FEDERATION OF OBSTETRIC AND GYNAECOLOGICAL SOCIETIES OF INDIA

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TOG Times of Gynaecology™
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EDITORIAL

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CONTENTS

President's Message

From the desk of Dr. Nandita Palshetkar – President, FOGSI 2019

Hello FOGSIans,

The theme of FOGSI this year is "We for Stree". I would like to thank every FOGSIAN who has helped making every woman Safer, Stronger, and Smarter.

I would like to thank our contributors and our editorial team for their contributions towards the TOG journal. I know that we all are busy with our day-to-day work, therefore the TOGs that are released are a quick and easy way to update you with the latest evidence in the field of OBGY.

This year we ask all FOGSIANS to focus on the Stree and help make them safer, smarter, and stronger. Through various academic and social programs FOGSI aims to uplift the quality of care that is given to every woman who comes to us. And the best way to keep the quality of patient care is to update ourselves with the latest in the field of OBGY. Through these TOGs we wish to bring to you quick updates which can be easily implemented in your daily practice. I am sure that you will appreciate the effort which has gone into preparing the TOGs and find them useful in your day-to-day practice.

Wish you all a very happy reading.

Regards to all

Dr. Nandita Palshetkar

President 2019 - Federation of Obstetrics and Gynaecological Societies of India (FOGSI)

Editorial Message

Dear FOGSIans,

It gives us great pleasure to know that the Times of Gynaecology (TOG) is ready for release. The aim of this TOG is to highlight the benefit of docosahexaenoic acid supplementation in reducing the risk of preterm births and role of micronutrients in women with PMS-related somatic symptoms.

We would like to thank our readers, contributors, and editorial board for their support of the TOG journal. Their ability to generate the updates highlight their dedication towards enriching FOGSIans with these recent advances.

As busy practitioners, we rarely have time to read and update ourselves with current evidence. We hope this volume will help you to keep abreast of the latest developments and give you some valuable tips and pointers, which you can implement in your day-to-day practice.

We are sure these articles will be beneficial in your patient management and impact the lives of the women that we serve, our purpose in publishing this TOG will have been well served.

Dr. Nandita Palshetkar
Dr. Hrishikesh Pai
(Editors)

Docosahexaenoic acid supplementation during pregnancy: A potential tool to reduce the risk of preterm births

Drug focus

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Preterm birth: A major cause of neonatal morbidity and mortality

Globally, every year, about 15 million pregnancies end in preterm births[1] which is a leading cause of neonatal mortality.[2] In 2016, preterm birth was responsible for 35% of the world's 2.6 million deaths.[2] A high prevalence of premature birth is also observed in India. In a recent study, about 25.6% of the new born babies were reported to be preterm.[3]

Preterm birth is also associated with lifelong effects on neurodevelopmental functioning such as increased risk of cerebral palsy, intellectual disability, visual and hearing impairments, and an increased risk of chronic disease in adulthood.[2]

Role of omega-3 fatty acids in reducing the risk of preterm birth

One of the key components of cell membrane integrity and function is the long chain polyunsaturated fatty acids (LC-PUFA), especially, the docosahexaenoic acid (DHA).[4] Plasma levels of PUFAs are determined by dietary intake and endogenous metabolism. During pregnancy, in order to maintain high levels of DHA in the placenta and foetal bloodstream and tissues, a significant amount of DHA are transferred from maternal to fetal blood. With increasing gestational age, an exponential rise in the fetal need for DHA is observed, especially in the third trimester.[5]

A low plasma levels of maternal omega-3 fatty acids is reported to increase the risk of early preterm birth. In a recent study, researchers measured the early and mid-pregnancy plasma levels (percent composition) of omega-3 fatty acids eicosapentaenoic acid (EPA) + DHA in women who had early preterm births (<34 week of gestation) vs. term births. The results of the study revealed:[6]

- A 10-fold increased risk of early preterm birth in women in the lowest (first) quintile of plasma EPA + DHA vs. the top 3 quintiles (adjusted odds ratio [OR] 10.27, 95% confidence interval [CI]: 6.80, 15.79).

- As compared to women in the top 3 quintiles of plasma EPA + DHA, a 3-fold increase in risk for early preterm birth (adjusted OR 2.86, 95% CI: 1.79, 4.59) was observed for those in the second quintile.

