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Treatment of Nausea and Vomiting in Pregnancy

When Should it be Treated and What can be Safely Taken?

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Contents

Abstract

Nausea and vomiting are both common in early pregnancy. Most cases are mild and do not require treatment. However, persistent vomiting and severe nausea can progress to hyperemesis if the woman is unable to maintain adequate hydration, and fluid and electrolyte as well as nutritional status are jeopardised. Hyperemesis gravidarum is a diagnosis of exclusion, characterised by prolonged and severe nausea and vomiting, dehydration, ketosis and bodyweight loss.

Investigation may show hyponatraemia, hypokalaemia, a low serum urea level, metabolic hypochloraemic alkalosis and ketonuria. The haematocrit is raised and the specific gravity of the urine is increased. There may be associated liver function test abnormalities and abnormal thyroid function tests, with biochemical thyrotoxicosis with raised free thyroxine levels and/or suppressed thyroid-stimulating hormone levels.

The pathophysiology of hyperemesis is poorly understood. Various hormonal, mechanical and psychological factors have been implicated. Studies have demonstrated a direct relationship between the severity of hyperemesis, the degree of

biochemical hyperthyroidism and the levels of human chorionic gonadotrophin (hCG).

Management of hyperemesis should include hospitalisation, intravenous fluid and electrolyte replacement, thiamine (vitamin B1) supplementation, use of conventional antiemetics and psychological support. Most patients improve spontaneously with the help of the above measures without long term sequelae.

Conventionally, antiemetics are not usually prescribed, especially before 12 weeks gestation, except for women with hyperemesis. This reluctance relates to fears which are often unfounded concerning the teratogenic effects of antiemetics. Severe hyperemesis, refractory to conventional management with intravenous fluids and antiemetics is a rare, miserable and disabling condition, associated with multiple hospital admissions, time away from work and the family, and psychological morbidity. If inadequately or inappropriately treated, it may cause Wernicke's encephalopathy, central pontine myelinolysis and death. In extreme cases, women may request, or their obstetricians recommend, termination of the pregnancy. There are uncontrolled data supporting a beneficial effect of corticosteroids in these women, and a randomised placebo-controlled trial is currently in progress.

Nausea and vomiting are both common in pregnancy, affecting about 70% and 60% of pregnant women, respectively. They form part of the normal spectrum of symptoms in the first trimester, and in most women nausea and vomiting resolve by 12 to 16 weeks gestation. The majority of cases of nausea and vomiting in pregnancy are managed by women themselves, who learn which particular foods to avoid in order to minimise symptoms, and to eat at times of day when the symptoms are less severe. Although the nausea and vomiting associated with pregnancy is colloquially called 'morning sickness', symptoms may occur at any time of day or be constant throughout the day. Most women experiencing nausea and vomiting in pregnancy are able to continue to eat and drink sufficiently to avoid hospitalisation and the need for intravenous fluid therapy or antiemetics.

1. Clinical Features and Investigation of Hyperemesis

Hyperemesis gravidarum affects 0.5 to 10 per thousand pregnancies.[1] Persistent vomiting and severe nausea progress to hyperemesis if a woman is unable to maintain adequate hydration, and fluid and electrolyte as well as nutritional status are jeopardised. There is usually evidence of bodyweight loss and there may be muscle wasting. Signs of dehydration with postural hypotension and tachycardia[2] are common at presentation and there is ketosis. In addition to nausea and vomiting, there may be ptyalism and spitting (see table I).

Hyperemesis is a diagnosis of exclusion. There is no single confirmatory test. Onset is always in the first trimester, usually weeks 6 to 8, and vomiting beginning after the twelfth week of amenorrhoea should not be attributed to hyperemesis. Other causes of nausea and vomiting must be considered (see table II). Hyperemesis tends to recur in subsequent pregnancies, so a previous history makes the diagnosis more likely.

An ultrasound scan of the uterus should be performed to confirm gestational age, and to diagnose multiple pregnancy and exclude hydatidiform mole, both of which are associated with an increased incidence of hyperemesis.

