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Gestation age at the diagnosis of threatened preterm labour and the success of atosiban

Abstract

Objective: To assess the effect of gestational age at diagnosis or threatened preterm labour (TPL) on the success of Tocolytic using Atosiban (i.e. prolongation of pregnancy).

Methodology: A retrospective observational study the pregnant women admitted to the hospital with threatened preterm labour, and who received Atosiban as a tocolytic in the period 1st January 2015 till 31st December 2015 and the follow up till the timing of their delivery. Data were using an online data collecting system [Cerner; version 12.4.0 (441592)-2016 Citrix Systems, Inc]. After defining inclusion criteria; we created two groups Very Early Preterm (24 to <32 weeks) and Early Preterm (32-34 weeks) and Deferent variables were studied among the two groups. The data were kept anonymously in an Excel sheet [(Microsoft Office -2016]. Statistical analysis was done using Wizard Pro (version 1.9.26). A P-value of less than 0.05 was considered statistically significant.

Results: Total of 84 cases was included during the study period. 47.6% and 52.4% belong to the Very Early Preterm (VEPT) and the Early Preterm (EPT)group, respectively. Mean maternal age (27.8±1.4 weeks and 27.0±1.6 week for VEPT and EPT respectively (p-value 0.43), same for gravidity (p-value 0.88) with a median of 2 each. Median gestation age at diagnosis of PTL was 29.2 and 33 weeks, respectively (p-value <0.001). Median cervical dilation at diagnosis was 2 cm for each (p-value 0.53). Median Duration Atosiban Administration was 48 and 39.5 hours for VEPT and EPT, respectively (p-value 0.53). The Median Interval between Atosiban Discontinuation & Delivery was 16 and 16.5 days (p-value 0.71). The median gestation age at delivery was 32 and 36 weeks respectively (p-value <0.001)

Conclusion: Our study revealed that indifference that gestational age can do to influence the success of the Atusiban in prolonging the pregnancy. Preventing Preterm labour shall be an outmost goal to achieve.

Keywords: gestational age, preterm labour, early preterm, maternal age

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Abbreviations: VEPT, very early preterm; TPL, threatened preterm labour

Introduction

An estimated 15 million babies are born too early every year. That is more than 1 in 10 babies. Approximately 1 million children die each year due to complications of preterm birth.[1] Preterm infants are particularly vulnerable to complications due to impaired respiration, difficulty in feeding, poor body temperature regulation and high risk of infection.[2] The upper limit for preterm labor is universally defined all over the world as childbirth at less than 37 weeks of pregnancy, but the lower limit is set at different gestational ages in different countries. Many developed countries and regions have set 20 or 24 weeks of pregnancy as the lower limit.[1] As for our hospital; we adapt 24 weeks as the cut off for viability. Preterm delivery (birth before 37 weeks' gestation) is further delineated into very early preterm (before 32 weeks), early preterm (32 0/7 to 33 6/7weeks), and late preterm (34 0/7 to 36 6/7 weeks).[1–4]

The diagnosis of preterm labor generally is based on clinical criteria of regular uterine contractions accompanied by a change in cervical dilation, effacement, or both, or initial presentation with regular contractions and cervical dilation of at least 2 cm.[1] Tocolytic therapy may provide short-term prolongation of pregnancy, enabling the administration of antenatal corticosteroids and magnesium sulfate for neuroprotection, as well as transport, if indicated, to a tertiary facility.[5] So far Atosiban is the only tocolytic that has demonstrated superiority as maintenance therapy over placebo in prolonging pregnancy.[1] Atosiban is the primary tocolytic therapy for threatened preterm labour in our institute. In the absence of contraindications, it is used mainly to prolong pregnancy enough to allow for steroids administration.

Since gestational age is quite a crucial factor in the neonatal outcome, hence all the efforts opt to reduce the likelihood of preterm labour in general; but of utmost importance is to reduce the incidence of very early-term labour. In our research, we aim to study the effectiveness of Atosiban tocolytic in Very early preterm and Early preterm groups and look at the length of pregnancy prolongation and timing of delivery and the effects of other variables on these effects. As a secondary objective, we look at different variables among the two groups that might influence the response to the Atosiban; hence increase the lowlihood of delivery despite tocolytic.