Mechanism of action of DHA in reducing risk of preterm birth

Multiple factors trigger the early contraction of uterus leading to labor and ultimately preterm births.[7] However, one of the factors associated with preterm labor is reported to be inflammation and infection.[8] DHA is reported to be beneficial in preventing preterm labor. This role of DHAs is associated with its direct inhibitory action on the arachidonic acid (AA) and its eicosanoids and with the anti-inflammatory and protective properties of the resolvins and protectins (Figure 1).[5]

Efficacy of omega-3 fatty acid (DHA) supplementation in reducing risk of preterm birth

In a study, researchers compared the effects of maternal DHA supplementation vs. controls (nutrition education to increase DHA consumption from fish and DHA fortified foods) on early preterm births. The study included pregnant women (n=564) between 16-20 weeks of gestation. The findings of the study revealed that the early preterm birth rate was significantly lower in those supplemented with DHA vs. control (1.7% vs. 5.7%, p=0.045).[9]

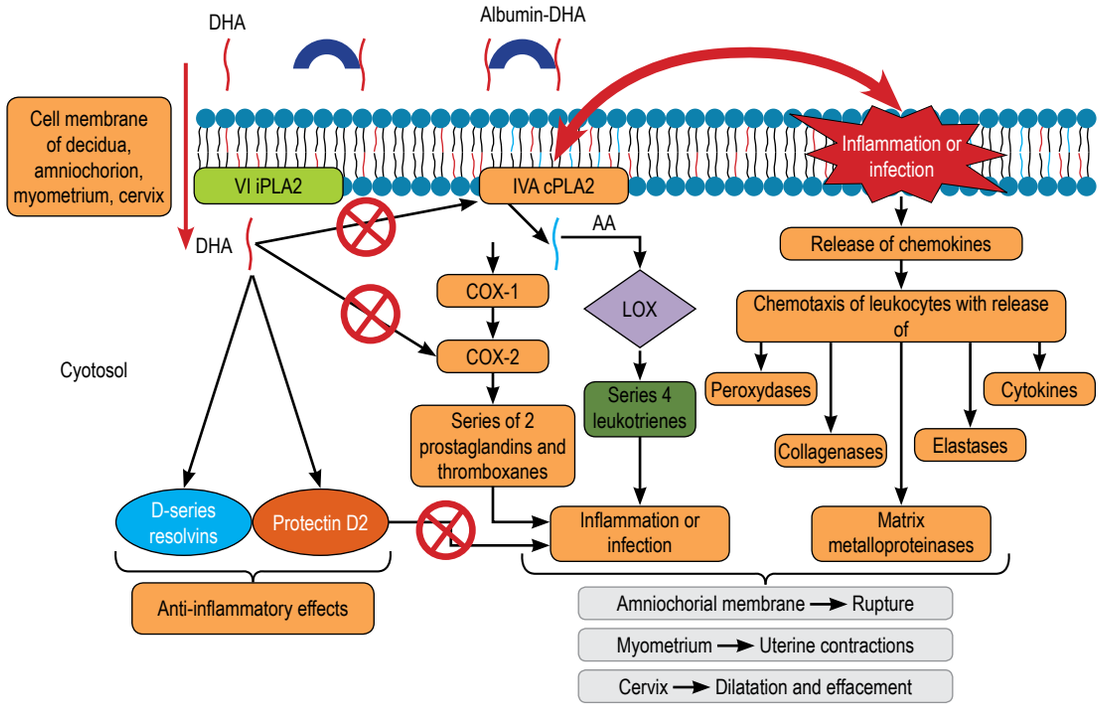
> DHA supplementation lowers the rate of early preterm births.

In a double-blind, multicentre, randomized controlled trial (DHA to Optimize Mother Infant Outcome [DOMInO] trial (n=2399, >21 weeks' gestation with singleton pregnancies), researchers studied the effect of DHA–rich fish oil capsules vs. control (no DHA) on early preterm births. The results of the study revealed that:[10]

- The DHA group vs. control had fewer preterm birth (<34-week gestation) (1.09% vs 2.25%; adjusted relative risk (RR), 0.49; 95% CI, 0.25-0.94; p=03).
- As compared to control, the DHA group had fewer admissions to the neonatal intensive care unit (control: 3.08% vs. DHA: 1.75% of births, p=0.04),

FIGURE 1

DHA, resolvin and protectin putative effects on labor and amniochorial membrane rupture events



AA: arachidonic acid, COX-1: cyclooxygenase-1, cyclooxygenase-2: COX-2, VI iPLA2: VI Ca^{2+}-independent-phospholipase A2, IVA cPLA2: IVA Ca^{2+}-dependent cytosolic phospholipase A2, LOX: lipoxygenase.

fewer low birth weight infants (<2500 g; control: 3.41% vs. DHA: 5.27% of births, p=0.003), and higher birth weights (p=0.03).

