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The Impact of Hormones and Migraine Headache in Women's Life – A short communication

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Migraine headaches occur more frequently in women than in men. Women are more likely to get migraines for longer periods of time than males. It is a chronic neurological condition that affects between 10% and 12% of the population. Women experienced headaches more frequently, for a longer duration, and with greater severity than males. The hypothalamic hypophyseal-ovarian axis regulates women's reproductive cycles through the production of oestrogen and progesterone. Variations in these hormone levels regulate and control every aspect of life, from menstruation to pregnancy, puerperium, and menopause. The luteal or ovulatory phase is divided into the follicular or proliferative phase and the luteal or ovulatory phase. Migraine is classified into two basic types: migraine without aura and migraine with aura. Menstruation is the second most common migraine trigger after stress. During perimenopause, between 8% and 13% of migraine sufferers reported a new beginning of symptoms. Migraine can be treated successfully at any age, whether acute or preventative. Nonsteroidal anti-inflammatory medicines (NSAIDs), antiepileptic drugs topiramate and valproate, beta-blockers such as propranolol, and tricyclic antidepressants amitriptyline and nortriptyline are the most frequently suggested treatments. Migraine is a frequent occurrence in women's life. The primary cause of migraine in women is the variation of sex hormone levels during menstruation. Migraines are caused by a woman's hormone levels fluctuating throughout time.

Keywords: Migraine, hormones, Estrogen, central nervous system, menopause

Introduction

Migraines are more prevalent in females than in males. Women get migraines for a longer period of time than men. It is a devastating neurological condition that affects between 10% and 12% of the population. Migraine is a chronic pain syndrome marked by intense throbbing headaches, photophobia, phonophobia, and gastrointestinal difficulties, all of which contribute to a diminished quality of life. Patients suffering from chronic migraine frequently exhibit emotional temperamental dysregulation and suicidal behaviour, and psychiatric disorders such as anxiety and depression are common comorbidities. Menarche, menstruation, pregnancy, and menopause, as well as the use of oral contraceptives and hormone replacement therapy (HRT), may all play a role in migraine occurrence. Migraines affect both men and women equally [1-10]. There is data that there are gender differences in migraine, with females having approximately double the prevalence rate as males. Women have a higher prevalence and severity of associated symptoms than men. Concomitant conditions were more common in female migraineurs, with psychiatric comorbidities being the most common. The putative influence of oestrogen fluctuations in females causes migraine impairment. Men and women have different physical and functional brain alterations, which might trigger migraines [11-18].

Epidemiology

Pre-pubescent migraines are more common in boys than in girls. During adolescence, girls experience migraines at a higher rate than boys. Migraine is more common in women during childhood and early adulthood, peaking at the age of 40 before gradually diminishing. Migraine was most common in women aged 25 to 55. Migraine with aura and Migraine without aura are the two types of headaches classified by the HIS classification. Migraines without aura are a common type of migraine (MWOA). Migraine is a clinical illness characterised by a set of symptoms that are all related. Around 75% of MWOA cases have been recorded globally. Migraine with aura (MWA) is a kind of migraine that includes both central neurological and headache symptoms. Females (70%) had a higher incidence of migraine than males (30%), with the highest prevalence occurring during the reproductive years (aged 25 to 40) [5, 11, 18-24].

Signs and Symptoms

Photophobia, phonophobia, nausea, vomiting, and cutaneous allodynia are all indications and symptoms that women are more likely to have. Women experienced headaches more frequently, for a longer duration, and with greater severity than males. Men and women have similar levels of pain and attack frequency. Migraine is a type of headache condition characterised by recurring episodes of headaches. Nausea, light sensitivity, and loudness are some of the side effects, which can continue for up to 72 hours. This illness affects over 15% of the global population. Migraine is a common complaint among women of all ages. Women had early experiences at a higher rate than men, with 17% having early experiences. Headaches affect approximately 6% of the population [13, 25-34].

Migraine and Women

Through the secretion of hormones such as oestrogen and progesterone, the hypothalamic-hypophyseal-ovarian axis regulates a woman's reproductive cycle. Hormone levels that control and regulate menstruation, pregnancy, puerperium, and menopause are all unique to each woman throughout her life. Menstruation lasts for 28 days on average. In contrast to the proliferative or follicular phase, the luteal or ovulatory phase is separate. The follicular phase begins with the first day of menstruation. Bleeding happens at the end of the preceding cycle as oestrogen and progesterone levels decrease. The pituitary follicular stimulating hormone (FSH) level increases somewhat during this time period, promoting the formation of many ovarian follicles. Until ovulation, only one follicle forms, increasing oestrogen levels, limiting follicle formation, and activating the hypophysis to release luteinising hormone [19, 35-42]. During the follicular cycle, progesterone levels are low except for a brief surge just before ovulation. In response to a rush of Luteinizing hormone, the mature follicle ruptures at the time of ovulation, releasing a mature egg. Following ovulation, the luteal phase begins, during which progesterone and oestrogen are secreted by the corpus luteum, a follicle. The endometrium is induced to form a dense layer of blood vessels in preparation for fertilisation. If no pregnancy occurs, the corpus luteum lasts around 14 days before degenerating, resulting in a decrease in blood oestrogen and progesterone levels, endometrial shedding, and the beginning of a new menstrual cycle[42-49].