Methodology

A retrospective observational study of the pregnant patient presented to our hospital with threatened preterm labour (TPL) and received Atosiban as tocolysis over one year (January to End of December 2015). Data were collected from the hospital online medical record system [Cerner; version 12.4.0 (441592)-2016 Citrix

Systems, Inc]. These include patient's biodata, singleton or multiple gestations, clinical information at presentation (cervical dilation, and effacements), duration of Atosiban, and gestational age at delivery. We included all pregnant women with reproductive age with a gestational age between 24 weeks and 34 weeks, with the cervical dilation of less than 4 cm. Patients presented with vaginal bleeding, foetal distress, foetal anomalies, or signs of intrauterine infections; were excluded.

Atosiban dose was according to the recommended doses and duration as of the product pamphlet, which was adapted in our local guide. The duration was primely for 48 hours. No further therapy was given beyond 48 hours; as well as the tocolysis was stopped as the progression to 5 cm or more. The primary outcome was to assess the effect of gestational age at TPL on the success of Tocolytic using Atosiban. We created two groups; Very Early Preterm (24 to <32 weeks) and Early Preterm (32-34 weeks) to study the statistical deference taking deferent variables, as well the effectiveness of Atosiban in prolongation of pregnancy. The anonymous data were kept in an Excel sheet [(Microsoft Office -2016]. The statistical analysis was done using Wizard Pro (version 1.9.26), and the statically differences were calculated using the t-test for the means and the Mann-Whitney test for the medians. A P-value of less than 0.05 was considered statistically significant. Since this was a quality project audit; Ethical approval was not required, and all data were unidentified.

Results

Total of 84 cases was studied during the study period. Two mean groups were created [24-<32 and 32-34 weeks], shown in the following graph. Mean Maternal age (27,4±4,77 years) (Figure 1 & Table 1). There is an increment in the rate of PL as the age goes up that could be explained by mean maternal age of 27 years and the following graph of parity could help understand that as half of our cohort are primigravida of whom 45% are above 25 years (Figure 2). Median Gestational age at diagnosis of threatened preterm labour was 31.3 Weeks. The Median cervical dilation was 2 cm, and the Median effacement was 70%. The Median duration of Atosiban administration was 43.6 hours (Figure 3). The median Interval between Atosiban Discontinuation & Delivery was 16 days, and the median gestational at delivery was 34.1 weeks (Figures 4&5).[6–8]