- In the DHA group, there were also more post-term inductions or pre-labor cesarean deliveries vs. control (17.59% vs. 13.72%, p=0.01), indicating prolonged gestation.
- A trend of lower preterm birth was also observed with DHA vs. control (5.60% vs.7.34%)

> DHA supplementation reduces the risk of preterm delivery, prolongs gestation, and demonstrates a trend toward decreased preterm birth risk.

In another study, researchers evaluated the impact of DHA supplementation on increasing maternal and new born DHA status, gestation duration, birth weight, and length. Pregnant women were administered capsules (placebo (n=147) or DHA (n=154)) from <20 weeks of gestation to birth. Blood (enrolment, birth, and cord) was analysed for red blood cell (RBC) phospholipid DHA.[11]

The results of the study revealed that:

- In the DHA-supplemented group, red blood cell (RBC)-phospholipid-DHA (percentage of total fatty acids by weight) was significantly higher and increased significantly from enrolment in that group only (Table 1).
- In the DHA supplementation group vs. placebo, an increase in gestational age and, birth weight and length were observed (Table 1).
- In new-borns of women assigned to DHA, a significantly higher cord RBC-phospholipid-DHA and head circumference were reported as compared to placebo (Table 1).
- The DHA group vs. placebo had fewer infants born at <34 week of gestation (p=0.025).

Safety evaluation

- For mother and new born, no serious safety concerns related to DHA supplementation were reported.

Table 1. Primary and secondary outcomes

	Placebo	DHA	p-value
Primary outcomes			
RBC-phospholipid-DHA (% by wt)	4.7±1.3	7.3±2.2	<0.001
Gestational age (d)	272.8 ±17.0	275.7±11.2	0.041
Birth weight (g)	3187 ±602	3359±524	0.004
Birth length (cm)	49.0±3.4	49.7±2.7	0.022
Secondary outcomes			
Cord RBC-phospholipid-DHA (%)	5.9±1.4	7.3±1.8	0.001
Head circumference (cm)	33.7±2.0	34.2±1.7	0.012
Gestation <34 week (%)	4.8	0.6	0.025

DHA: docosahexaenoic acid; RBC: red blood cells.

> DHA supplementation lowers the early preterm delivery rates, increases gestational age, and birth weight and length. The intervention with DHA was found to be safe.

In a recent review (70 studies, n=19,927 women at low, mixed or high risk of poor pregnancy outcomes) researchers compared the effect of omega-3 LC-PUFA interventions (supplements and food) vs. placebo or no omega-3. The results of the study revealed that:

- In women who were administered omega-3 LC-PUFA vs. placebo or no omega-3 LC-PUFA, a lower risk of preterm birth (<37 weeks) (11.9% vs. 13.4%, RR 0.89, 95% CI 0.81 to 0.97; 26 randomized controlled trials (RCTs), n=10,304) and early preterm birth (<34 week) (2.7% vs. 4.6%, RR 0.58, 95% CI 0.44 to 0.77; 9 RCTs, n=5204) was observed.

> During pregnancy, supplementation of DHA significantly improves both the length of pregnancy and birth weight in high risk pregnancies as compared with controls.

- In women who received omega-3 LC-PUFA, prolonged gestation (>42 weeks) was probably increased from 1.6% to 2.6% vs. no omega-3 (RR 1.61 95% CI 1.11 to 2.33; 6 RCTs, n=5141).

> Increased omega-3 LC-PUFA intake during pregnancy, either through supplements or in foods, may reduce the incidence of preterm birth (before 37 weeks and before 34 weeks)

In a recent prospective study, researchers compared the effect of omega-3 fatty acid supplementation versus no supplementation in high risk pregnant females (women with a history of prior spontaneous singleton preterm birth) from 20 weeks gestation in terms of frequency of preterm delivery. The women were divided into two groups:

1. Group 1 (n=250): Omega-3 fatty acid supplementation was given from 20 weeks

2. Group 2 (n=250): No supplementation

Study findings:

- A statistical difference was observed in the mean duration of pregnancy at delivery and birth weights between the treatment and control groups ($p<0.0001$ for both) (Table 2).

