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West Middlesex University Hospital

Date: 19 March 2020
Sources Searched: Medline, Embase.

Midodrine use in Pregnancy

See full search strategy

1. Pregnancy in postural orthostatic tachycardia syndrome.

Author(s): Glatter, Kathryn A; Tuteja, Dipika; Chiamvimonvat, Nipavan; Hamdan, Mohamed; Park, Jeanny K

Source: Pacing and clinical electrophysiology : PACE; Jun 2005; vol. 28 (no. 6); p. 591-593

Publication Date: Jun 2005

Publication Type(s): Research Support, Non-u.s. Gov't Case Reports Journal Article

PubMedID: 15955196

Available at Pacing and clinical electrophysiology : PACE - from Wiley Online Library

Abstract:INTRODUCTIONPostural orthostatic tachycardia syndrome (POTS) is a rare disease characterized by syncope, sinus tachycardia, and orthostasis due to autonomic dysfunction.METHODS AND RESULTSTwo women aged 26 and 24 years with severe POTS became pregnant. Both women experienced hyperemesis gravidarum with subsequent marked improvement in their POTS symptoms until 6 months gestation, when their syncope and sinus tachycardia caused clinical decompensation. Both patients delivered healthy babies at 37 weeks by elective cesarean section.CONCLUSIONIn long-term follow-up, both women reported improvement in their prepartum symptoms. We describe the first report, to our knowledge, of two successful pregnancy outcomes in severe POTS, including the first report of midodrine use in pregnant women.

Database: Medline

2. A Case Report and Review of Postural Orthostatic Tachycardia Syndrome in Pregnancy.

Author(s): Lide, Brianna; Haeri, Sina

Source: AJP reports; Apr 2015; vol. 5 (no. 1); p. e33

Publication Date: Apr 2015

Publication Type(s): Case Reports

PubMedID: 26199795

Abstract: Purpose Postural orthostatic tachycardia syndrome (POTS) is a form of orthostatic intolerance characterized by an increased heart rate upon transition from supine to standing, and head-up tilt without orthostatic hypotension. Its etiology is multifactorial, and no clear cause has been identified. Common symptoms include light-headedness, blurred vision, weakness, cognitive difficulties, and fatigue and are often accompanied by palpitations, shortness of breath, syncope, or gastrointestinal symptoms. Management includes volume expansion, physical counter maneuvers, and pharmacological agents such as fludrocortisone, midodrine, propranolol, and pyridostigmine. The course of POTS in pregnancy is variable and POTS has not been directly implicated in any adverse outcomes for the mother or fetus. Methods Two cases of POTS in pregnancy are presented, along with a review of the literature for reports of POTS in pregnancy. Results Along with our 2 cases, 10 other case reports were identified and included. Conclusion The course of POTS in pregnancy is variable, and not directly linked to increase perinatal morbidity or mortality. Women can safely undergo regional anesthesia, and vaginal delivery with close monitoring of hemodynamic changes.

Database: Medline

3. Postural Orthostatic Tachycardia Syndrome during pregnancy: A systematic review of the literature

Author(s): Morgan K.; Chojenta C.; Tavener M.; Loxton D.; Smith A.

Source: Autonomic Neuroscience: Basic and Clinical; Dec 2018; vol. 215 ; p. 106-118

Publication Date: Dec 2018

Publication Type(s): Review

PubMedID: 29784553

Available at Autonomic neuroscience : basic & clinical - from Unpaywall

Abstract: Purpose: Postural Orthostatic Tachycardia Syndrome is most commonly seen in women of child bearing age, however little is known about its effects in pregnancy. Method(s): A systematic review was conducted in March 2015 and updated in February 2018. Medline, Embase, PsychInfo, CINHAL, and the Cochrane Library were searched from database inception. The ClinicalTrials.gov site and bibliographies were searched. MeSH and Emtree headings and keywords included; Postural Orthostatic Tachycardia Syndrome, Postural Tachycardia Syndrome, and were combined with pregnancy and pregnancy related subject headings and keywords. Searches were limited to English. Eligible articles contained key words within the title and or abstract. Articles were excluded if Postural Orthostatic Tachycardia Syndrome was not pre-existing. Result(s): Eleven articles were identified as eligible for inclusion. Studies were appraised using the PRISMA 2009 guidelines. The overall quality of evidence was poor using the NHMRC Evidence Grading Matrix, which was attributed to small sample sizes and mostly observational studies, emphasizing the need for future high quality research. Findings in this review must be used with caution due to the poor quality of the literature available. Conclusion(s): Postural Orthostatic Tachycardia Syndrome should not be a contraindication to pregnancy. Symptom course is variable during pregnancy and the post-partum period. Continuing pre-conception medication may help symptoms, with no significant risks reported. Obstetric complications, not Postural Orthostatic Tachycardia Syndrome, should dictate mode of delivery. Postural Orthostatic Tachycardia Syndrome did not appear to affect the rate of adverse events. These results are important in determining appropriate management and care in this population.

