

# بسم الله الرحمن الرحيم



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# شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



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# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
على هذه الأقراص المدمجة قد أعدت دون أية تغيرات



### يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



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# **Role of MRI evaluation in acute secondary inability to walk in children**

## **Thesis**

*Submitted for Partial Fulfillment of MD Degree in Radio-diagnosis*

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## List of Abbreviations

|                   |                                       |
|-------------------|---------------------------------------|
| <b>ADEM.....</b>  | Acute disseminated encephalomyelitis. |
| <b>AHEM.....</b>  | Acute hemorrhagic encephalomyelitis.  |
| <b>ATM.....</b>   | Acute transverse myelitis.            |
| <b>CNS.....</b>   | Central nervous system.               |
| <b>CSF.....</b>   | Cerebrospinal fluid.                  |
| <b>CT.....</b>    | Computed topography.                  |
| <b>DTPA.....</b>  | Diethylenetriaminepenta-acetic acid.  |
| <b>DW.....</b>    | Diffusion weighted images.            |
| <b>EMG.....</b>   | Electromyograph.                      |
| <b>ER.....</b>    | Emergency.                            |
| <b>FLAIR.....</b> | Fluid-attenuated inversion recovery.  |
| <b>GBS.....</b>   | Guillain-Barré syndrome.              |
| <b>GFR .....</b>  | Glomerular filtration rate.           |
| <b>GIT.....</b>   | Gastrointestinal tract.               |
| <b>H.....</b>     | Hours.                                |
| <b>ICU.....</b>   | Intensive care unit.                  |
| <b>IgG.....</b>   | Immunoglobulin G.                     |
| <b>IV.....</b>    | Intra-venous.                         |
| <b>Kg.....</b>    | Kilogram.                             |
| <b>LMN.....</b>   | Lower motor neuron.                   |
| <b>MCA.....</b>   | Middle cerebral artery.               |
| <b>Mg.....</b>    | Milligram.                            |
| <b>ML.....</b>    | Milliliter.                           |
| <b>mm.....</b>    | Millimeter.                           |

List of Abbreviations<sub>(Cont...)</sub>

|                   |                             |
|-------------------|-----------------------------|
| <b>mmol</b> ..... | Millimole.                  |
| <b>MRI</b> .....  | Magnetic resonance imaging. |
| <b>MS</b> .....   | Multiple sclerosis.         |
| <b>NPV</b> .....  | Negative predictive value.  |
| <b>PPV</b> .....  | Positive predictive value.  |
| <b>Sec</b> .....  | Second.                     |
| <b>T1W</b> .....  | T1 weighted                 |
| <b>T2W</b> .....  | T2 weighted                 |
| <b>UMN</b> .....  | Upper motor neuron.         |
| <b>mmol</b> ..... | Millimole.                  |

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## Introduction

Children are commonly brought with a complaint of acute bilateral lower limbs weakness. A good history and physical examination are paramount in determining etiology. Once a diagnosis is suspected, diagnostic tests should be performed immediately to define the etiology and guide therapy for this emergency situation.

The range of potential etiologies include inflammatory, vascular, traumatic, compression of the spinal cord [intradural or extradural], and infectious causes. The two most frequently encountered disorders causing child inability to walk are acute post-infectious polyneuropathy or Guillain-Barré syndrome and acute transverse myelitis. Nearly all causes of acute paralysis are life threatening and necessitate emergency management (Morgan, 2015).

Guillain-Barré syndrome (GBS) is a common cause of acute flaccid paralysis, characterized by symmetrical weakness of the limbs and hyporeflexia or areflexia. GBS typically occurs after an infectious disease in which the immune response generates antibodies that crossreact with gangliosides at nerve membranes. This autoimmune response results in nerve damage

or functional blockade of nerve conduction (**Van Den Berg et al., 2014**).

Acute transverse myelitis is a clinical syndrome affecting the spinal cord, which is characterized by acute onset of motor, sensory and autonomic dysfunction. Approximately 20% of cases of acute transverse myelitis occur in children (**Wolf et al., 2012**).

Acute disseminated encephalomyelitis (ADEM), a common demyelinating CNS disease in children. Other neuro-inflammatory demyelinating conditions, including multiple sclerosis (MS) is a demyelinating disorder of the central nervous system (CNS), characterized by multifocal areas of CNS demyelination disseminated in time and space. Para-clinical investigations in MS, including magnetic resonance imaging (MRI) of the brain and spinal cord, serve as useful identifiers of abnormalities consistent with and supportive of MS (**Eckstein et al., 2012**).

The anatomy of the spinal cord and surrounding structures renders the non-invasive imaging methods essential. It is also this anatomical arrangement that creates most of the challenges of imaging the spinal cord (**Wheeler-Kingshott et al., 2014**).