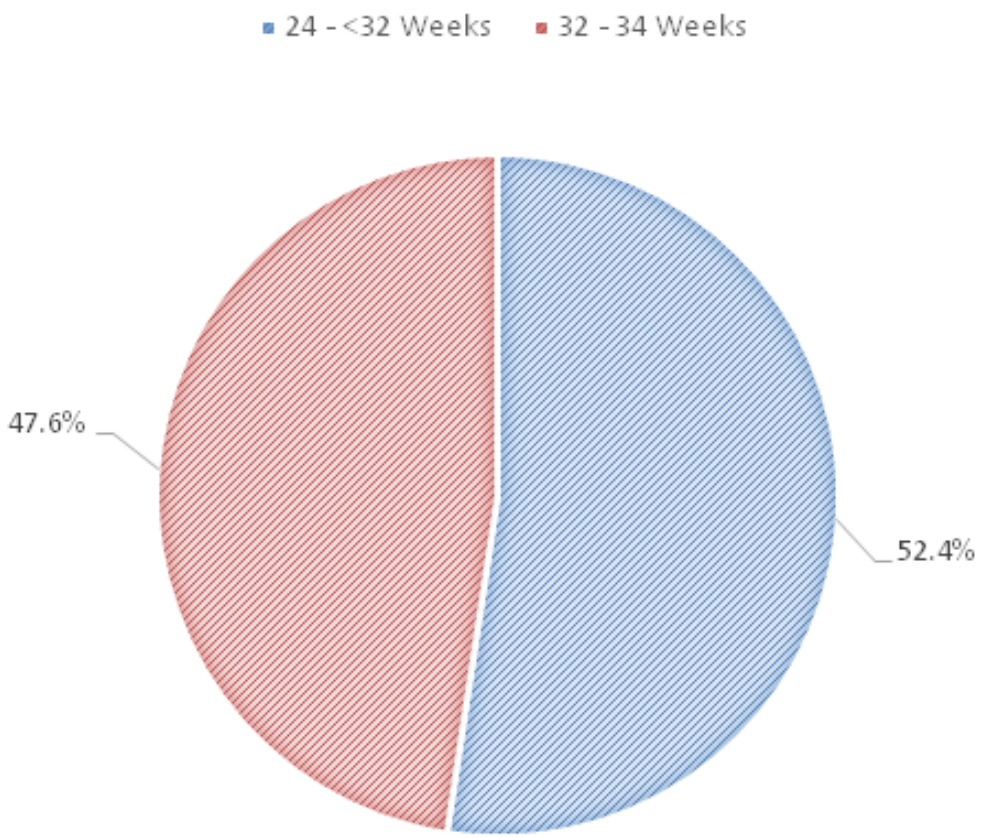

Figure 1 Gestational age groups.

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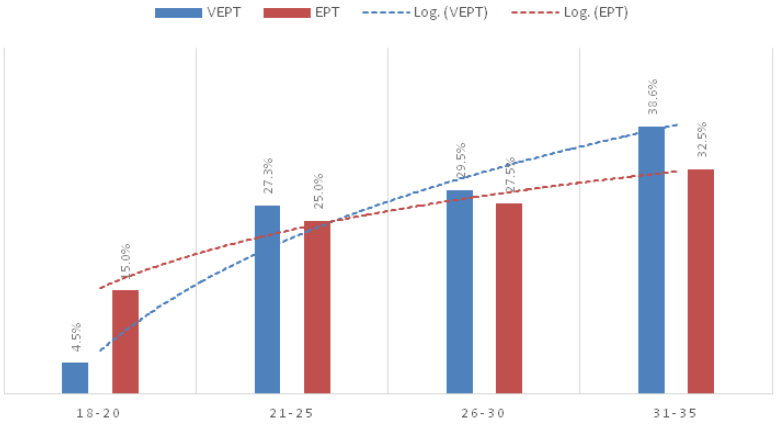

Figure 2 Maternal Age Subgroups [p value 0.44].

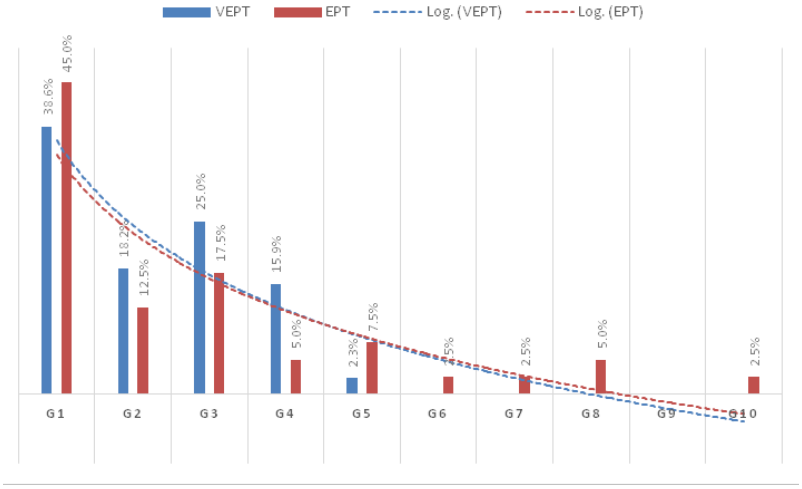

Figure 3 Garvidity [P value 0.25].

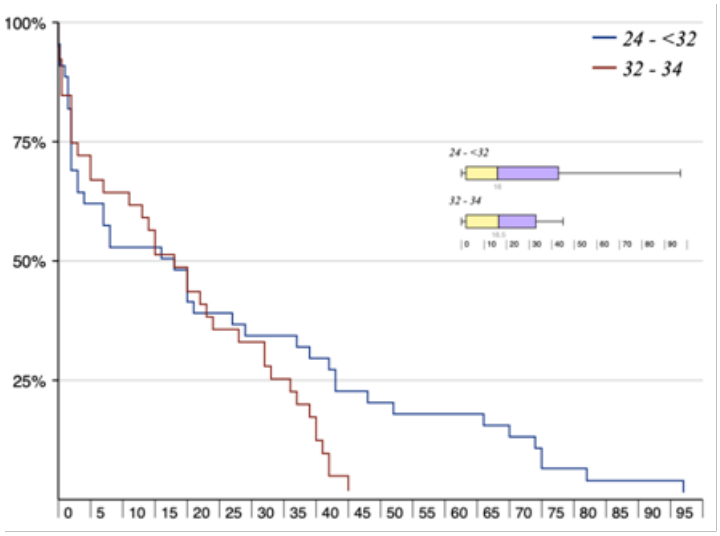

Figure 4 Kaplan–Meier estimator for the interval (days) between diagnosis/atosiban administration and delivery [log rank. p value 0.09].