Table I. Clinical features of hyperemesis gravidarum

Nausea Vomiting	Onset in first trimester
Ptyalism	
Bodyweight loss	
Ketonuria	
Dehydration	
Muscle wasting	

Table II. The differential diagnosis of hyperemesis gravidarum

Genitourinary
Urinary tract infection
Uraemia
Endocrine
Thyrotoxicosis
Diabetic ketoacidosis
Addisons disease[3]
Hypercalcaemia
Gastrointestinal
Gastritis
Peptic ulcer
Pancreatitis
Bowel obstruction
Hepatitis
Drug-induced vomiting (especially iron supplements)
Central nervous/vestibular disease

Investigation usually reveals hyponatraemia, hypokalaemia, a low serum urea level and ketonuria. A metabolic hypochloraemic alkalosis is seen unless the condition is very severe in which case acidaemia may be encountered. The haematocrit is raised and specific gravity of the urine is increased. There may be associated thyroid function and liver function test abnormalities. Abnormal thyroid function tests may be a feature in two-thirds of patients with hyperemesis, defined as persistent vomiting with large ketonuria and >5% bodyweight loss.[4] The picture is that of a biochemical thyrotoxicosis with a raised free thyroxine levels and/or a suppressed thyroid-stimulating hormone (TSH) level. Patients with these abnormalities are clinically euthyroid without thyroid antibodies except in the very rare case of autoimmune thyrotoxicosis coincidentally presenting early in pregnancy. The abnormal thyroid function tests resolve as the hyperemesis improves and in one study had returned to normal by 18 weeks gestation.[4] Treatment with antithyroid drugs is inappropriate and unnecessary.

Abnormal liver function tests are found in 25 to 40% of patients with hyperemesis.[5] The most usual abnormalities are a moderate rise in transaminase levels (above the normal range but below 200U). The bilirubin level may be slightly raised, but jaundice is uncommon. Mild elevation in serum amylase levels can be seen. Significant elevation of transaminases, especially in the presence of jaundice, should prompt a search for viral hepatitis. As the hyperemesis improves spontaneously or is treated, the abnormalities in liver function resolve.

2. Pathogenesis

The pathophysiology of hyperemesis is poorly understood. Various hormonal, mechanical and psychological factors have been implicated. Since there is a direct relationship between the severity of hyperemesis as defined by disturbances in serum electrolyte levels and liver function tests results, and the degree of biochemical hyperthyroidism, Goodwin et al.[4] have suggested that the raised thyroxine levels or suppressed TSH levels may be closely related to the cause.

Goodwin et al.[6] have also demonstrated that the level of human chorionic gonadotropin (hCG), which shares a common α subunit with TSH, is directly correlated with the severity of vomiting and free thyroxine levels, and inversely correlated with TSH levels. They concluded that hCG acts as a thyroid stimulator in patients with hyperemesis. There is structural homology not only in the hCG and TSH molecules but also in their receptors, and this suggests the basis for the reactivity of hCG with the TSH receptor.[7] Goodwin and colleagues also found greater levels of oestradiol in patients with hyperemesis and attributed this to the effects of hCG on steroidogenesis.[6]

More recently, the inverse relationship between hCG and TSH has been confirmed[7-9] and an increased incidence of gestational thyrotoxicosis demonstrated in Asians compared to Europeans.[8] The positive correlation between severity of hyperemesis and hCG levels explains the increased incidence of this condition in multiple pregnancy and hydatidiform mole. The theory is also supported by the fact that the peak in hCG levels (6 to 12 weeks) coincides with the presentation of hyperemesis.