Database: EMBASE

4. Postural tachycardia syndrome and pregnancy

Author(s): Bhatia M.; Kavi L.; Nelson-Piercy C.

Source: Obstetrician and Gynaecologist; 2018; vol. 20 (no. 2); p. 119-123

Publication Date: 2018

Publication Type(s): Review

Available at The Obstetrician & Gynaecologist - from Wiley Online Library

Abstract: Key content: Postural tachycardia syndrome (PoTS) is a potentially debilitating autonomic disturbance that primarily affects females between the ages of 15 and 50 years, and may present for the first time during pregnancy. The typical signs and symptoms are vague and therefore the condition is often under- or misdiagnosed as pregnancy may induce similar symptoms. If correctly diagnosed and managed, patients have a good outcome; however, a delay in diagnosis may be disabling. PoTS is unfamiliar to most clinicians and its variable course during pregnancy requires a better understanding of the condition. PoTS management in pregnancy may be challenging and clinicians should be aware of common strategies that are suitable in pregnancy. A multidisciplinary approach is essential for correctly diagnosing and managing the condition and optimising pregnancy outcomes. Learning objectives: To understand:. The common symptoms and signs of PoTS. How to diagnose and manage PoTS safely in pregnancy. The likely course of disease in pregnant women with PoTS. The effect of pregnancy on PoTS. Multidisciplinary antenatal, intrapartum and postnatal considerations required for patients with PoTS. Ethical issues: The impact of delayed diagnosis on individuals. The safety of commonly used pharmaceutical agents. The role of psychological support.

Database: EMBASE

5. A Case of postural orthostatic tachycardia syndrome in pregnancy

Author(s): Lim H.Y.N.; Dangi S.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Nov 2014; vol. 121 ; p. 19

Publication Date: Nov 2014

Publication Type(s): Conference Abstract

Available at BJOG : an international journal of obstetrics and gynaecology - from Wiley Online Library

Abstract: Background: This abstract describes a case of postural orthostatic tachycardia syndrome (POTS) in pregnancy and its management in labour. Case: A 30-year-old, gravida 2 para 1 was diagnosed with POTS after her last pregnancy. She had one previous emergency lower segment caesarean section (LSCS) for failure to progress at 41 weeks. Her current pregnancy remained uneventful where she had multidisciplinary input to manage her pregnancy. Management and outcome: The woman was advised to continue with midodrine 3.5 mg TDS and propranolol 5 mg OD to control her symptoms. She opted for an elective LSCS and had a combined spinal and epidural anaesthesia (CSE). Intra-operatively she experienced some 'deep' sensations and her epidural was topped up with good effect. There were no intraoperative complications and baby was delivered with normal Apgar scores. Discussion(s): POTS is an umbrella term that describes a group of autonomic disturbance disorders. It is characterised by symptoms of orthostatic intolerance that are relieved at a recumbent position. These include light-headedness, fatigue, sweating, tremor, anxiety, palpitation, exercise intolerance and syncope. POTS is thought to occur due to impaired vascular innervation in response to sympathetic stimulation without vasoconstriction, leading to a fall in central venous pressure and reflex tachycardia. The symptoms can also be triggered by dehydration, alcohol consumption and extreme heat. POTS has major anaesthetic implications in obstetrics due to widespread use of epidural or spinal anaesthesia during labour that can reduce patients' blood pressure, consequently triggering the condition. It is therefore important that POTS is diagnosed early and an appropriate plan in labour is made with the involvement of the anaesthetic team. Conclusion(s): POTS is a very rare condition that but can be managed efficiently with early multidisciplinary input.

Database: EMBASE

6. Pregnancy in postural tachycardia syndrome: Clinical course and maternal and fetal outcomes

Author(s): Blitshteyn S.; Poya H.; Bett G.C.L.

