



Evaluation of the relationship between gestational week and the incidence of preeclampsia

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Preeclampsia (PE) is a serious condition that affects both the mother and fetus. It is classified based on the time of onset during pregnancy; the majority of PE instances occur around or during term, although they may also develop in the earlier stages of pregnancy. The types of PE are known as “late onset (LO)” and “early onset” (EO) PE; fetal health is severely compromised in EO cases. Based on the time of onset, The International Society for the Study of Hypertension in Pregnancy (ISSHP) has defined EO-PE and LO-PE as PE occurring before and after 34 weeks gestation, respectively. However, in Japan, the EO and LO types of PE are defined as an onset time before and after 32 weeks of gestation, respectively [1]. The ISSHP classification is based on expert consensus, whereas the Japanese classification is based on previous reports of dual peaks of PE onset in Japan.

In the present study, Okuchi et al. reexamined previous reports with a more detailed design for the occurrence of dual peaks and the number of gestational weeks at which PE develops in Japan, and two critical points were revealed. Thus far, only in Japanese reports has the dual peak incidence of PE/SPE onset been reported [2]. However, in this study, dual peaks were proven to be absent at the onset of PE and severe preeclampsia (SPE) in Japanese individuals. Furthermore, the incidence of PE and SPE increases exponentially with gestational age. This was also seen in patients with gestational hypertension and PE with severe hypertension.

The risk factors for PE are variable, and changes in the epidemiology of the disease may be recognized with a

change in the type of population (Fig. 1). This could be partly because race is also a risk factor for PE, and the ratio of obese pregnant women also varies between countries. Thus, the distribution of gestational age of PE onset may differ in Japan compared to other countries. Furthermore, it is possible that the distribution of various risk factors for PE in Japan may have differed between 1995 and 2022. Therefore, the reassessment performed by Okuchi et al. is relevant and may reveal the current Japanese epidemiology even if similar results were obtained in the past [2]. Considering that maternal age also influences the onset of PE, it is possible that the epidemiology of PE onset in Japan has changed. However, health care needs to adapt to the prevailing social conditions; therefore, this study by Okuchi et al. will be crucial for updating the epidemiology of PE in Japan.

The pathophysiology of PE has been elucidated in great detail in the last two decades, as in the case of the discovery of the relationship between sFlt-1 or PlGF and PE [3–5]. Serum Flt-1 levels in women with PE are elevated compared to those in normotensive pregnant women. In addition, excessive sFlt-1 is reported to be involved in the onset of PE using animal models [3, 6]. Moreover, the removal of sFlt-1 from maternal blood by dialysis results in transient improvement of PE symptoms [7]. Therefore, sFlt-1 levels provide critical information about the pathogenesis of PE, and changes in blood sFlt-1 levels are also known to increase monotonically with gestational age [4].

However, the plasma PlGF level peaks at approximately 29–32 weeks of gestation and decreases thereafter. Therefore, theoretically, dual peaks may be associated with sFlt-1/PlGF. In this study, Okuchi et al. did not evaluate the relationship between changes in serum sFlt-1 and PlGF levels and the monotonic increase in PE incidence along with gestational age [2]. However, the evaluation of serum markers is challenging for a significant number of pregnant women due to higher costs. Furthermore, Okuchi et al.

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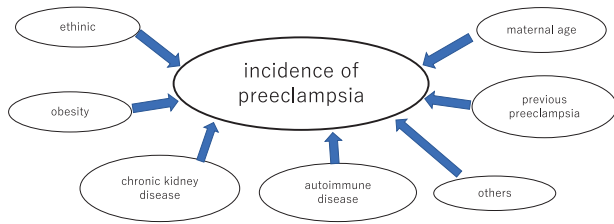


Fig. 1 Pathophysiology of Preeclampsia. Preeclampsia is multifactorial disease

recommended that additional research is needed to establish a suitable cutoff that is more appropriate from the point of view of pathology and treatment for both mothers and fetuses.

Furthermore, the incidence of PE and SPE also increased exponentially with gestational age. A correlation between monotonical increases and gestational age is known; however, an exponential increase is an interesting finding [2]. Furthermore, based on Okuchi et al.'s research, it will be interesting to observe the increasing trend in the incidence rate for each risk factor in the future, including existing diseases such as PE, SPE, and antiphospholipid antibody syndrome.

Compliance with ethical standards

Conflict of interest The author declares no competing interests.

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