Other hormonal deficiencies or excesses, involving follicle stimulating hormone, progesterone, cortisol and adrenocorticotrophic hormone (ACTH), have been proposed as aetiological factors but never proven.[1,10]

Pregnancy is associated with a fall in the lower oesophageal pressure, decreased gastric peristalsis, and delayed gastric emptying.[11] These factors may well exacerbate the symptoms of hyperemesis, but are unlikely to be causative in isolation.[12]

Many psychological and behavioural theories have been suggested to explain hyperemesis, usually involving hyperemesis as an expression of rejection of the pregnancy. Some have suggested that problems at home or unwanted pregnancy may contribute to nausea and vomiting in pregnancy.[13] Certain psychiatric features such as stress, poor communication with the partner and doubt or inadequate information about pregnancy have been found more frequently among women with hyperemesis.[14] Coping mechanisms and stress tolerance as well as psychosocial stressors may play a role. However, studies suggesting a link between pathological personality types or other disorders and hyperemesis have serious methodological flaws. In addition, although there is often a psychological component to the expression of the condition, it is very difficult to prove causation, since hyperemesis itself may cause extreme psychological morbidity related to separation from family, inability to work, anger that the woman feels neither blooming nor even well, and guilt when this anger is turned inwards towards the fetus and resentment of the pregnancy results. Certainly psychological factors do play a role in a proportion of cases and this may be evident by the rapid improvement on admission to hospital and consequent removal from a stressful home environment. Although some have suggested a relationship between anorexia nervosa, bulimia nervosa and hyperemesis, and women with a history of eating disorder may be more likely to induce vomiting during pregnancy and vomit more than necessary to try to control bodyweight,[13] this has not been substantiated in all studies. Fairburn et al.[15] showed that eating disorder features decreased in severity early in pregnancy but increased later on. In his study of a general population sample, no evidence was found of a relationship between pregnancy outcome and the severity of eating disorder features prior to pregnancy.[15]

3. Complications of Nausea and Vomiting in Pregnancy

3.1 Maternal

In the 1950s, when intravenous fluid replacement had become standard management for hyperemesis, maternal mortality decreased to 3 per million from the 1930s level of 159 per million.[1] In the 1970s and 1980s there were no deaths reported from hyperemesis in the Confidential Enquiries into Maternal Deaths in the United Kingdom. However, between 1991 and 1993 there were 3 maternal deaths from hyperemesis. Two were probably the result of Wernicke's encephalopathy and one the result of aspiration of vomitus.[16]

Serious morbidity may result if the condition is inadequately or inappropriately treated. Wernicke's encephalopathy, caused by thiamine (vitamin B1) deficiency, is characterised by diplopia, abnormal ocular movements, ataxia and confusion. Wernicke's encephalopathy may develop in any condition causing prolonged vomiting and inadequate nutrition, but is most commonly seen in patients with alcoholism. It may be precipitated by carbohydrate rich foods and intravenous dextrose or glucose[17] particularly in the context of intravenous hyperalimentation in the presence of inadequate thiamine stores. Abnormal liver function tests are more common in hyperemesis complicated by Wernicke's encephalopathy (47%) than in hyperemesis in general (25%).[5] As in patients with alcoholism, the abnormal functioning liver may participate in the production of Wernicke's encephalopathy by decreased conversion of thiamine to its active metabolite thiamine pyrophosphate and by a decreased capacity to store thiamine.[5] Although institution of thiamine replacement may

improve the symptoms of Wernicke's encephalopathy, residual impairment is not uncommon.[18] If retrograde amnesia, impaired ability to learn and confabulation (Korsakoff's psychosis) have supervened, the recovery rate is only about 50%.

Hyponatraemia (plasma sodium levels <120 mmol/L) causes lethargy, seizures and respiratory arrest. Both severe hyponatraemia, and particularly its rapid reversal, may precipitate central pontine myelinolysis (osmotic demyelination syndrome). This is associated with symmetrical destruction of myelin at the centre of the basal pons and causes pyramidal tract signs, spastic quadraparesis, pseudobulbar palsy and impaired consciousness. There are 3 reports of central pontine myelinolysis and Wernicke's encephalopathy coexisting during pregnancy, although none was associated with a recorded serum sodium level below 126 mmol/L, and some authors[19] have suggested that thiamine deficiency may render the myelin sheaths of the central pons more sensitive to changes in serum sodium levels.

