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CORRELATION OF VASOPRESSIN SECRETION IN GASTRIC DYSRHYTHMIA IN PREGNANT WOMEN WITH HYPEREMESIS GRAVIDARUM: A SYSTEMATIC LITERATURE REVIEW

Erald Giovanny Hasiholan Simatupang*[1], Aulia Rahmi[2], Dhea Ivanka[3]
[1] Siloam Hospitals Manado, Manado, Indonesia
[2,3] Fakultas Kedokteran Universitas Palangka Raya
e-mail co Author: eraldghs@gmail.com

ABSTRAK

Hiperemesis gravidarum (HEG) adalah kondisi mual, muntah yang berlebihan pada kehamilan dan dapat meningkatkan kebutuhan perawatan di rumah sakit akibat dehidrasi yang diderita. Mual muntah pada kehamilan adalah keluhan yang umum ditemui pada wanita hamil di trimester awal kehamilan. Kondisi mual muntah ini diperkirakan terjadi pada 80% wanita hamil dan sekitar 0,3- 3,6% merupakan HEG. Sekitar 50- 60% kehamilan disertai dengan mual dan muntah, dari 360 wanita hamil, 2% diantaranya mengalami mual dan muntah dipagi hari dan sekitar 80% mengalami mual dan muntah sepanjang hari, kondisi ini biasanya bertahan dan mencapai puncak pada usia kehamilan 9 minggu. Peningkatan fisiologis dapat menyebabkan disritmia lambung dan mual, masih belum jelas apakah hal ini terjadi dalam keadaan fisiologis normal. Hubungan temporal yang tepat antara vasopresin, disritmia lambung dan mual harus dipelajari untuk memberi kita wawasan tentang patogenesis sindrom mual akut dan kronis. Selain vasopresin, faktor pelepas kortikotropin (CRF) telah ditetapkan sebagai mediator otak-usus dalam fungsi usus depan dan dapat menstimulasi saraf motorik penghambat di nukleus motorik dorsal vagus, menyebabkan pengosongan lambung tertunda dan mual. Mual dan muntah yang berlebihan dan terjadi sepanjang hari sampai mengganggu pekerjaan sehari- hari dan menyebabkan dehidrasi disebut sebagi hiperemesis gravidarum.

Kata Kunci : Heg, Vasopressin, Kehamilan, Disritmia Gaster

ABSTRACT

Hyperemesis gravidarum (HEG) is a condition of excessive nausea and vomiting in pregnancy and can increase the need for hospitalization due to dehydration. Nausea and vomiting in pregnancy is a common complaint in pregnant women in the early trimester of pregnancy. This condition of nausea and vomiting is estimated to occur in 80% of pregnant women and around 0.3-3.6% are HEG. Approximately 50-60% of pregnancies are accompanied by nausea and vomiting, out of 360 pregnant women, 2% of them experience

morning sickness and about 80% experience nausea and vomiting throughout the day. This condition usually persists and reaches its peak at 9 weeks of gestation. Physiological elevations may cause gastric dysrhythmias and nausea, it is unclear whether this occurs under normal physiological conditions. The precise temporal relationship between vasopressin, gastric dysrhythmias and nausea should be studied to give us insight into the pathogenesis of acute and chronic nausea syndromes. In addition to vasopressin, corticotropin releasing factor (CRF) has been established as a gut-brain mediator in foregut function and can stimulate inhibitory motor nerves in the dorsal motor nucleus of the vagus, causing delayed gastric emptying and nausea. Nausea and vomiting that is excessive and occurs throughout the day to the point of interfering with daily work and causing dehydration is known as hyperemesis gravidarum.