Source: Journal of Maternal-Fetal and Neonatal Medicine; Sep 2012; vol. 25 (no. 9); p. 1631-1634

Publication Date: Sep 2012

Publication Type(s): Article

PubMedID: 22185354

Abstract: Objective: Postural tachycardia syndrome (POTS), a disorder of the autonomic nervous system, predominantly occurs in women of child-bearing age. We set out to determine the clinical course and maternal and fetal outcomes in pregnant women with pre-existing POTS. Method(s): Participants were asked to complete a detailed questionnaire assessing the clinical course of POTS before, during and after pregnancy, as well as complications of pregnancy, labor and delivery and fetal outcomes. Result(s): Among 10 women with pre-existing POTS (pregnancy age 28+/-7 years, range 1639), with a total of 17 live births, two were complicated by pre-eclampsia, 14 were normal vaginal deliveries and three were C-sections. The rate of severe vomiting or hyperemesis gravidarum in the first trimester was 59%. There were no stillbirths or congenital abnormalities. The average birth weight was 3076+/-733 grams, with two infants born premature. During pregnancy, POTS symptoms were either improved or stable in six of 10 women, and four of these six women utilized medications for POTS. Six months after delivery, POTS symptoms were improved in three, stable in two and worsened in five women compared to before pregnancy. Conclusion(s): POTS may have a variable clinical course in pregnancy, with 60% of women reporting either improved or stable symptoms during pregnancy, and 50% of women reporting either improved or stable symptoms 6 months after delivery. There may be a higher rate of severe vomiting in the first trimester in women with POTS than in general population.

Database: EMBASE

7. Postural orthostatic tachycardia syndrome in pregnancy: A case report and review of literature

Author(s): Kindinger L.; Terry J.; Syed S.; Phelan L.

Source: Archives of Disease in Childhood: Fetal and Neonatal Edition; Apr 2012; vol. 97

Publication Date: Apr 2012

Publication Type(s): Conference Abstract

Available at Archives of Disease in Childhood - Fetal and Neonatal Edition - from BMJ Journals - NHS

Available at Archives of Disease in Childhood - Fetal and Neonatal Edition - from ProQuest (Health Research Premium) - NHS Version

Abstract: Postural Orthostatic Tachycardia Syndrome (POTS) is an autonomic condition characterised by the increase in heart rate greater than 30 beats per minute with associated orthostatic symptoms including palpitations, dizziness and syncope. Females are affected more than males, particularly during childbearing age. We report a 35 year old woman with POTS in her second pregnancy. Diagnosed four years prior to her first pregnancy, she remains under the care of an Autonomic Neurologist in conjunction with Rheumatology for her Ehlers Danlos, Haematology for a Mast cell dysfunction, and Obstetricians during pregnancy. Her resting heart rate is 80-90bpm, rising to160bpm during exacerbations. These are provoked by heat, stress, excessive eating or exercise. Moderate daily walking however improves her long term control through improving peripheral tone. Medical management of POTS in pregnancy remains unclear. Treatments are focused on rate control or peripheral vasoconstriction. She is on Midodrine, an alpha1-receptor agonist and sodium supplements. Reports of POTS in pregnancy are infrequent, however her experiences are typical; symptoms may worsen in the first trimester, improve in the second and third trimester, and may be significantly better post partum compared to the pre-pregnancy state. There are no long term effects of pregnancy on POTS and POTS does not present an increased risk for pregnancy. Diagnosis is important for optimising symptom control and avoiding undue concern over tachycardia in pregnancy such as bleeding or infection. Advocated mode of delivery remains uncertain. A multidisciplinary team approach with consultant led Obstetric clinics and an Anaesthetic review antenatally is recommended.

Database: EMBASE

8. Outcomes of pregnancy in patients with preexisting postural tachycardia syndrome

Author(s): Kanjwal K.; Karabin B.; Kanjwal Y.; Grubb B.P.

