

“It’s not all about eclampsia”: Involuntary movements in the postpartum period

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Objective:

New onset movement disorders during pregnancy and the puerperium are rare, yet alarming. They present a diagnostic challenge due to a diverse differential, some of which are potentially life threatening. This case prompted multi-disciplinary team (MDT) problem-solving and highlights a paucity of easily accessible clinical guidance for diagnosis and management.

Case report:

- A healthy 28 year-old primiparous woman presented in labour at term following spontaneous rupture of membranes and progressed well in labour reaching full dilatation immediately after insertion of an epidural.
- A vaginal delivery, complicated by a postpartum haemorrhage of 1800 mls, was inadequately controlled with uterotonics alone (syntocinon, misoprostol, carboprost) and she was transferred to theatre for an examination under anaesthesia. After an epidural top-up, assessment demonstrated an empty uterus with persistent bleeding arising from the lower uterine segment.
- A second dose of carboprost was administered, together with ondansetron for nausea; haemostasis was subsequently achieved with a Bakri[®] balloon.
- 30 minutes later, she developed uncoordinated jerking movements of her face and limbs, remaining alert throughout. This was described as a “disorganised dystonia”.
- The remainder of the neurological examination was unremarkable.
- Bedside tests: normotension with no proteinuria and a capillary blood glucose of 4.5mmol/L.
- Investigations: serum electrolytes, including magnesium and calcium were unremarkable. MRI head revealed no features of oedema, haemorrhage, ischaemia, mass lesions or venous sinus thrombus.

- Eclampsia or seizure of unknown aetiology were excluded.
- Given the risks of cardiotoxicity and neurotoxicity, empirical lipid emulsion treatment was administered to treat for local anaesthetic systemic toxicity (LAST).
- The involuntary movements resolved within an hour and MDT assessment by obstetricians, anaesthetists and physicians proposed a drug-induced reaction as the most likely diagnosis.

Diagnosis	Investigations	Management
Generalised seizure	Diagnosis of exclusion and accurate clinical assessment	General resuscitation measures (using A-E assessment) Antiepileptics – lamotrigine or Levetiracetam monotherapy are safest for use in pregnancy. Benzodiazepines are drug of choice for seizure termination. (1,2)
Status epilepticus	Generalised tonic clonic seizure lasting >5 minutes (1).	Benzodiazepines for seizure termination. - Lorazepam IV 0.1mg/kg or Diazepam 5-10mg IV slowly - Diazepam 10-20mg PR or Midazolam 10mg (buccal) (if no IV access) - Phenytoin or fosphenytoin if uncontrolled (1)
Eclampsia	Generalised seizure with 1. Hypertension 2. Proteinuria (urine dipstick 1+ and protein: creatinine ratio >30mg/mmol (3)	Admit to labour ward/ obstetric high-dependency unit (HDU). High level specialist senior input required. Airway – maintain Breathing – 100% oxygen via 15L non-rebreathe mask Circulation – Monitor heart rate, blood pressure, place in left lateral tilt IV Magnesium sulphate (Mg SO4) 4g loading dose (15 mins) Maintenance 1g/hour 10% IV MgSO4 over 24 hours Antihypertensives (labetolol (PO/IV) or nifedipine (PO)) or hydralazine (IV). Urgent delivery once maternal stability attained if prepartum + antenatal corticosteroids if antepartum. (3, 4)
Local anaesthetic systemic toxicity (LAST)	Diagnosed based on clinical suspicion (see text)	General resuscitation measures including stopping LA Intravenous lipid emulsion (5)
Intracranial infarct	Neuroimaging (MRI / CT head)	Expert MDT management in a tertiary centre. Medical management includes adequate oxygenation, blood pressure and blood glucose control. Antiphospholipid antibody testing recommended if <45 years. Consideration of thrombolysis / thrombectomy. (6)
Intracranial haemorrhage	Neuroimaging (MRI / CT head)	Expert MDT management in a tertiary centre. Blood pressure control. Cessation / reversal of antiplatelet or anticoagulation therapy. May require osmotic diuretics or surgery. (6)
Hypoglycaemia	Blood glucose measurement (<4mmol/L) (6)	Glucose replacement - Give 1-2 tubes of glucose gel - 1mg/1ml Glucagon IM - 100ml 20% glucose IV at 100ml/hr (7)

Figure 2. Differentials ‘at a glance’

Discussion:

- Several medications, given routinely peripartum, can cause movement disorders. Myoclonus has been reported with fentanyl and “movement disorders” with Levobupivacaine, carboprost and ondansetron.
- This case highlights the broad differential for involuntary movements seen in pregnancy and the puerperium, as well as the lack of relevant clinical guidance to diagnose and manage them.
- We propose the development of a decision tree to aid diagnosis.
- A drug-induced movement disorder was considered the most likely diagnosis, after exclusion and preventative treatment of more serious possibilities.
- Evaluating the risks, however uncommon, associated with routinely administered medicines in the peri-partum period is essential.