Kata Kunci : Heg, Vasopressin, Pregnancy, Gaster Dyshrythmia

INTRODUCTION

Hyperemesis gravidarum (HEG) is a condition of excessive nausea and vomiting in pregnancy and can increase the need for hospitalization due to dehydration. Nausea and vomiting of pregnancy (NVP) is a common complaint found in pregnant women in the early trimester of pregnancy (Khan, 2019). Generally it begins to occur at around 6-8 weeks of gestation and can last until 16-20 weeks of gestation (Fejzo et al., 2019). This condition of nausea and vomiting is estimated to occur in 80% of pregnant women and around 0.3-3.6% are HEG. This condition is an indication for treatment in hospital with an average treatment of around 3-4 days (Royal College of Obstetricians and Gynecologists, 2016). Until now, the exact cause of HEG is not known and there is no specific consensus as a diagnostic criterion, but HEG generally refers to a spectrum of conditions with severe nausea and vomiting in pregnancy (Widayana et al., 2013; Jennings & Krywko, 2021).

In pregnant women, conditions of nausea and vomiting often occur and these conditions can be found ranging from mild to severe. The most severe condition is referred to as HEG which is characterized by dehydration, electrolyte and metabolic imbalances and nutritional deficiencies that require hospital treatment (Gabra et al., 2019). The incidence of HEG is found mostly in nulliparous or first-time pregnant women, a history of previous pregnancies suffering from HEG, female fetuses, trophoblastic disease, multiple pregnancies, fetal chromosomal abnormalities, central nervous system malformations, and women under 25 years of age. Women who have a sister suffering from HEG have a 17 times the risk of suffering from HEG (Khan, 2019). The prevalence of HEG is estimated to be between 0.3-3% of all pregnancies and this varies in different populations. Throughout the world, Asian and Middle Eastern women are the ethnicities that report the highest incidence of HEG, estimated at around 10% (London et al., 2017). In a study conducted by Dermayasa et al. (2017) at Sanglah General Hospital Denpasar, pregnant women with HEG based on age were highest in pregnant women aged between 20-35 years and nulliparous (Putri et al, 2019). The exact cause of HEG is unknown and is thought to involve multifactorial

aspects (London et al., 2017; Jennings & Krywko, 2021). Until now, it is believed that the incidence of HEG is a combination of hormonal, immunological, genetic and psychosocial factors, where the hormonal theory is considered to have the greatest role. Hormones (human chorionic gonadotrophin/hCG) which increase in early pregnancy, especially in twin pregnancies and trophoblastic disease, influence the incidence of HEG (Khan, 2019). Then another theory regarding hormones, namely high serum levels of estrogen, progesterone and serotonin in early pregnancy, is the pathogenesis of HEG (Gabra et al., 2019). The genetic role associated with an increase in the incidence of HEG, namely the Growth and Differentiation Factor 15 (GDF15) and Insulin-like Growth Factor binding protein 7 (IGFBP7) genes, is believed to play a role (Dean et al., 2019; Khan, 2019). In some serious cases it may be related to psychological factors although the causal relationship of this still needs to be further proven (Gabra et al., 2019).

METHODS

This study used a systematic literature review (SLR) method to collect, filter, and analyze data from various relevant literature sources regarding the correlation of vasopressin secretion in gastric dysrhythmias in women with hyperemesis gravidarum. The SLR approach was chosen because it provides the opportunity to identify, combine, and synthesize diverse research results, so as to provide a thorough and in-depth overview of the research topic.

The databases used in this study include trusted and relevant scientific databases such as PubMed, ScienceDirect, Google Scholar, and official databases of health organizations such as the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). The selection of this database was carried out to ensure that the data used in this research had high quality and accuracy.

Inclusion and exclusion criteria were established to identify studies relevant to this research topic. Inclusion criteria included focusing on the correlation of vasopressin secretion with gastric dysrhythmias in women with hyperemesis gravidarum, as well as studies published in Indonesian or English within the last five years. Meanwhile, exclusion criteria included studies that were irrelevant to the research topic, did not have sufficient data, or focused on other types of risk factors.

A literature search process was carried out using relevant keywords, such as "vasopressin secretion for hyperemesis gravidarum", "gastric dysrhythmias for hyperemesis gravidarum", "vasopressin secretion for women", and so on. A literature search was conducted systematically and comprehensively to ensure that all relevant studies could be identified.

