

Risk Assessment by Stratification of Raised sFlt-1/PLGF Ratio in Suspected Pre-Eclampsia

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Objective:

Pre-eclampsia (PE) is characterized by abnormally low Placental Growth factor (PLGF), a protein involved in placental angiogenesis and an increase in soluble FMS-like tyrosine kinase-1 (sFlt-1) which disable PLGF. sFlt-1/PLGF ratio is widely used to predict preeclampsia and recommended by NICE. Our preliminary study has suggested that raised PLGF ratio is associated with adverse maternal and fetal outcome. The objective of this study is to assess whether further risk stratification of those with raised PLGF ratio predict the severity of maternal and fetal adverse outcomes, in context of a district hospital with resource constraints.

Design:

A prospective observational study on all pregnant mothers with elevated PLGF ratio test >85 . This cohort was classified as Category A with results 85-110, Category B-111-200, and Category C-201 and above. Analysis was performed on impact on maternal adverse outcomes including development of preeclampsia, eclamptic fits, Caesarean-section rate, adverse fetal events and neonatal admission in the 3 different categories.

Method:

Study included consecutive pregnant mothers between 20+0/40 and 36+6/40 who had sFlt-1/PLGF ratio more >85 from Aug 2020 till Dec 2022. Participants were identified from maternity-triage results register in two hospital sites and cross-checked with laboratory data. Clinical information was obtained from Euro king and maternity-records. Final data was analysed using Excel spread sheet..