Source: PACE - Pacing and Clinical Electrophysiology; Aug 2009; vol. 32 (no. 8); p. 1000-1003

Publication Date: Aug 2009

Publication Type(s): Article

PubMedID: 19659618

Abstract: Background: Postural orthostatic tachycardia syndrome (POTS) occurs more commonly in women than in men and often affects women of childbearing age. Many of these women wish to have children, yet there are little reported data on the outcomes of pregnancy in patients with POTS. To date there has been one report of two patients with POTS who successfully completed pregnancy. We report the outcomes of 22 women with preexisting POTS who became pregnant. Objective(s): To assess the outcome of pregnancy in patients with preexisting POTS. Methods and Results: Twenty-two patients, age 30 +/- 7 years, with POTS became pregnant. Migraine was the common comorbidity found in 40% of patients. Medications used were beta-blockers (18%), midiodrine (31%), selective serotonin reuptake inhibitors (31%), fludrocortisone (13%), combination (40%), and none (18%). During pregnancy, symptoms of POTS remained unchanged in three (13%), improved in 12 (55%), and worsened in seven (31%) patients. One patient who had recurrent episodes of syncope without aura was found to have complete heart block and received a cardiac pacemaker. All patients completed pregnancy successfully. There were no stillbirths. One patient developed hyperemesis. Eighteen patients had vaginal delivery and four patients delivered by cesarian section. No other complications of pregnancy were encountered. Congenital abnormalities were encountered in the form of one atrial septal defect, one ventricular septal defect, and one Down's syndrome. Postpartum symptoms of POTS remained stable in 15 (69%) patients and worsened in seven (31%) patients. Conclusion(s): Based on our observation, patients with POTS can safely complete pregnancy if they desire to do so. POTS should not be considered a contraindication to pregnancy per se. ©2009 Wiley Periodicals, Inc.

Database: EMBASE

9. Postural tachycardia syndrome complicating pregnancy.

Author(s): Powless, Cecelia A; Harms, Roger W; Watson, William J

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Aug 2010; vol. 23 (no. 8); p. 850-853

Publication Date: Aug 2010

Publication Type(s): Journal Article

PubMedID: 20136369

Abstract:OBJECTIVETo review clinical experience at our institution on postural tachycardia syndrome (POTS) complicating pregnancy.METHODSIn a retrospective review, we identified nine pregnancies in seven patients with POTS syndrome at our institution.RESULTSPatients who did not require treatment for POTS before conception were less likely to have an exacerbation of symptoms or need reintroduction of treatment. Exacerbations of POTS during pregnancy are variable. Of our patients with exacerbations of symptoms, increases in the existing pharmacologic treatments, such as increasing beta-blocker dosage, was effective in palliation of symptoms. There were seven vaginal deliveries. Two patients delivered without neuraxial anesthesia; the other five deliveries were done using epidural anesthesia without associated complications. POTS does not seem to contribute to pregnancy-related complications. Importantly, there were no adverse intrapartum events attributable to POTS.CONCLUSIONSPregnant women with POTS may undergo safe regional anesthesia and vaginal delivery. This contradicts earlier reports in the literature recommending cesarean delivery.

Database: Medline

Strategy 827437

#	Database	Search term	Results
1	Medline	(Midodrine).ti,ab	555
2	Medline	exp MIDODRINE/	433
3	Medline	(Amatine OR Gutron OR Midodrin).ti,ab	46
4	Medline	(1 OR 2 OR 3)	656
5	Medline	(pregnan*).ti,ab	483980
7	Medline	exp PREGNANCY/ OR exp "PREGNANCY OUTCOME"/	884144
8	Medline	(5 OR 7)	991158
9	Medline	(4 AND 8)	7
10	EMBASE	(Midodrine).ti,ab	1004
11	EMBASE	exp MIDODRINE/	2752
12	EMBASE	(Amatine OR Gutron OR Midodrin).ti,ab	45
13	EMBASE	(10 OR 11 OR 12)	2813
14	EMBASE	(pregnan*).ti,ab	620240
15	EMBASE	exp PREGNANCY/	652762
16	EMBASE	exp "PREGNANCY OUTCOME"/	57608
17	EMBASE	exp FETOTOXICITY/	2434
18	EMBASE	(14 OR 15 OR 16 OR 17)	886732
19	EMBASE	(13 AND 18)	46
20	EMBASE	exp "TERATOGENIC AGENT"/	28304

21	EMBASE	(13 AND 20)	2
22	Medline	exp "MATERNAL-FETAL EXCHANGE"/	29315
23	Medline	(4 AND 22)	0
24	Medline	exp "MATERNAL-FETAL EXCHANGE"/	29315
25	Medline	(4 AND 24)	0