After searching, a selection process was carried out by looking at the title and abstract of the study to ensure that the study met the inclusion criteria. Studies that meet the inclusion criteria will then be completely retrieved for further evaluation.

The data analysis procedure was carried out by collecting data from relevant studies and presenting it in the form of tables or summaries of direct and indirect quotations. Data from various sources will be combined and synthesized to present

consistent and comprehensive findings regarding the correlation of vasopressin secretion in gastric dysrhythmias in women with hyperemesis gravidarum.

By using a systematic literature review method, it is hoped that this study can provide accurate, thorough, and clear results regarding the correlation of vasopressin secretion in gastric dysrhythmias in women with hyperemesis gravidarum. This method also ensures that all relevant studies have been considered objectively to provide a comprehensive view of vasopressin secretion as a risk factor for hyperemesis gravidarum.

RESULTS AND DISCUSSION

Pregnancy as a process that occurs between the fusion of sperm and ovum cells so that conception occurs until the birth of the fetus, the normal duration of pregnancy is 280 days or 40 weeks counting from the first last menstruation (HPHT). (Arantika and Fatimah; 2019).

During pregnancy, many changes usually occur, including hormonal changes which can result in anatomical changes in pregnant women. One of the hormonal changes that pregnant women will experience is an imbalance in the performance of the hormones progesterone, estrogen and also the hormone HCG (Human Chorionic Gonadotropin). And one of the effects of the HCG hormone is nausea and vomiting (emesis gravidarum) which can also lead to excessive nausea and vomiting (hyperemesis gravidarum). (Catur and Ida; 2021).

Nausea and vomiting is common in early pregnancy (trimester I). Nausea and vomiting usually occurs in the morning, because it is also known as morning sickness, but it does not rule out the possibility of occurring during the day and at night. Approximately 50-60% of pregnancies are accompanied by nausea and vomiting, out of 360 pregnant women, 2% of them experience morning sickness and about 80% experience nausea and vomiting throughout the day. This condition usually persists and reaches its peak at 9 weeks of gestation. However, around 20% of cases of nausea and vomiting will continue until birth. Nausea and vomiting that is excessive and occurs throughout the day to the point where it interferes with daily work and causes dehydration is known as hyperemesis gravidarum (Lismawati; 2022).

The etiology of hyperemesis gravidarum is not known with certainty, there is no evidence that this disease is caused by toxic factors, nor are biochemical abnormalities found, but are thought to be influenced by various factors, namely predisposing factors such as primigravidas, organic and psychological factors (Arisdiani, T., 2020).

Physiological elevations may cause gastric dysrhythmias and nausea, it is unclear whether this occurs under normal physiological conditions. The precise temporal relationship between vasopressin, gastric dysrhythmias and nausea should be studied to give us insight into the pathogenesis of acute and chronic nausea syndromes. In addition to vasopressin, corticotropin releasing factor (CRF) has been established as a gut-brain mediator in foregut function and can stimulate inhibitory motor nerves in the dorsal motor nucleus of the vagus, causing delayed gastric

emptying and nausea. (Singh, 2016). Many clinical disorders, such as HEG, may be associated with gastric dysrhythmias, and slow-wave gastric arrhythmias are common with early morning sickness, affecting 50–70% of pregnant women. The abnormal gastric slow-wave electrical rhythm will definitely affect peristalsis and gastric emptying, causing nausea and vomiting.

SUMMARY

Hyperemia gravidarum (HEG) is a condition of excessive nausea and vomiting in pregnancy and can increase the need for hospitalization due to dehydration. Nausea and vomiting of pregnancy (NVP) is a common complaint found in pregnant women in the early trimester of pregnancy. Physiological elevations can cause gastric dysrhythmias and nausea; it is unclear whether this occurs under normal physiological conditions. The precise temporal relationship between vasopressin, gastric dysrhythmias and nausea should be studied to give us insight into the pathogenesis of acute and chronic nausea syndromes. In addition to vasopressin, corticotropin releasing factor (CRF) has been established as a brain-gut mediator in foregut function and can stimulate inhibitory motor nerves in the dorsal motor nucleus of the vagus.

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