Table 2. Gestational age and weight of new born

	Omega-3	Mean	Std. deviation	Std. error mean
Pre term delivery	Yes	1.2	0.40684	0.07428
	No	1.8	0.40684	0.07428
Gestation age at delivery	Yes	38.2333	0.68699	0.12543
	No	36.6533	0.93578	0.17085
Weight of new born	Yes	3.2533	0.23302	0.04254
	No	2.8667	0.25909	0.0473

Guideline recommendation for omega-3 fatty acid intake during pregnancy[4]

The guideline recommendations for omega-3 fatty acid supplementation during pregnancy are given in table 3.

Table 3. Guideline recommendations for omega-3 fatty acid supplementation during pregnancy

Authority	EPA + DHA (mg/d) for pregnancy
European Food Safety Authority (EFSA)	250 (of which 100–200 DHA)
Nordic Nutrition Recommendations (NNR)	200 mg DHA
National Health and Medical Research Council (NHMRC)	115

DHA: docosahexaenoic acid; EPA: eicosapentaenoic acid.

Conclusion

- Preterm birth is a leading cause of neonatal mortality and is highly prevalent in India. Preterm birth is associated with lifelong effects on neurodevelopmental functioning of the new born.
- One of the key components of cell membrane integrity and function is the LC-PUFA especially, DHA. During pregnancy a significant amount of DHA are transferred from maternal to fetal blood to meet the fetal requirements.
- Plasma levels of PUFAs are determined by dietary intake and endogenous metabolism. During pregnancy, a low plasma concentration of EPA and DHA is a strong risk factor for subsequent early preterm birth.
- Inflammation and infection are considered to be one of the reasons for preterm birth. The anti-inflammatory action of DHA plays a significant role in reducing risk of preterm birth.
- DHA supplementation during pregnancy reduces the risk of early pre-term birth, demonstrates a trend toward decreased preterm birth risk, prolongs gestation, and is found to be safe.

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Ovulation induction in clomiphene-citrate-resistant PCOS: Is addition of coenzyme Q10 and NAC beneficial?

Scientific review

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Ovulation in clomiphene-citrate-resistant PCOS women

Polycystic ovarian syndrome (PCOS) is the most common endocrinopathy with prevalence of up to 10% in women of reproductive age. A significant proportion of PCOS patients (>50%) suffer from defective insulin secretion and insulin resistance and hyperinsulinemia.[1] This condition has a patho-physiological role in the hyperandrogenism of the disorder, thereby causing premature follicular atresia and anovulation in PCOS women.[2]

Clomiphene citrate (CC) remains the treatment of first choice for induction of ovulation in anovulatory women with PCOS. But, insulin resistance, hyperandrogenemia, and obesity are the major factors that cause CC resistance by preventing the ovaries from responding to raised endogenous FSH levels following CC therapy. Failure to ovulate after administration of 150 mg of CC daily for 5 days per cycle, for at least three cycles, occurs in approximately 15-40% in women with PCOS.[2] Evidence has shown that insulin sensitizers in PCOS women decrease hyperandrogenism, and hyperinsulinemia, and are effective for induction of ovulation.[1]

Role of N-acetylcysteine in promoting ovulation induction

N-acetylcysteine (NAC) has shown to have insulin-sensitizing and androgen reducing effects.[3] It regulates insulin receptors in human erythrocytes and influences insulin secretion in pancreatic β-cells.[1] Its exerts antiapoptotic, antioxidant effects, and inhibits phospholipid metabolism, proinflammatory cytokine release and protease activity, which together leads to better folliculogenesis and ovulation rate in PCOS patients.[3] The antioxidant effect of NAC increases the cellular levels of reduced glutathione and has preventive effect on the endothelial damage.[1]

Benefits of coenzyme Q10 on the ovaries

Coenzyme Q10 (CoQ10) is a fat-soluble coenzyme that is found in the inner mitochondrial membrane. The functional status of the mitochondria contributes to the quality of oocytes and plays an important role in the

process of fertilization and embryo development. Since CoQ10 acts directly on the mitochondria, it plays a crucial role in the production of cellular ATP. It also reduces oxidation stress within the ovary and protects DNA from free radical induced oxidative damage. Moreover, its antiapoptotic action is the main mechanism involved in follicular cohort atresia.[4]

Addition of NAC to CC improves ovulation and pregnancy rates in PCOS patients. Researchers have shown that NAC in an adjuvant to CC improves the hormonal profile and is effective for the treatment of anovulatory infertility in hyperinsulinemic patients especially in women with PCOS who are CC-resistant.[5]

