

## **Clinical effectiveness of routine first-trimester combined screening for preeclampsia**

Mendoza M, Garcia-Manau P, Bonacina E, Serrano B, Caamiña S, Ricart M, Lopez-Quesada E, Vives A, Lopez M, Pintado E, Maroto A, Catalan S, Dalmau M, Del Barco E, Hernandez A, Miserachs M, San Jose M, Armengol-Alsina M, Carreras E  
Hospital Vall d'Hebron, BARCELONA, Spain

### **Objective**

The aim of this study was to assess the clinical effectiveness of the routine first-trimester combined screening for preeclampsia with placental growth factor after being implemented in 8 maternity hospitals in Spain.

### **Methods**

This was a multicenter cohort study. Participants in the reference group were prospectively recruited between October 2015 and September 2017. Participants in the study group were retrospectively recruited between March 2019 and May 2021. Preeclampsia risk was calculated between 11<sup>+0</sup> and 13<sup>+6</sup> weeks using an algorithm combining maternal characteristics, mean arterial pressure, uterine arteries pulsatility index, pregnancy-associated plasma protein-A and placental growth factor. Patients with a risk greater than 1/170 were prescribed daily salicylic acid 150mg until 36 weeks. Patients in the reference group did not receive salicylic acid during gestation.

### **Results**

Preterm preeclampsia occurred in 30 of 2,641 patients (1.14%) in the reference group versus 54 of 10,134 patients (0.53%) in the study group (OR 0.47; 95% CI 0.30-0.73;  $p < 0.001$ ). Early-onset preeclampsia occurred in 11 patients (0.42%) in the reference group versus 15 patients (0.15%) in the study group (OR 0.35; 95% CI 0.16-0.77;  $p = 0.009$ ). In the reference group, 44 of 2,483 patients (1.77%) had a preterm small for gestational age fetus versus 89 of 8,802 patients (1.01%) in the study group (OR 0.57; 95% CI 0.40-0.82;  $p = 0.003$ ). Spontaneous preterm birth  $< 37$  weeks occurred in 104 patients (3.9%) in the reference group versus 287 (2.8%) in the study group (OR 0.72; 95% CI 0.57-0.90;  $p = 0.005$ ). Admission to intensive care unit was required in 37 patients (1.40%) in the reference group and 78 patients (0.77%) in the study group (OR 0.55; 95% CI 0.37-0.81;  $p = 0.003$ ) and the total number of days in the intensive care unit was 133 in the reference group versus 270 in the study group (OR 0.53; 95% CI 0.43-0.65;  $p < 0.001$ ). A greater treatment adherence resulted in a significant reduction in adverse outcomes, especially in cases with compliance  $\geq 90\%$ .

### **Conclusion**

Routine first-trimester screening for preeclampsia with placental growth factor can be implemented in a public healthcare system and leads to a significant reduction in preterm and early-onset preeclampsia, preterm small for gestational age, spontaneous preterm birth  $< 37$  weeks and maternal intensive care unit admission. Aspirin treatment compliance has a great impact on the effectiveness of this screening program.