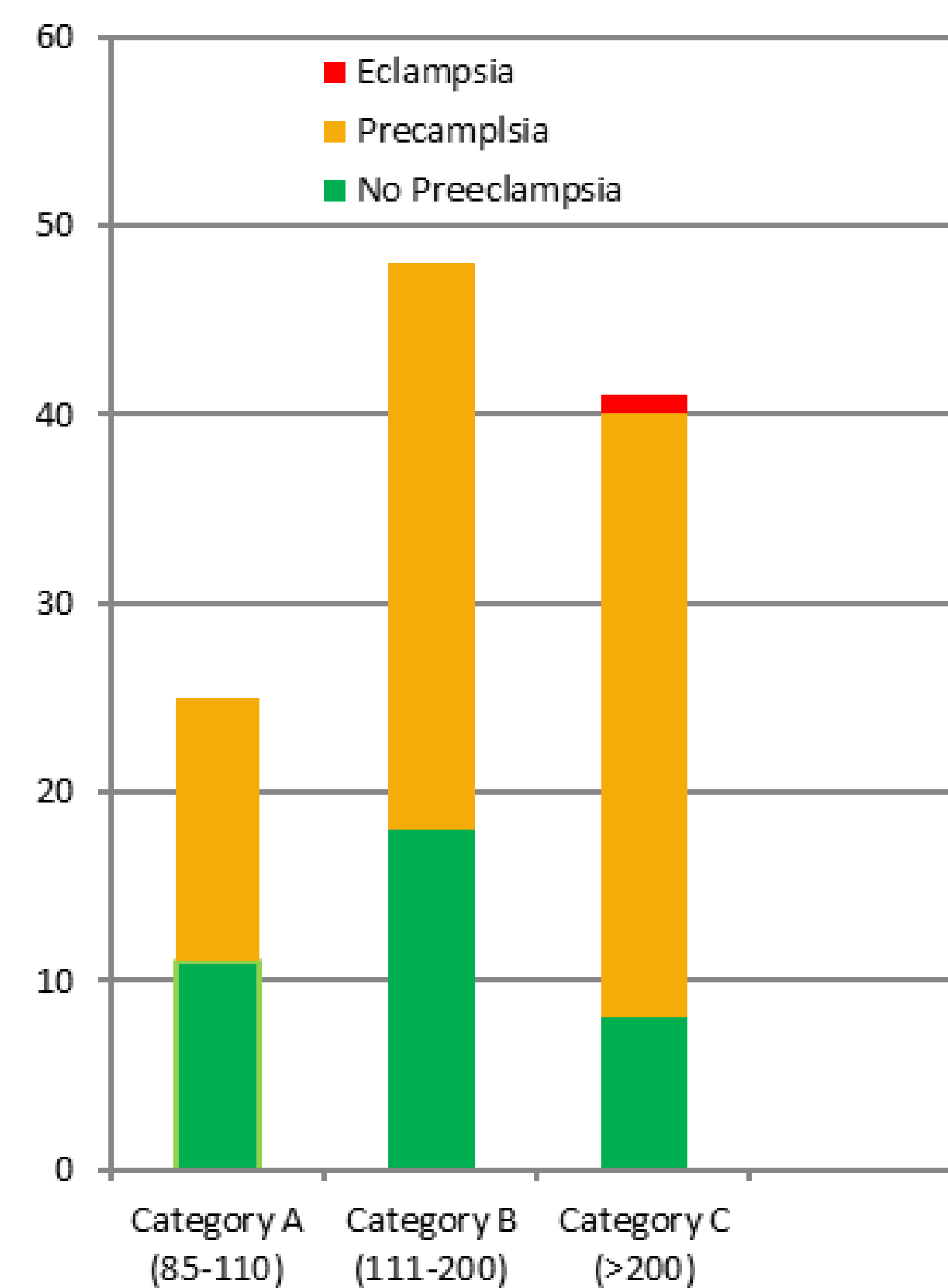


Figure A: Demonstrating number of patients with No preeclampsia, Pre-eclampsia and Eclampsia in all 3 categories

Statistics:

- ❖ 113 women had raised PLGF ratio test and included in the study
- 25(22.2%) was Category-A (85-110)
- 48(42.4%) was Category-B (111-200)
- 40(35.4%) Category-C(≥ 201)
- ❖ 56% for Category A, 25% for Category B, and 65% from Category C were Primigravida,
- ❖ Mean Age of subjects was 32.5, 31.7 and 29 years for Cat A, B and C respectively.
- ❖ Mean BMI 33, 28, and 30 for category A, B, and C respectively.

Results:

- ❖ 56% (14/25) in Category-A, 62.5% (30/48) in Category-B, and 80% (32/40) in Category-C developed Preeclampsia.
- ❖ The mean time from high risk result to development of pre eclampsia was 25 days, 22 days and 14 days respectively for Category A, B & C.
- ❖ One lady with significantly raised ratio in Category-C developed eclamptic fits.
- ❖ 71% of Category C had emergency Caesarean section, 55% for Category B and only 48% for Category A
- ❖ The incidence of Small for Gestational age was 28% (7/25) in Category-A, 40% in Category B, and 43% in Category-C.
- ❖ Admission to NICU was 56% (14/25), 41.6% (20/48) and 62.5% (25/40) in Category A, B, C respectively.
- ❖ Of the 3 pregnancies complicated with stillbirth, 2 had high risk results (98-730)

Conclusions:

Raised PLGF ratio tests is associated with increased risk of Preeclampsia. Our preliminary-study is the first of the kind where raised PLGF test is further stratified to analyse severity of disease and impact on maternal and neonatal outcome. Our study suggests that stratifying pregnancies with raised PLGF ratio is a useful marker not only to predict adverse maternal, fetal, neonatal outcome in women with preeclampsia but also to predict the disease severity. In women with high results, we observed an increased rate of significant adverse outcomes such as eclamptic fits, severe preeclampsia, emergency LSCS rate, and adverse fetal outcomes such as Small for gestational age babies, NICU admission, and stillbirth. Also, the higher the result the sooner the risk of developing preeclampsia. This risk stratification hence may be useful for counselling mothers with raised PLGF ratio test and prepare them for delivery and allocate resources to optimise maternal and fetal outcome. Larger study and analysis are needed to confirm the above findings and association to adverse perinatal and maternal outcome. Our study also provides preliminary evidence for extending the use of PLGF ratio test up to 36+6 weeks gestation.