Nemati et al evaluated the effects of short- and long-term treatment with metformin and NAC, in an adjuvant to CC, on the improvement of hormonal profile (SHBG, total testosterone, FBS, and fasting insulin) and fertility status in CC-resistant women with PCOS. The ovulation and pregnancy rates in patients treated with NAC were higher than those received metformin, in the first and second cycles (Table 1). After 12 weeks, the reducing-effect of NAC was significantly more on hirsutism score and FBS levels than metformin.[5]

Another study by Shalepour et al demonstrated that NAC was a safe and well-tolerated adjuvant to CC for induction of ovulation. NAC+CC improved the ovulation and pregnancy rates in PCOS patients and provided beneficial impacts on endometrial thickness compared with CC alone (Table 2). No adverse side-effects and no cases of ovarian hyperstimulation syndrome were observed in the group receiving NAC.[1]

Efficacy of combined CoQ10 and CC on ovulation and pregnancy rates in CC-resistant PCOS women[4]

Researchers showed that combination of CoQ10 and CC improves ovulation and clinical pregnancy rates in CC-resistant PCOS patients. Infertile women with CC-resistant PCOS were randomized either to combined CoQ10 and CC (51 patients, 82 cycles) or to CC alone (50 patients, 71 cycles). It was found that:

- Numbers of follicles >14mm and >18mm were significantly higher in the CoQ10 group.
- Endometrial thickness on the day of human chorionic gonadotrophin was significantly greater in the CoQ10 group (8.82 ± 0.27 mm versus 7.03 ± 0.74 mm).

Table 1. Ovulation and pregnancy rates in the first and second cycles of patients receiving NAC and metformin[5]

Groups	Before treatment	Treatment with metformin		Treatment with NAC	
		In the first cycle	In the second cycle	In the first cycle	In the second cycle
Ovulation rate	25%	32%	47.6%	38%	58.53%
Pregnancy rate	10%	16%	26.1%	18%	24.3%
p value		0.124		0.451	

NAC; N-acetylcysteine.

Table 2. Induction of ovulation outcomes[1]

Variable	CC+NAC (*n* = 82)	CC+Placebo (*n* = 85)	*P*-value
Follicles (>18 mm)	1.5 ± 0.89	1 ± 0.77	0.001
Endometrial thickness (mm)	6.6 ± 1.69	5.4 ± 1.61	0.001
Ovulation rate	45.12%	28%	0.02
Pregnancy rate	20.73%	9.4%	0.04

BMI, body mass index; CC, clomiphene citrate; FSH, follicle-stimulating hormone; LH, luteinizing hormone; NAC, N-acetylcysteine; NS, not significant.

- Ovulation occurred in 54/82 cycles (65.9%) in the CoQ10 group vs. 11/71 cycles (15.5%) in the control group.
- Clinical pregnancy rate was significantly higher in the CoQ10 group (19/51, 37.3%) versus the control group (3/50, 6.0%).
- Treatment outcomes are shown in Table 3.

Therefore, CoQ10 seems to be a promising adjuvant to oral ovulatory agents such as clomiphene citrate.

Summary

- CC is the first choice of treatment for the induction of ovulation in anovulatory women with PCOS. But, insulin resistance, hyperandrogenemia, and obesity are the major factors that cause CC resistance. Hence, introducing insulin sensitizers decrease hyperandrogenism, and hyperinsulinemia, and are effective for induction of ovulation in PCOS women.
- NAC has insulin-sensitizing and androgen reducing effects. The antiapoptotic, and antioxidant effects leads to better folliculogenesis and ovulation rate in PCOS patients.
- The CoQ10 present in the inner mitochondrial membrane contributes to the quality of oocytes and plays a role in process of fertilization and embryo development. CoQ10 reduces the oxidative stress within the ovary and protects DNA from free radical induced oxidative damage. It also exerts an antiapoptotic effect which is involved in follicular cohort atresia.
- Combination of NAC and CC improves the ovulation and pregnancy rates and improves the hirsutism score and fasting blood sugar in CC-resistant women with PCOS. NAC+CC also increases the endometrial thickness compared with CC alone.
- Combined CoQ10 and CC produces a significantly higher number of ≥18 mm of follicles, a significantly higher endometrial thickness, and increases the ovulation and clinical pregnancy rates in CC-resistant PCOS patients.
- Therefore, a combination of CC, NAC, and CoQ10 can be a promising therapeutic option for ovulation induction in CC-resistant PCOS women.

