



GUILLAIN BARRE SYNDROME : SCIENCE & TECHNOLOGY

NEWS: *Guillain-Barré Syndrome cases in Pune reach 111*

WHAT'S IN THE NEWS?

Guillain-Barré Syndrome (GBS) is a rare autoimmune disorder where the immune system attacks the peripheral nerves, often triggered by infections. A recent outbreak in Pune, India, with 111 cases and one fatality, highlights the need for early diagnosis, treatment, and public awareness.

1. Pathophysiology of Guillain-Barré Syndrome (GBS)

Autoimmune Mechanism

- GBS is an **autoimmune disorder** where the body's immune system mistakenly attacks the **peripheral nervous system**.
- The immune system targets the **myelin sheath** (the protective covering of nerves) or, in some cases, the **axons** themselves (the nerve fibers).

Molecular Mimicry

- The condition is often triggered by an **infection** (viral or bacterial), where the immune system confuses nerve cells with pathogens due to **molecular mimicry**.
- For example, the **Campylobacter jejuni** bacteria, a common trigger, has surface molecules similar to those found in nerve cells, leading to cross-reactivity.

Types of GBS

1. **Acute Inflammatory Demyelinating Polyneuropathy (AIDP):**
 - The most common form, where the immune system attacks the myelin sheath.
2. **Acute Motor Axonal Neuropathy (AMAN):**
 - The immune system directly attacks the axons, leading to rapid muscle weakness.
3. **Miller Fisher Syndrome (MFS):**
 - A rare variant characterized by **ophthalmoplegia** (eye muscle weakness), **ataxia** (loss of coordination), and **areflexia** (absence of reflexes).

2. Epidemiology of GBS

Global Prevalence

- GBS is a **rare condition**, affecting **1-2 people per 100,000 annually** worldwide.
- It can occur at **any age** but is more common in **adults** and the **elderly**.
- **Men** are slightly more affected than women.

Indian Context

- In India, GBS cases are often linked to **post-infectious triggers**, such as **diarrheal diseases** or **respiratory infections**.



- Recent outbreaks, like the one in **Pune**, highlight the need for better surveillance and public health measures.

3. Clinical Features of GBS

Early Symptoms

- **Tingling and Numbness:** Often begins in the legs and spreads upward.
- **Muscle Weakness:** Starts in the lower limbs and progresses to the upper body.
- **Loss of Reflexes:** A hallmark feature of GBS.

Advanced Symptoms

- **Severe Muscle Weakness:** Can lead to **paralysis**.
- **Respiratory Failure:** Weakness of chest muscles can impair breathing, requiring mechanical ventilation.
- **Autonomic Dysfunction:** Fluctuations in **blood pressure** and **heart rate**.
- **Facial Weakness:** In some cases, facial muscles are affected, leading to difficulty in speaking or swallowing.

Progression

- Symptoms typically progress over **days to weeks**, reaching peak severity within **2-4 weeks**.
- Recovery can take **weeks to months**, and some patients may experience **long-term residual weakness**.

4. Diagnosis of GBS

Clinical Evaluation

- Diagnosis is primarily based on **clinical symptoms**, such as progressive muscle weakness and loss of reflexes.

Diagnostic Tests

1. **Nerve Conduction Studies (NCS):**
 - Measures the speed of nerve signals, which is slowed in GBS due to demyelination.
2. **Lumbar Puncture (Spinal Tap):**
 - Analyzes cerebrospinal fluid (CSF) for elevated protein levels, a common finding in GBS.
3. **Electromyography (EMG):**
 - Assesses electrical activity in muscles, helping to differentiate between demyelinating and axonal forms of GBS.



WEAKNESS and TINGLING
in Your Extremities are
Usually the First
Symptoms

GUILLAIN BARRE SYNDROME

Guillain Barre Syndrome is
a Rare Disorder in which
your Body's Immune
System attacks your
Nerves



Limb
Weakness



Difficulty
Swallowing



Shortness
of Breath



Flaccid
Paralysis



5. Treatment of GBS

Primary Treatments

1. Plasma Exchange (Plasmapheresis):

- Removes harmful antibodies from the blood, reducing the immune attack on nerves.
- Typically performed **5 times over 1-2 weeks**.

2. Intravenous Immunoglobulin (IVIG):

- Provides healthy antibodies to neutralize harmful ones.
- Administered over **5 days**.

Supportive Care

- **Mechanical Ventilation:** For patients with respiratory failure.
- **Physical Therapy:** Helps restore muscle strength and mobility during recovery.
- **Pain Management:** Medications like **gabapentin** or **pregabalin** for nerve pain.

Prognosis

- Most patients recover fully, but **10-20%** may experience **long-term disability**.
- Recovery can take **6-12 months** or longer.

6. Recent Outbreak in Pune, India

Key Details

- **Number of Cases:** 111 cases reported in less than three weeks.
- **First Fatality:** A 41-year-old individual succumbed to the disease.



- **Cause:** Linked to a **bacterial infection**, likely **Campylobacter jejuni**, often spread through contaminated food or water.

Healthcare Response

- Hospitals prioritized **early diagnosis** and **treatment** to prevent complications.
- Public health authorities investigated the source of the outbreak, focusing on **food and water safety**.

Public Awareness

- Efforts were made to educate the public about **early symptoms** (tingling, muscle weakness) and the importance of **timely medical intervention**.

7. Public Health Implications

Preventive Measures

- **Hygiene Practices:** Regular handwashing, proper food handling, and safe drinking water.
- **Infection Control:** Early treatment of infections that may trigger GBS.
- **Vaccination:** Ensuring vaccination against common infections (e.g., flu) to reduce the risk of GBS.

Surveillance and Reporting

- Strengthening **disease surveillance systems** to detect and respond to outbreaks promptly.
- Encouraging healthcare providers to report GBS cases to public health authorities.

Research and Development

- Investigating the **mechanisms** of GBS to develop targeted therapies.
- Studying the **long-term outcomes** of GBS patients to improve rehabilitation strategies.

8. Global and Indian Context

Global Perspective

- GBS is recognized as a **rare but serious condition** worldwide.
- Outbreaks are often linked to **infectious diseases**, such as **Zika virus** in Latin America and **Campylobacter jejuni** in India.

Indian Perspective

- India faces unique challenges due to **poor sanitation** and **high prevalence of infectious diseases**, which increase the risk of GBS.
- The recent outbreak in Pune underscores the need for **better healthcare infrastructure** and **public health interventions**.

Source: <https://indianexpress.com/article/india/guillain-barre-syndrome-cases-in-pune-reach-101-9801074/>