Subtypes of migraine

Migraines are classified into two major types: without aura and with aura. Migraine without aura accounts for around 80% of instances, whereas migraine with aura accounts for approximately 20%. Migraine without aura is the type of migraine most closely associated with hormonal fluctuations, and it is the subject of this study. Perimenstrual migraine attacks happen within a five-

day period. Pure Menstrual Migraine (PMM) is a term that refers to women who experience migraine attacks only during the two days preceding the start of menstruation and on the third day of menstruation [50-61]. This relatively uncommon disease affects between 7% and 12% of migraineurs of reproductive age. In contrast to Pure Menstrual Migraine (PMM), the majority of migraineurs experience attacks throughout both perimenstrual and menstrual periods. MRM is a disorder that affects approximately half to seventy per cent of women of reproductive age. To differentiate Pure Menstrual Migraine (PMM) from Menstrually Related Migraine, perimenstrual headache bouts must have occurred during at least two of the preceding three menstruations (MRM). Non-menstrual migraines are headaches that do not occur during menstruation [46, 62-69].

Migraine and Hormones

Menstruation, second only to stress, is women's most common cause of migraine. Because women frequently assert that menstruation induces migraine episodes, a 5-day window of migraine attacks have been discovered around the start of menstruation. Clinical evidence and an experimental investigation from the 1970s corroborate this. This demonstrates that an oestrogen deficiency causes menstrual migraines during the late luteal phase. For almost 40 years, researchers have known that declining oestrogen levels increase the incidence of migraine headaches. Only a few studies have examined how menstrual cycle-specific sex hormone changes contribute to migraine symptoms [7, 12, 70-74].

Estrogen and The central nervous system

The ovaries, adipocytes, liver, adrenal glands, and breasts all produce oestrogen in non-pregnant women. The process of aromatisation is the conversion of androstenedione and testosterone to oestrogen hormones. In comparison to young women, men have lower oestrogen levels. Oestrogen plays a role in a variety of physiological and pathological processes in both men and women, including homeostasis, memory, pain processing, and reproduction. Estradiol (E2), estrone, and estriol are the main oestrogens in non-pregnant women. The most potent oestrogen is estradiol. Estrogen has three effects on the brain: peripheral oestrogen diffuses directly into the central nervous system (CNS), testosterone and androstenedione in the brain are converted by aromatases in presynaptic terminals, or oestrogen is synthesised in the brain from cholesterol. Estrogen binds to oestrogen receptors found in the nucleus and increases gene transcription and protein synthesis in the brain [75-80].

Migraine during the menopausal transition

Migraines are more prevalent among women in their twenties and thirties. During perimenopause, between 8% and 13% of migraine sufferers reported a new beginning of symptoms. Migraine is an often misunderstood illness affecting many of the general population. It is uncertain what variables impact these alterations as women proceed through menopause. Women suffering from premenstrual syndrome migraines appear to have the best postmenopausal prognosis, with complete remission occurring frequently. Endogenous oestrogen levels are decreased and stabilised. Migraines become less severe following menopause [70, 81-86].

Migraine treatment during the menopausal transition

Migraine can be handled as an acute or preventative condition at any age. Concomitant diseases and symptoms may impact therapy choices in women in the MT stage of menopause when the majority of standard migraine medicines are recommended. As part of an integrated treatment plan that includes nonpharmacologic techniques, women should be encouraged to get adequate sleep, eat regularly, exercise regularly, drink enough of water, and avoid caffeine, cigarettes, and alcohol. Breathing techniques, relaxation, and massage are examples of nonpharmacologic therapy for symptom reduction [87-91]. Non-steroidal Anti-inflammatory drugs (NSAIDs) are regularly administered for acute pain and may be used in conjunction with antiemetics if necessary.

When a patient does not have any significant cardiovascular risk factors, triptans are utilised as a first line of treatment. Treating perimenstrual migraines with NSAIDS and/or triptans is indicated as a form of mini-prevention for menstrual migraine. Women with irregular menstrual cycles are frequently unavailable to men with regular menstrual cycles. Antiepileptic medications such as topiramate and valproate, beta-blockers such as propranolol, and tricyclic antidepressants such as amitriptyline and nortriptyline are all considered safe for perimenopausal women to utilise. A novel class of monoclonal CGRP antibodies has been developed to prevent migraines. Because it is well tolerated, simple to follow, and without known serious adverse effects, it may be an attractive alternative for women in their forties and fifties. Hormone therapy (HT) has been used to treat migraines in perimenopausal women in order to counteract the effect of changing oestrogen levels [14, 92-99].

Conclusion

Migraine is a common occurrence in the lives of women. Migraines are caused by changes in a woman's sex hormone levels during menstruation. Migraine attacks are caused by fluctuations in a woman's hormone levels throughout her life. The levels of oestrogen drop twice during the menstrual cycle. After ovulation, oestrogen levels fall and then rise during the follicular phase. Women's premenopause hormone levels change during postmenopause, which might cause migraine headaches. Nonsteroidal anti-inflammatory drugs (NSAIDs), such as pain relievers, can aid, and monoclonal CGRP antibodies are being studied as a future treatment. At this time, you should expect throbbing, excruciating headaches, phonophobia, photophobia, nausea, and vomiting. It's also possible to see pain and visual disturbance in the eye. Hormonal headaches can be treated with plenty of water, an ice pack on the head, massaging the affected area, and physical activity, yoga, or meditation. The fundamental reason of these symptoms is hormonal fluctuations in every woman's life. Menstruation is a normal part of a woman's life, and it causes hormones in the body to fluctuate, resulting in migraine headaches.

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Conflict of interest

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