Neonatal Hypotonia

Neonatal hypotonia is defined as **poor** tone in the muscles of the **trunk, limbs and/or face**. This means that the muscles provide little resistance when passively moved. Hypotonia can be categorized as central or peripheral (see clinical presentation). It can also be categorized as **axial or truncal**, predominantly affecting the neck and spinal muscles; **appendicular**, affecting predominantly the extremities; or **global**. It may be identified early in life when the newborn is unable to obtain a normal posture during movement or at rest.

CLINICAL PRESENTATION

CENTRAL HYPOTONIA *"Floppy but strong"*	PERIPHERAL HYPOTONIA *"Floppy but weak"*
❑ Hypotonic posture but may respond to external stimuli with appropriate power ❑ Reflexes normal or hyper-reflexive ❑ Often show other CNS abnormalities: decreased level of consciousness, seizures, apnea, feeding difficulties, and head shape abnormalities ❑ +/- Dysmorphic features	❑ Frog-leg posture ❑ Reflexes may be normal or hyporeflexive ❑ Diffusely low muscle bulk and/or congenital contractures ❑ Alertness and consciousness are preserved ❑ Symmetrical or asymmetrical pattern of weakness

HISTORY

- ❑ Timing and progression of hypotonia: acute vs chronic
- ❑ **Prenatal history:** abnormalities on US (polyhydramnios), chromosomal abnormalities, drug exposures, infections during pregnancy, gestational diabetes, hypertension, fetal movements.
- ❑ **Birth history:** gestational age, mode of delivery, forceps/vacuum, resuscitation, previous p9regnancies
- ❑ **Systemic illness:** GBS status, prolonged rupture of membranes, maternal fever, electrolyte abnormalities
- ❑ **Genetic causes:** family history, especially neurological

PHYSICAL EXAM

- ❑ **General Appearance:** Vital signs, level of consciousness, signs of systemic illness, contractures
- ❑ **Skin**: rashes, jaundice, cyanosis
- ❑ **HEENT**: dysmorphic features
- ❑ **Neuro**: fasciculations, CN exam, primitive and distal reflexes, observe spontaneous movements
- ❑ Horizontal and vertical suspension, traction response

DIFFERENTIAL DIAGNOSIS

Acute	Chronic

Systemic illness
❑ Sepsis/infection (ie. meningitis)
 	
Metabolic conditions
❑ Hypokalemia
❑ Hypophosphatemia
❑ Hypocalcemia
❑ Hypo/hypernatremia
 	
Genetic conditions
❑ Prader-Willi syndrome
❑ Down syndrome
	Genetic conditions
	❑ Prader-Willi syndrome
	❑ Down syndrome
	
	Neurological disorders
	❑ **Central**
	  ❑ Hypoxic-ischemic encephalopathy
	  ❑ Malformations of brain development
	  ❑ Intracranial bleeds or strokes
	❑ **Peripheral**
	  ❑ Spinal muscular atrophy
	  ❑ Myasthenia gravis
	  ❑ Congenital myopathies or muscular dystrophies

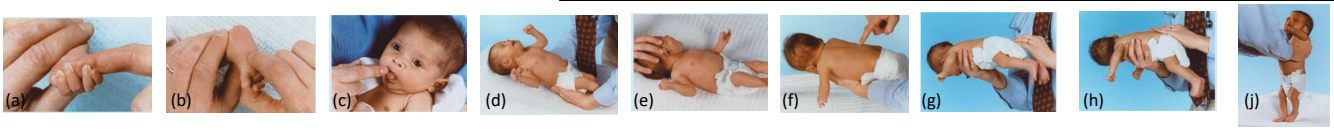
PRIMITIVE REFLEXES*

❑ Palmar grasp (a)	❑ Galant (f)
❑ Plantar grasp (b)	❑ Landau (g)
❑ Rooting (c)	❑ Parachute (h)
❑ Moro (d)	❑ Positive support (i)
❑ Asymmetric tonic neck (e)	❑ Placing and stepping (j)

*See note on Primitive Reflexes for more information.

INVESTIGATIONS

Guided by history and physical.
Systemic illness: septic workup, lytes, LFTs, ammonia, lactate
Neurologic causes: MRI brain +/- EEG; CK, electromyography/nerve condition study, muscle biopsy.
Genetic/metabolic: karyotype and microarray analysis, genetic testing for specific disorders, newborn metabolic screen and further metabolic testing as indicated.



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