Other vitamin deficiencies occur in hyperemesis, including cyanocobalamin (vitamin B12) and pyridoxine (vitamin B6) causing anaemia and peripheral neuropathy. A recent study from South Africa found suboptimal biochemical status of thiamine, riboflavin (vitamin B2), pyridoxine and retinol (vitamin A) in over 60% of patients with hyperemesis.[20]

Prolonged vomiting may lead to Mallory-Weiss tears of the oesophagus and episodes of haematemesis. Protein and calorie malnutrition results in bodyweight loss which may be profound (10 to 20%) and muscle wasting with consequent weakness.

The psychological problems (see section 2) resulting from severe hyperemesis are often underestimated. As already discussed, certain problems may predate the onset of hyperemesis, but others result from the condition itself. Requests for termination of pregnancy should not be assumed to indicate or confirm that the pregnancy is not wanted, but rather this should be an indication of the degree of desperation felt by the patient.

If total parenteral nutrition is required, this is usually given via a central venous catheter, and is not without its own problems e.g. risk of infection and pneumothorax.

3.2 Fetal

It has been traditionally thought that vomiting in pregnancy was not associated with any adverse fetal outcome and may even predict a successful outcome. Pregnancies associated with mild to moderate nausea and vomiting are less likely to end in miscarriage,[21,22] preterm delivery,[22] and stillbirth,[22] and show no increase in the risk of congenital malformations.[22] However, it has been shown that infants of mothers with *severe* hyperemesis associated with abnormal biochemistry[23,24] and bodyweight loss of > 5%[24] have significantly lower birth weights and birth weight percentiles compared to infants of mothers with mild hyperemesis[23,24] and those of the hospital population.[23] Women admitted repeatedly for hyperemesis have a more severe nutritional disturbance, associated with a significantly reduced maternal bodyweight gain and neonatal birth weight.[25]

Hyperemesis causing Wernicke's encephalopathy is associated with fetal death in 40% of cases.[5]

4. Management

Conventional management of nausea and vomiting in pregnancy avoids the use of antiemetic drugs before 12 to 14 weeks gestation. Pregnant women and their doctors fear the possibility of drugs affecting the development of the fetus. These concerns date principally from the thalidomide tragedy in the early 1960s. Following this, further concern with the antiemetic combination of doxylamine, dicyclomine and pyridoxine, marketed as 'Debendox' or 'Bendectin', led to the voluntary withdrawal by the manufacturer of these products from the market worldwide in 1983 despite the lack of evidence to substantiate claims about teratogenicity from their use in 33 million pregnancies.[26] Following the withdrawal of 'Bendectin', hospital admissions for hyperemesis

rose by 50% in Canada and similar trends were seen in the US.[26]

The potential maternal and fetal complications of hyperemesis discussed in sections 3.1 and 3.2 argue for early and aggressive treatment of nausea and vomiting. The natural history of the condition is for gradual improvement as pregnancy progresses. When dietary and behavioural modifications (see section 4.1) are not sufficient and a woman is losing bodyweight, but before she is so severely dehydrated that she requires admission for intravenous fluid replacement therapy, there is a place for the outpatient use of antiemetics. A more relaxed attitude to the outpatient prescription of drugs which have been shown to be well tolerated in pregnancy (see section 4.5), and which are frequently prescribed once women are admitted to hospital, may prevent some hospital admissions and decrease morbidity. In some units in the US and Australia hyperemesis is managed on an outpatient basis, with visits to the obstetric emergency department or day assessment unit for intravenous fluid and antiemetic therapy, without the need for patients to be admitted.