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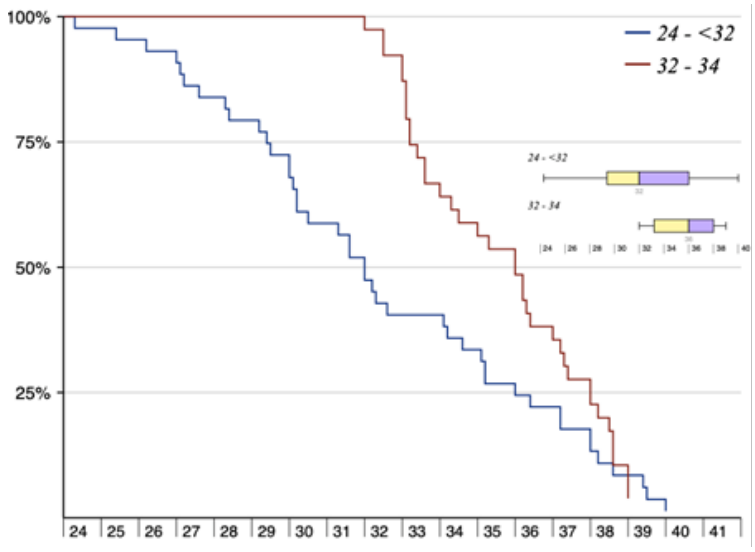

Figure 5 Kaplan–Meier estimator forthe gestational age at delivery [logrank, p value 0.043].

Table 1 study variable among the two groups (n=84)

Variable	24-<32 Weeks	32-34 Weeks	P value	Significance
	(n=44)	(n=40)		
Maternal age (Mean±SD) years	27.8±1.4	27.0±1.6	0.43	NS
Gravida (Median)	2	2	0.88	NS
Gestational age at TPL diagnosis (Median-Weeks)	29.2	33	<0.001	S (Obviously)
Multiple pregnancy (%)	27.30%	10%	0.044	S
Cervical dilation at TPL diagnosis (Median-cm)	2	2	0.53	NS
Median Effacement at TPL diagnosis (Median-%)	70%	80%	0.15	NS
Duration atosiban administration (Median-Hours)	48	39.5	0.53	NS
Interval between atosiban discontinuation & delivery (Median-Days)	16	16.5	0.71	NS
Gestational age at delivery (Median-Weeks)	32	36	<0.001	S

Discussion

Even though the neonatology care is improving, yet the aim is not only to reduce the neonatal complications; but it goes beyond the clinical domain to touch a broad arena; including reducing the cost of the NICU care, enhance the mother-baby bond and by reducing hospitalization. Furthermore, the psychological impact of very early preterm and its complication on the mother and the family, which indeed is a forgotten dilemma. All of that push for a more proactive approach to preventing preterm labour or at least to prolong pregnancy as far as possible. The obstetricians also play a relevant role, as implementation of certain procedures in women in preterm labor (PTL) can significantly affect the prognosis for the premature neonate.[1] Atosiban is as effective for prolonging pregnancy as beta sympathomimetics and nifedipine, has the lowest rate of maternal adverse effects, but also the highest drug costs.[2] The Royal College of Obstetricians and Gynecologists have recommended considering Atosiban as a first-line tocolytic agent based on the result of many studies.[1,2] The advantage of the Atosiban, in comparison to other "ubiquitously" effective tocolytics is the primarily uterus-specific effect without a significant influence on the cardiovascular system, the CNS, the kidney and the lung as well as without negative metabolic effects.[9] With low placental passage of 10–12%, no relevant adverse effects on the foetus/child are known, even after a 2-year observation period.[1]