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Table 3. Treatment outcomes[4]

	CoQ10-clomiphene citrate (n=51)	Clomiphene citrate (n=50)	p-value
No. of follicles >14 mm	1.94 ± 0.25	0.13 ± 0.29	<0.05
No. of follicles ≥18 mm	1.85 ± 0.27	1.30 ± 0.32	<0.001
Endometrial thickness on day of HCG (mm)	8.82 ± 1.49	7.03 ± 0.74	<0.001
Serum oestradiol on the day of HCG (pg/ml)	168.93 ± 75.01	138.32 ± 70.24	<0.05
Midluteal progesterone (pg/ml)	10.2 ± 1.03	8.9 ± 0.91	<0.001
Ovulation per cycle	54/82 (65.9)	11/71 (15.5)	<0.001
Clinical pregnancy per patient	19 (37.3)	3 (6.0)	<0.001

Values are mean ± SD or n (%). HCG: human chorionic gonadotropin; CoQ10; Coenzyme Q10

Role of micronutrients in women with PMS-related somatic symptoms

Scientific review

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Premenstrual syndrome (PMS) and its associated symptoms

PMS is a significant disorder affecting millions of women.[1] It is characterized as cyclic recurrence of distressing somatic and affective symptoms in the luteal phase of menstrual cycle and in the few days (1-3 days) of the next follicular phase. The most common somatic and affective symptoms are given in table 1.[2] Mild premenstrual symptoms are reported in around 50-80% of reproductive age women, which does not require treatment. But around 30%–40% of the women experience more severe symptoms of PMS which require treatment.[3] In India, the prevalence of PMS in college students was reported to be 18.7%; the moderate to severe PMS was 14.7% and premenstrual dysphoric disorder was 3.7%.[4]

Table 1. Symptoms associated with PMS

Somatic symptoms	Affective symptoms
Feeling over whelmed	Irritability
Food craving	Anxiety
Insomnia or hypersomnia	Depression
Headache	Mood swing
Pelvic pain and discomfort	Hostility
Breast tenderness	Poor concentration
Joint pain	Confusion
Bloating	Social withdrawal

High prevalence of somatic symptoms in patients with PMS

In a recent study, researchers evaluated the prevalence of different PMS symptoms in perimenopausal women (n=100, age: 43-53 years) as per the PMS criteria of American College of Obstetrics and Gynecology (ACOG) and PMDD criteria by American Psychiatric Association (APA). Among all the symptoms, breast tenderness, abdominal bloating, and headache were most common (Table 2)[5]

Table 2. Common symptoms associated with PMS

Symptoms	Response	Percent of total
	N	
Depression	28	12%
Angry outbursts	33	14%
Irritability	19	8%
Anxiety	22	9%
Breast tenderness	**56**	**23%**
Abdominal bloating	**36**	**15%**
Headache	**36**	**15%**
Swelling of extremities	12	5%
Total	242	100%

Beneficial effects of micronutrients in managing PMS-associated somatic symptoms

Micronutrients	Effect on PMS-associated somatic symptoms
Vitamin E for women with premenstrual cyclical breast discomfort.[6]	A trend toward a reduction of cyclical mastalgia was observed with Vitamin E supplementation.
Vitamin E and B6 in cyclic mastalgia.[7]	After intervention, a significant difference was observed during the first menstrual cycle (Vitamin D group: 5.1 ± 1.6 and vitamin B6 group: 5.2 ± 2.5, respectively) and the second (Vitamin D group: 2.3 ± 1.0 and vitamin B6 group: 2.6 ± 2.0, respectively).
Magnesium, combination of vitamin B6 and magnesium vs placebo.[8]	As compared to placebo, a greater reduction in somatic symptoms of PMS was observed with magnesium and magnesium +vitamin B6.
Low dose calcium in women with PMS vs pacebo.[1]	A significant difference in the somatic changes was observed between calcium and placebo groups in the first and second menstrual cycles after intervention.
Zinc sulfate supplementation vs placebo in women with PMS.[9]	As compared to placebo, zinc supplementation improved the premenstrual symptoms screening tool (PSST) score at 1, 2, and 3 months from the baseline (Table 5).