4.1 Dietary Behaviour Modification

Dietary recommendations are empirical and have not been carefully studied. Some women are able to reduce the severity of nausea by changes in diet and eating patterns. Advice should include suggestions to try small, dry, bland, frequent meals with avoidance of fatty, fried and spicy foods. Eating at times of day when nausea is less severe and eating before getting out of bed in the mornings may help. Avoidance of the smell of food and minimising the time spent in the kitchen may reduce symptoms.[13] It is essential to stress the importance of drinking small amounts of fluid regularly between meals.

Any iron supplements should be temporarily discontinued, as they can cause nausea and vomiting in some women.

4.2 Intravenous Fluids

Any women who is ketotic and unable to maintain adequate hydration should be admitted to hospital. Adequate and appropriate fluid and electrolyte replacement is the most important component of management. Infusion of dextrose-containing fluids, i.e dextrose saline, 5% dextrose, and 10% dextrose, is mistakenly thought by some to be desirable to provide the patient with at least some energy, but this assumption is erroneous and dangerous. Firstly, as discussed above, Wernicke's encephalopathy may be precipitated by carbohydrate rich foods and intravenous dextrose.[17] Secondly, the hyponatraemia demands the infusion of sodium containing fluids (dextrose saline contains only 30 mmol/L of sodium and 5% dextrose contains none). Normal saline (sodium chloride 0.9%; 150 mmol/L sodium) or Hartmann's solution (sodium chloride 0.6%; 131 mmol/L sodium) are appropriate solutions, and potassium chloride is added to the infusion bags as required. There is no place for the use of double strength saline (2N saline) even in cases of severe hyponatraemia, as this results in too rapid a correction of serum sodium levels with the risk of central pontine myelinolysis. Fluid and electrolyte regimes must be adapted daily and titrated against daily measurements of serum sodium and potassium levels and fluid balance charts.

4.3 Thiamine

Routine thiamine supplementation should be given to all women admitted to hospital with prolonged vomiting.[5,16,19] Requirements for thiamine increase during pregnancy to 1.5 mg/day.[19] If the woman is able to tolerate tablets, thiamine can be given as thiamine hydrochloride tablets 25 to 50mg 3 times daily. If intravenous treatment is required for those unable to tolerate tablets, this can be given as thiamine 100mg diluted in 100 ml of normal saline and infused over 30 minutes to 1 hour.[12] The intravenous preparation is only required weekly.

4.4 Pyridoxine

The theoretical benefit of pyridoxine for nausea and vomiting in pregnancy relates to a possible pyridoxine deficiency. It was one of the components of 'Debendox' and 'Bendectin', and has been shown to significantly reduce nausea in a randomised, placebo-controlled trial of 342 women with nausea of pregnancy in Thailand. However, there was no significant improvement in vomiting.[27] Another study suggested pyridoxine may be useful for those with severe nausea, but was no better than placebo for women with mild or moderate nausea.[28] The widespread use of 'Debendox' and 'Bendectin' before their withdrawal suggests that pyridoxine is well tolerated in pregnancy but it was probably not the active antinausea agent in Debendox and 'Bendectin'.[26]

4.5 Antiemetics

Pharmacological treatment with antiemetics should be offered to women whose nausea and vomiting fails to respond to intravenous fluids and electrolytes alone. Post-thalidomide anxiety has resulted in an understandable reluctance to prescribe antiemetics for hyperemesis, but extensive data exist to show a lack of teratogenesis with dopamine antagonists (metoclopramide and domperidone),[29] phenothiazines (chlorpromazine and prochlorperazine)[30] and histamine H_1 receptor blockers (promethazine and cyclizine).[31] A meta-analysis of 24 studies including more than 200 000 women exposed to antihistamines, used mainly for morning sickness in the first trimester, concluded that there was no increased teratogenic risk, the odds ratio of 0.76 even suggesting a protective effect.[31] The authors raised the possibility that by preventing vomiting, antihistamines may ensure better metabolic conditions for the fetus and thus reduce some birth defects.[31] Alternatively, it is possible that pregnancies characterised by vomiting are associated with better outcome because of other reasons.[31] A recent study from California has demonstrated the efficacy of continuous droperidol infusion and bolus intravenous diphenhydramine in the management of hyperemesis.[32]

