may be able to make informed decisions regarding whether and how to continue with the therapy. This shall also increase the adherence rates to the doctors' prescription and advises. Provided, their capability to cause trouble for the fetus, vitamin K antagonists should be used only if the merits of its use, outweigh the probable risks that it poses. Just like the rest of the anti-coagulation aents, UFH too is not all good. The complexities of involved in regulating the levels of UFH in the body and the maternal side-effects it poses (such as osteoporosis and heparin-induced thrombocytopenia) puts its use in doubt as well. But research suggest that limiting the dose to no greter than 20,000 iu in 24 hours and halting its use before 6 months of gestation can make it more safe to use [7].

This research hopes to highlight the dangers inherent (to the mother and fetus) with the reckless pre-partum and post-partum use of anti-coagulation therapy. We hope that it shall serve as a stern reminder of what may happen is care is not taken while prescribing any therapy to women during pregnancy and puerperium.

METHODOLOGY:

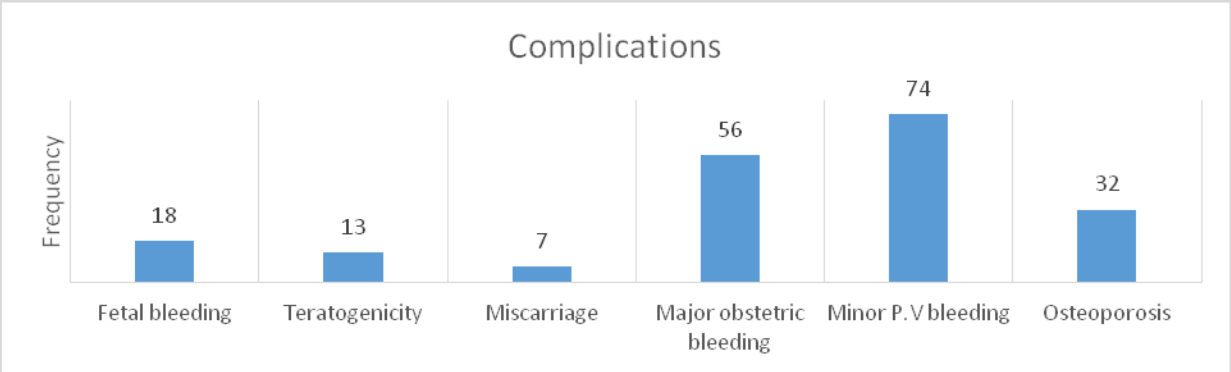
This retrospective analysis is built upon the primary data, available in the hospital records, of 286 consecutive patients who received obstetric and gynecological care at Liaquat University Hospital, Hyderabad from July 2016 to December 2016. The records for screened for maternal or fetal complications and the data obtained was analyzed using SPSS v. 19.0 and MS Excel 360.

Inclusion criteria: The data of women, aged 18-35 years, provably taking anti-coagulation therapy during pregnancy and puerperium was included in the study.

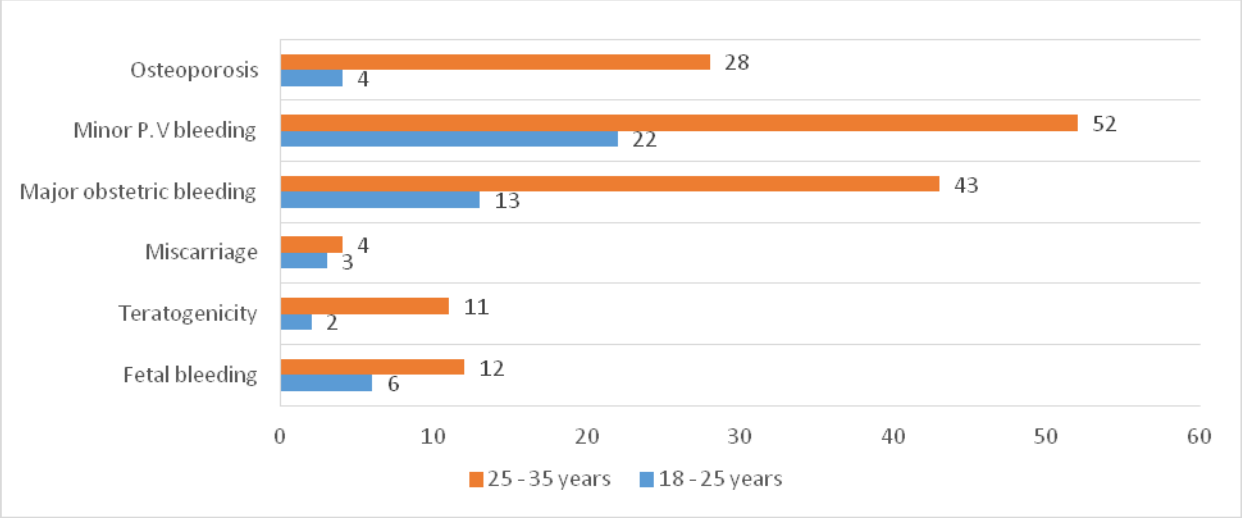
Exclusion criteria: Women suffering from any major systemic illness and women taking any other potential teratogenic drugs were excluded from the sample.