FIGURE 1 Trend of the changes in the pain severity score in the vitamin E and B6 group. The trend was reducing in both the groups p<0.001

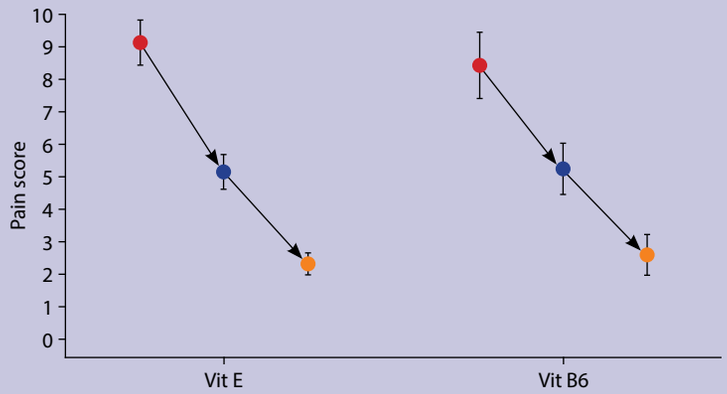

Table 3. Comparison of changes in the PMS scores before and after the intervention in the three groups

Symptoms	Magnesium + vitamin B6		Magnesium		Placebo		p-value
	Mean	SD	Mean	SD	Mean	SD	
PMS (Somatic)	-18.09	18.95	-12.73	16.87	-2.5	16.97	0.005

Table 4. Comparison of changes in the mean PMS scores before and after the intervention in the two groups

Characteristics	Calcium group	Placebo group	p- value
On admission (cycle 0)			
Somatic changes	2.41 (1.07)	2.22 (0.55)	0.383
One month later (cycle 1)			
Somatic changes	1.72 (1.05)	0.46 (1.91)	0.045
Two months later (cycle 2)			
Somatic changes	1.31 (0.93)	2.41 (0.56)	0.001

Values are presented as mean (standard deviation).

Table 5. Change in premenstrual symptoms screening tool (PSST) scores vs use of zinc sulphate

PSST component	Baseline	1st month	2nd month	3rd month	*p-value	Baseline	1st month	2nd month	3rd month	*p-value	**p-value
Overeating/food cravings	73.0	64.7	62.8	56.8	0.001	67.9	68.2	66.1	64.1	0.598	0.001
Insomnia	62.1	59.5	58.8	51.7	0.001	68.8	71.4	72.1	69.2	0.051	0.024
Hypersomnia	64.7	58.5	60.0	53.3	0.001	76.2	72.4	70.9	77.6	0.171	0.001
Feeling overwhelmed	67.7	59.6	61.5	54.5	0.001	73.2	71.3	69.4	73.4	0.083	0.009

* Intra group p-value, ** Inter group p-value

Take aways

- In women with PMS, there is a cyclic recurrence of distressing somatic symptoms in the luteal phase of menstrual cycle and in the few days (1–3 days) of the next follicular phase.
- Important somatic symptoms include feeling over whelmed, food craving, insomnia or hypersomnia, headache, pelvic pain and discomfort, breast tenderness, joint pain and bloating.
- Vitamins E and B6 are effective in relieving premenstrual severity of cyclical mastalgia.
- Supplementation with magnesium plus vitamin B6 decreases the mean score of PMS for somatic symptoms.
- A significant reduction in the PMS score for the somatic symptoms was observed with low dose calcium.
- Zinc sulphate supplementation reduces PSST scores for somatic symptoms (overeating/food cravings, insomnia, hypersomnia and feeling overwhelmed).

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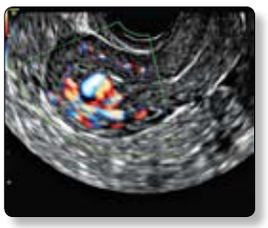
QUIZ Whiz

1. A female infant born by spontaneous vaginal delivery at 35 weeks' gestation, following induction of labor for premature rupture of membranes. Which one of the following is the most likely diagnosis?

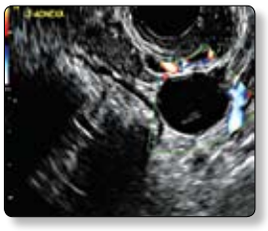
A. Congenital vertical talus ❑
B. Paralytic calcaneus foot deformity ❑
C. Posteromedial bowing of the tibia ❑
D. Talipes calcaneovalgus ❑

2. A 25-year-old woman presents to her ObGyn's office with heavy noncyclical bleeding 6 weeks after a first-trimester suction curettage abortion. Transvaginal pelvic ultrasonography of the uterus with color Doppler is performed. What is the most likely diagnosis?