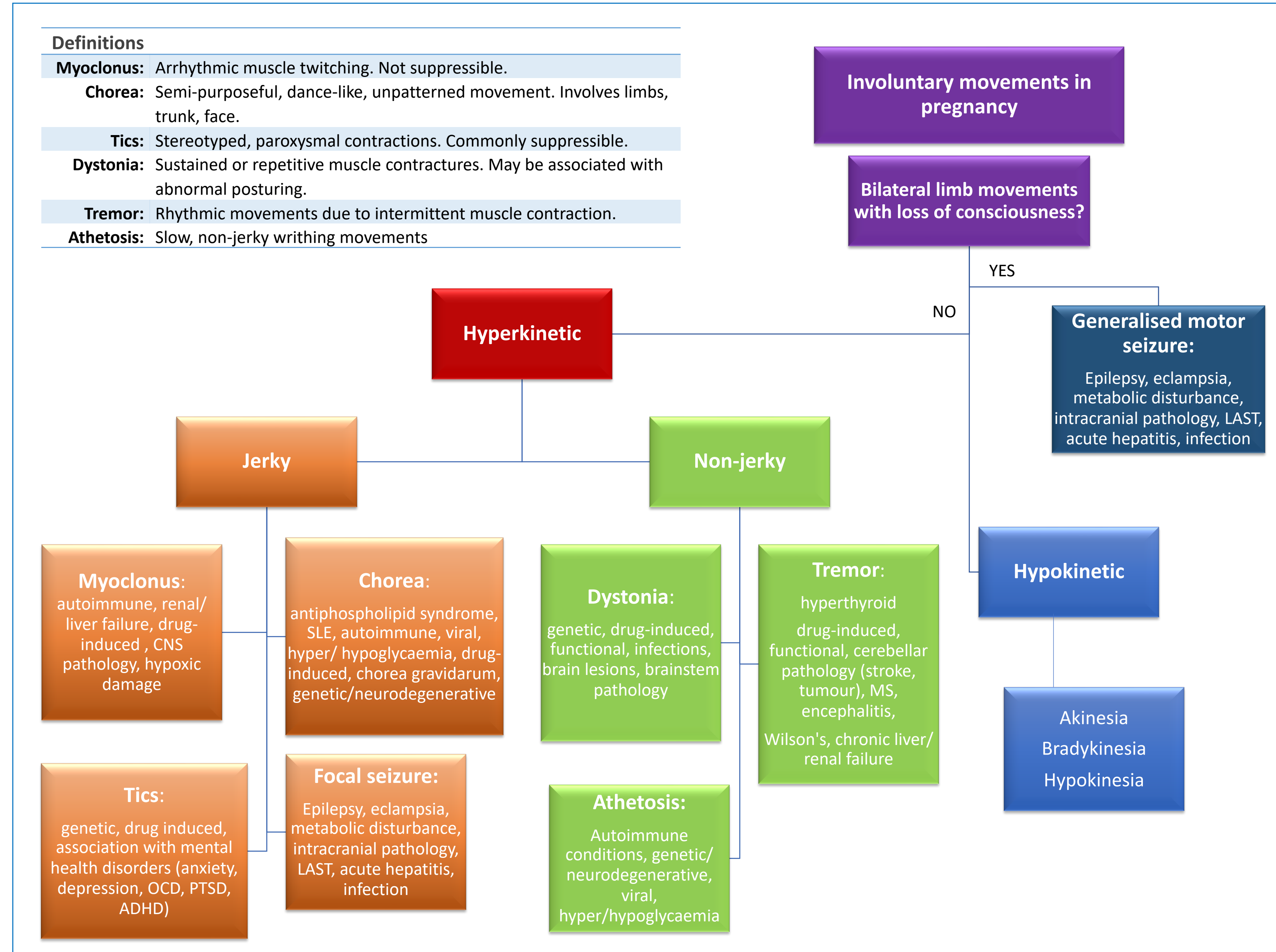


Figure 3. Proposed diagnostic algorithm for involuntary movements in pregnancy (8,9,10)

Conclusions:

A systematic A-E approach with MDT support is key to optimally managing potentially life-threatening neuropathology in the assessment of acute and unfamiliar presentations.

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References:

- Royal college of obstetricians and gynaecologists. *Epilepsy in pregnancy: Green-top guideline no. 68*. RCOG. 2016
- Medicines and Healthcare products Regulatory Agency. *Epilepsy medicines and pregnancy*. 2021 [cited 2022 Jun 6]; Available from: <https://www.gov.uk/guidance/valproate-use-by-women-and-girls>
- Noor M, Nelson-Piercy C, Phelan L. *Hypertension and Pre-eclampsia v6.2*. Imperial College Healthcare NHS Trust. 2018.
- National Institute for Health and Care Excellence. *Hypertension in pregnancy: diagnosis and management*. NICE [Internet]. [Cited 2022 May 25]. Available from: <https://www.nice.org.uk/guidance/ng133/chapter/Recommendations>
- Li W, Hao N, Xiao Y, Zhou D. *Clinical characteristics and pregnancy outcomes of new onset epilepsy during pregnancy*. Medicine [Internet]. 2019 [cited 2022 Apr 10];98(27). Available from: <https://pubmed.ncbi.nlm.nih.gov/3235223/>
- Cauldwell M, Rudd A, Nelson-Piercy C. *Management of stroke and pregnancy*. European Stroke Journal. 2018 Sep 1;3(3):227–36.
- Oliver N. *Hypoglycaemia Management in Adult Inpatients With Diabetes Mellitus*. Imperial College Healthcare NHS Trust. 2017.
- Involuntary Movements: Types, Causes, and Examples*. Stanford Medicine [Internet]. [Cited 2022 May 31]. Available from: <https://stanfordmedicine25.stanford.edu/the25/involuntary-movements-and-tremors.html>
- Méneret A, Garcin B, Frismand S, Lannuzel A, Mariani LL, Roze E. *Treatable Hyperkinetic Movement Disorders Not to Be Missed*. Frontiers in Neurology. 2021 Dec 1;12:2140.
- Scheffer IE, Berkovic S, Capovilla G, Connolly MB, French J, Guilhoto L, et al. *ILAE classification of the epilepsies: Position paper of the ILAE Commission for Classification and Terminology*. Epilepsia [Internet]. 2017 [cited 2022 Jun 5];58(4):512–21. Available from: <http://www.ilae.org/Visitors/Docume>

Figure 1.1. Bedside tests

Figure 1.2. Venous blood gas results