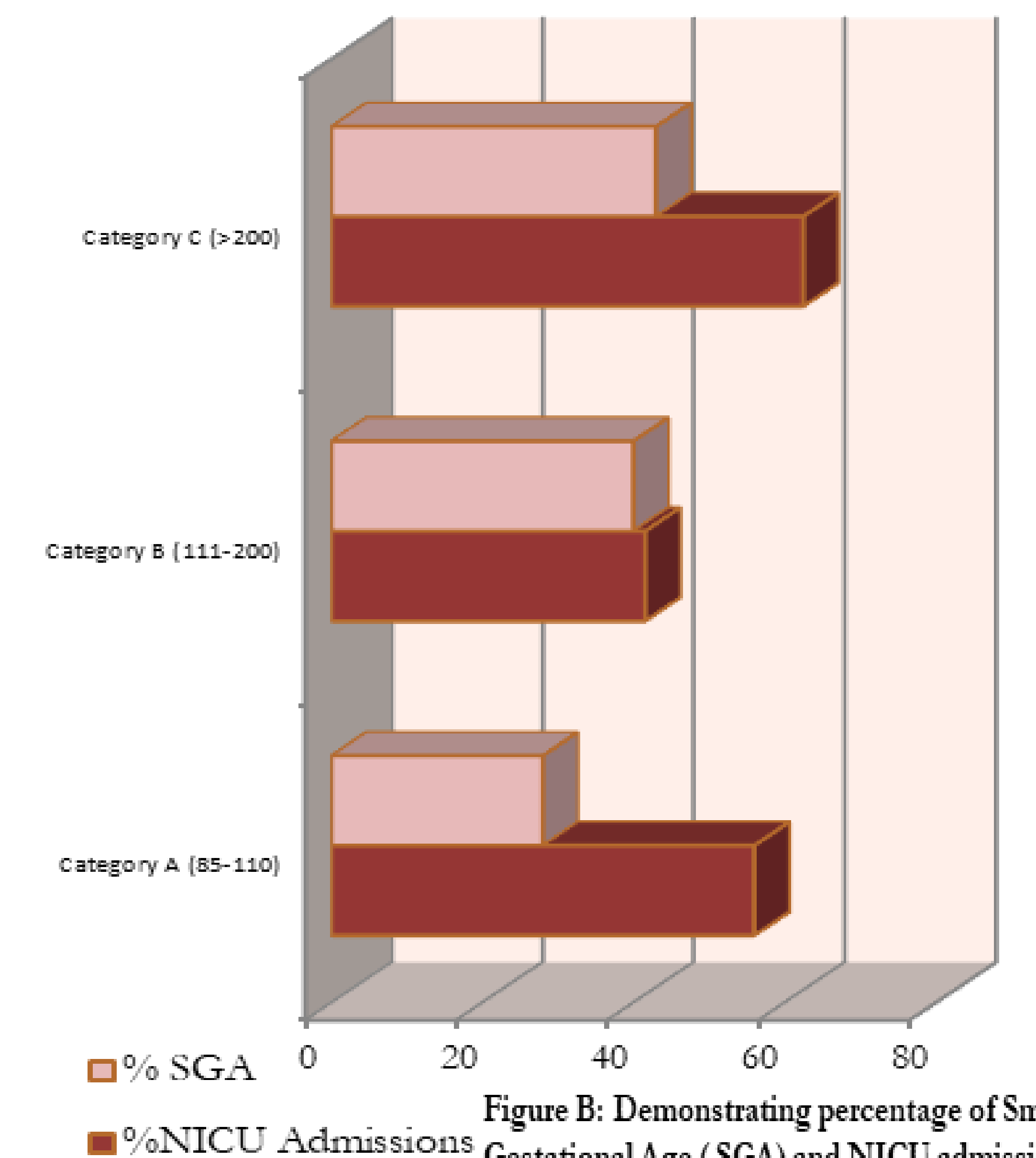


Figure B: Demonstrating percentage of Small for Gestational Age (SGA) and NICU admissions in all 3 categories