RESULTS:

Maternal and fetal complications such as fetal bleeding, teratogenicity, bleeding at the utero-placental junction and major bleeding during obstetric surgery and osteoporosis were observed among patients receiving anti-coagulation therapy during pregnancy. The frequency of each of the above stated complication is described in the graph below.



The individual frequency of each complication varied with age. A detailed breakdown of which is shown in the graph below.



DISCUSSION:

A unanimous consensus has existed for long on the fact that use of oral anti-coagulation therapy during the first trimester is more than capable of translating into fetal malformations and anomalies [8 - 12] such as, but not limited to, nasal hypoplasia and stippled epiphysis. Fresh evidence, however, now suggests that use of oral anti-coagulation therapy during the latter two trimesters of pregnancy is not safe either [12]. Furthermore, warfarin (previosuly considered relatively safe) use too is now considered capable of causing embryopathy [13].

Despite all de-merits of anti-coagulation therapy, bring a complete halt to its use is not advisable at any level, otherwise it patients suffering from hypercoagulable states, cardiac pathologies and patients with cardiac and vascular implants would suffer unbearably. The aforementioned conditions are made so worse by pregnancy that the use of anti-coagulation therapy is, at times, the only solution. However, an alternative best pathway can be identified by extensive research.

All patients presenting for antenatal check-up at the department of obstetrics and gynecology should be made to undergo risk evaluation to ascertain their likelihood of developing hyper-coagulation complications and once the risks are stratified early, they should be closely monitored and assigned an anti-coagulation therapy that is mutually decided the obstetrician and the physician. Once the associated risks have been identified and the patients classified as low, intermediate, and high risk, decision can be taken to either halt the anti-coagulation therapy during pregnancy and resumed after the delivery has been done or resume the therapy throughout the pregnancy, delivery and puerperium. [14, 15]

Patients with acute venous thromboembolism and prosthetic heart valves regardless of which risk group they fall within should not be kept from using anti-coagulation therapy. The best possible way would be to strive and maintain the INR between 2.0 and 2.5. This way the patients' hyper-coagulation will be covered while keeping the fetal health risk to a minimum. The use of oral anti-coagulation therapy should be preferred over heparin [14] and it can be supplemented with low-dose aspirin (75 to 100 mg) daily. [1, 5, 15] The use of heparin should, however, be resumed as early as six to as six to twelve hours

after delivery as it is absolutely essential in the postpartum phase in the high risk groups because this group is at the most risk of hyper-coagulation related complications soon after delivery [16,17].

The anti-coagulation therapy can them be resumed boldly for at least six to twelve months after delivery and the INR kept between 2.5 to 3.5 [1, 5, 15] since it is probable that the risk factors for thromboembolism persist for a minimum of eight months after delivery. Simpler means of prophylaxis should also be advised. Early mobilization of the patients after caesarian section use of leg stocking yield good outcomes [18].

CONCLUSION:

Anti-coagulation therapy, despite being useful, can be a cause of grave danger to the mother and fetus and thus great care must be taken to tackle the potential teratogenic effects of anti-coagulation therapy and deal with the dosing intricacies around the time of labor. A combined effort of the hematologist and gynecologist/obstetrician is advised to yield best outcomes for the mother and fetus. Futher research also needs to be conducted to explore the matter at greater length.

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