In our institute, Atosiban is the primary tocolytic agent mainly to give time for steroids administration, especially in the case of very

early and early preterm labour, providing no contraindication. In a recent systematic review, Ali et al.,[13] showed that there is no significant difference between Atosiban and nifedipine regarding prolongation of pregnancy for 48 hours or more or 7 days of more. However, Atosiban resulted in fewer maternal side-effects than did nifedipine.[1] Of interest is a prospective, randomised study from Germany on 105 pregnant women between 24+0 to 33+6 weeks of pregnancy in which the pulsatile application of fenoterol was compared to Atosiban at a standard dosage. This revealed no significant differences with regard to prolongation of pregnancy by 48 hours (79.8 vs. 86.3%) and by 7 days (66.7 vs. 78.4%).[1] Our study, on the other hand, showed that gestational age at the diagnosis of preterm labour did not influence the effect of Atosiban; hence the length of pregnancy did not defer significantly among the two groups of our cohort. The limitations include; the retrospective nature of the research, the small number of the cases to compare, and the limited information about patients variables (comorbidities, the presence of infection (e.g.Group B Strept) as well as neonatal complications details.[10–14]

Conclusion

Our study revealed that indifference that gestational age can do to influence the success of the Atusiban in prolonging the pregnancy; a notion that highlights complexed pathognomonic of preterm labour and not simplified it be suppressing the contractions. Health professionals, stakeholders and the health care institutions need to ignite their efforts to prevent Preterm labour and make that as an outmost goal to achieve.

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None.

Conflicts of interest

No conflicts to declare.

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References

1. Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of under-5 mortality in 2000–15: an updated systematic analysis with implications for the Sustainable Development Goals. *Lancet*. 2016;388(10063):3027–3035.
2. Escobar GJ, McCormick MC, Zupancic JA, et al. Unstudied infants: outcomes of moderately premature infants in the neonatal intensive care unit. *Arch Dis Child Fetal Neonatal Ed.* 2006;91(4):F238–244.
3. Kinney HC. The near-term (late preterm) human brain and risk for periventricular leukomalacia: a review. *Semin Perinatol.* 2006;30(2):81–88.
4. The Subspecialty Group of Obstetrics, Obstetrics & Gynecology Society, Chinese Medical Association. Clinical diagnosis and treatment guidelines for preterm labor. *Chinese Journal of Obstetrics and Gynecology* 2014. p. 481–485.
5. https://www.who.int/news-room/fact-sheets/detail/preterm-birth.
6. Practice Bulletin No. 171: Management of Preterm Labor. *Obstetrics & Gynecology*. 2016;128(4):e155–e164.
7. Valenzuela GJ, Sanchez-Ramos L, Romero R, et al. Maintenance treatment of preterm labor with the oxytocin antagonist atosiban. The Atosiban PTL-098 Study Group. *Am J Obstet Gynecol.* 2000;182:1184–1190.
8. Locatelli Anna, Sara Consonni, Alessandro Ghidini. Preterm Labor. *Obstetrics and Gynecology Clinics of North America.* 2015;42(2):255–274.
9. Rath Werner, Sven Kehl. Acute Tocolysis - a Critical Analysis of Evidence-Based Data. *Geburtshilfe und Frauenheilkunde.* 2018;78(12):1245–1255.
10. MeloniA, Melis M, Alba E, et al. Medical therapy in the management of preterm birth. *J Matern Fetal Neonatal Med.* 2009;22(Suppl.3):72–76.
11. Usta IM, Khalil A, Nassar AH. Oxytocin antagonists for the management of preterm birth: A review. *Am J Perinatol*. 2011;28:449.
12. Flenady V, Reinebrant HE, Lieley HG, et al. Oxytocin receptor antagonists for inhibiting preterm labour. *Cochrane Database Syst Rev.* 2014;6:CD004452.
13. Ali AA, Sayed AK, El Sherif L, et al. Systematic review and meta analysis of randomized controlled trials of atosiban versus nifedipine for inhibition of preterm labor. *Int J Gynecol Obstet.* 2019;145:139–148.
14. Nonnenmacher A, Hopp H, Dudenhausen J. Effectiveness and safety of Atosiban vs. Pulsatile application of fenoterol in the treatment of premature labor. *Z birth neonatal.* 2009;213:201–206.