Adverse effects of antiemetics include drowsiness, particularly with the phenothiazines, and extrapyramidal effects and oculogyric crises, particularly with metoclopramide and the phenothiazines. Ironically, the best data concerning fetal safety are available for 'Debendox', 'Bendectin' and 'Diclectin' (the latter is still available in Canada as a slow release preparation of doxylamine 10mg, an antihistamine and pyridoxine 10mg).[26] In Australia, promethazine is the most frequently prescribed medication in the outpatient setting for nausea and vomiting in pregnancy.[13]

The histamine H_2 receptor blockers ranitidine and cimetidine and the proton pump inhibitor omeprazole have also been used in some cases of nausea and vomiting in pregnancy. More recently, the successful use of ondansetron, a highly selective serotonin 5-HT_3 receptor antagonist, which is used with dramatic effect for post-operative and chemotherapy-induced nausea and vomiting, has been reported in 3 women with intractable hyperemesis.[33-35] Following this, an American group compared intravenous ondansetron 10mg with intravenous promethazine 50mg, both given as an immediate dose followed by 8 hourly doses only if required, in 30 women with severe hyperemesis.[36] No benefit of ondansetron over promethazine could be demonstrated for relief of nausea, bodyweight gain, days of hospitalisation or total doses of medication.[36] However, although the study claimed to be studying women with severe hyperemesis, it enrolled patients at the time of admission, and one of the most interesting findings was the minimal amount of medication required to effect a clinical response in both groups (approximately 3 total doses). The authors comment that it may have been the intravenous hydration alone leading to improvement.

4.6 Alternative therapies

Attempts to avoid conventional pharmacological agents in pregnancy have prompted studies investigating the efficacy of alternative therapies.

Powdered root of ginger given to 30 women in a double-blind, randomised, cross-over trial was significantly better than placebo at diminishing or eliminating the symptoms of hyperemesis gravidarum.[37] Studies have also examined the effect of acupuncture and acupressure and a randomised, blinded study of 60 women demonstrated a significant improvement in nausea with acupressure at the Neiguan point, PC-6 compared with pressure at a dummy point.[38] However, there was no difference between the two groups in the severity or frequency of vomiting. A systematic review of the 7 published controlled trials in which the P6 acupuncture point was stimulated for treatment of nausea and/or vomiting associated with pregnancy reported that in 5 trials the treatment was accompanied by a significant improvement in symptoms.[39]

4.7 Total Parenteral and Enteral Nutrition

In some severe cases of hyperemesis gravidarum total parenteral nutrition (TPN) becomes necessary[40] and this has also been shown to have a rapid therapeutic effect.[41] However, metabolic and infectious complications are a risk and strict protocols and careful monitoring is obligatory. In addition, parenteral hyperalimentation is expensive and is usually reserved for extremely severe life-threatening cases. If total parenteral nutrition is used, it is vital to coadminister thiamine (see section 4.3).

A recent report describes the successful use of enteral feeding via a nasogastric tube in 7 women with hyperemesis unresponsive to antiemetics.[42] Nausea and vomiting improved within 1 day of continuous infusion and patients were discharged within 8 days, although enteral feeds were maintained for a mean of 6 weeks.

4.8 Corticosteroids

Corticosteroids were first used to treat hyperemesis over 40 years ago.[43] More recently, the successful use of oral prednisolone (40 to 60 mg/day) or intravenous hydrocortisone (100mg twice daily) in 10 women with severe hyperemesis has been reported.[44,45] Corticosteroids were only given to women who had persistent nausea and vomiting despite adequate intravenous fluid replacement, thiamine supplementation and regular antiemetic therapy. All women had had multiple admissions for hyperemesis, some had had previous terminations of pregnancy for hyperemesis, some were requesting termination of their pregnancy and one had been receiving total parenteral nutrition for 6 weeks prior to corticosteroid therapy. The response to corticosteroids was dramatic, rapid and complete in all patients, but the studies were not controlled.[44,45] There have since been further reports of corticosteroids used to treat severe hyperemesis.