A. Retained products of conception ❑
B. Complete hydatidiform mole ❑
C. Enhanced myometrial vascularity also known as arteriovenous malformation ❑
D. Endometritis ❑

3. A 32-year-old women reported pelvic pain and irregular menstrual periods. Results of a urine pregnancy test are negative. Pelvic ultrasonography images of the left adnexa obtained. What is the diagnosis?



A. Paratubal cyst ❑
B. Hydrosalpinx ❑
C. Peritoneal inclusion cyst ❑
D. Dilated pelvic veins ❑

Answers: 1. D. 2. C. 3. A.

What's New in Gynaecology ?

Fainting during the first trimester of pregnancy increases the risk of adverse pregnancy outcomes

Chatur S, Islam S, Moore LE, et al. Incidence of syncope during pregnancy: Temporal trends and outcomes. J Am Heart Assoc. 2019; 8(10): e011608.

Pregnant women who faint (syncope) during pregnancy, especially during the first trimester are at higher risk of adverse pregnancy outcomes, cardiac arrhythmia, and syncope postpartum. In a recent retrospective study, researchers examined 481,930 pregnancies for temporal trends, timing, frequency, and adverse neonatal and maternal outcomes in the first year postpartum among women with syncope during pregnancy. They found that 4,667 women had an episode of syncope and nearly 32.3% of them occurred in the first, 44.1% in the second, and 23.6% in the third trimester, while 8% of them showed more than one episode of syncope.

Researchers also found that:

- The incidence of congenital anomalies among children born with multiple syncope episodes during pregnancy was 4.9%, significantly higher than those without syncope (2.9%; $p < 0.01$).
- The rate of preterm birth was higher in pregnancies with syncope during the first trimester; 18.3% as compared to 15.8% in the second, 14.2% in the third, and 15% for pregnancies without syncope ($p < 0.01$).
- Women with syncope during pregnancy had higher rates of cardiac arrhythmias and syncope episodes postpartum as compared to women without syncope during pregnancy.

Implementation of IRON MOM toolkit reduces the risk of iron deficiency anemia in pregnancy

Abdulrehman J, Lausman A, Tang GH, et al. Development and implementation of a quality improvement toolkit, iron deficiency in pregnancy with maternal iron optimization (IRON MOM): A before-and-after study. PLoS Med. 2019; 16(8): e1002867.

Iron deficiency in pregnancy is a common problem which affects both maternal and fetal health. In a recent study, researchers developed a quality improvement toolkit to enhance screening and management of iron deficiency and iron deficiency anemia in pregnancy. Iron deficiency in pregnancy with Maternal Iron Optimization (IRON MOM) is a paper-based toolkit that includes clinical pathways for diagnosis and management, templated laboratory requisitions, educational resources, and standardized oral iron prescriptions. One year after the implementation of IRON MOM toolkit, researchers found an almost 10 times increase in the rate of ferritin testing and a lower risk of anemia ($p < 0.0001$). They also observed a lower proportion of women receiving red blood cell (RBC) transfusion during pregnancy ($p = 0.0499$), and in the first 8 weeks postpartum ($p = 0.0214$). **The implementation of IRON MOM toolkit resulted in increased rates of ferritin testing and decreased rates of iron deficiency anemia.**

KYOTO

THE SPIRITUAL HEART OF JAPAN

The International Congress on Reproductive Health and Medicine will be held in Kyoto, Japan during March 26–27, 2020 with an emphasis on the theme “Frontiers in improving the chances of fertility and reproductive health”.

Kyoto is a beautiful city filled with rich history. From paintings to sculptures, ancient temples to gothic style castles, this city has all that an art lover would be excited about.

Kyoto National Museum is one of the oldest and most unique museum, which has varied collection of relics, paintings, sculptures, calligraphy, and costumes.

Kyoto city is a hub for fashion shopping. From canvas bags to electronic gadgets, handicrafts to old calligraphy sets, one can find everything in the cheerful markets of Kyoto.

Kinkaku-Ji is one of the most famous attraction in Kyoto. It is a golden pavilion which offers picturesque views and widely known for its structure and a tea house in it.

The amazing waterfalls in Kyoto are as mesmerizing as the shinto castles. One of the famous being Kanabiki waterfall.

For the use of a registered medical practitioner or a hospital or a laboratory only.

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