Taylor[46] described the successful use of intravenous hydrocortisone 50mg twice daily in 7 patients with a mean bodyweight loss of 10.5 ± 4.3kg. Vomiting stopped within 3 hours of the first dose in all women, but prednisolone in doses exceeding 15 mg/day were required for 10.6 ± 4.7 weeks (range 6 to 20). Safari et al.[47] have described the successful use of oral methylprednisolone in 16 women with refractory hyperemesis including 3 patients receiving total parenteral nutrition. In a trial involving 1 patient, it was suggested that prednisolone 50 mg/day was no more effective than ascorbic acid (vitamin C) 100 mg/day at controlling symptoms.[48] In patients who do respond to corticosteroid therapy, the dosage must be reduced slowly and prednisolone cannot usually be discontinued until the stage of gestation at which the hyperemesis would have resolved spontaneously, which in some extreme cases is at delivery. It is usually possible to decrease the dosage of prednisolone to a maintenance dosage of below 20 mg/day, but screening for the complications of corticosteroid treatment in pregnancy, particularly an increased risk of urinary tract infection and gestational diabetes mellitus, is recommended in those patients who require long term therapy.

Some have questioned the safety for the fetus of maternal use of corticosteroids in pregnancy, but the over-quoted association of cleft palate with the use of massive doses of cortisone in rabbits re-

ported forty years ago[49] has *never* been reproduced in humans. Prednisolone is metabolised by the placenta and transfer across the placenta is slow and therefore very little active drug ever reaches the fetus. The concentration of active compound in fetal blood is 10% of that in the mother.[50] Although hydrocortisone (cortisol) crosses the placenta rapidly, most is quickly converted to inactive cortisone by fetal enzymes.[51] Studies examining the use of corticosteroids for asthma in pregnancy have failed to show any congenital malformations or adverse fetal effects attributable to maternal corticosteroid therapy.[52]

Since corticosteroids are effective in the treatment of vomiting induced by chemotherapy, it is thought that they may also be of use in other conditions such as hyperemesis in which vomiting is thought to have a central origin involving the chemoreceptor trigger zone. The pilot data[44-47] support a beneficial role for corticosteroids in the treatment of severe hyperemesis gravidarum, but corticosteroids have failed in at least 1 patient,[48] and intramuscular ACTH has been shown to be no more effective than placebo in the treatment of hyperemesis.[53] A definitive, randomised, double-blind, placebo-controlled trial of oral prednisolone is now in progress. Since the natural history of hyperemesis gravidarum is of gradual improvement with increasing gestation, the design of this multicentre study incorporates strict inclusion criteria. An intravenous 'arm' to the study, using hydrocortisone, will ensure that corticosteroids receive a fair trial.

4.9 Psychological Support

Most women, particularly during a first pregnancy, need reassurance and information concerning their symptoms of nausea and vomiting. Knowledge that nausea is normal and healthy and will improve and disappear during the pregnancy is helpful in itself. Women should also be informed that mild vomiting is not harmful to the fetus and will also improve. Most women respond well to support and to the knowledge that there will be support after the birth.[13] All patients with hyperemesis require emotional support with frequent reassurance and encouragement from nursing and medical staff. Psychiatric referral may be appropriate in certain cases. Psychotherapy, hypnotherapy and behavioural therapy have been reported to contribute to the treatment of hyperemesis.[54] Interventions must be tailored to the characteristics and needs of the individual patient.

5. Conclusion

Most nausea and vomiting in pregnancy is mild, requiring no treatment. Hyperemesis, especially if severe or prolonged, is potentially dangerous for the mother and her fetus. Hyperemesis should be treated with intravenous fluids. Standard antiemetics can be administered to women who are pregnant. Thiamine supplementation should be given. In patients whose hyperemesis is resistant to these measures, the use of corticosteroids or ondansetron may be considered.

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