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"Unraveling Guillain-Barré Syndrome: Clinical Progression, Laboratory Insights, and Potential Triggers in a Complex Case"

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ABSTRACT :

This case presents a typical progression of Guillain-Barré syndrome (GBS), characterized by ascending paralysis from tingling sensations in the lower limbs to weakness in both upper and lower limbs over ten days. Concurrent difficulties in speech, swallowing, and motor function underscore the rapid onset and progression of GBS. Laboratory findings support the diagnosis, revealing systemic involvement with elevated urea, decreased total serum protein and albumin, and an elevated total white blood cell count. The identification of Klebsiella pneumoniae in culture, resistant to cephalothin, raises questions about bacterial triggers. Additionally, the patient's COVID-19 vaccination history adds complexity, suggesting potential vaccination-related risk factors.

KEYWORDS: Guillain-Barré syndrome, Covid-19, Klebsiella pneumonia

CASE REPORT: A 55-year-old male arrived at the Emergency Department with a history of tingling sensations progressing to weakness in his lower limbs, then extending to his upper limbs for 10 days. Additionally, he reported difficulty speaking, swallowing, and rolling over in bed, which began three days ago coinciding with the onset of tingling in his lower limbs, initially confined to the ankles but subsequently involving the entire lower limbs. Laboratory investigations confirmed his condition, revealing elevated urea serum levels of up to 85 mg/dl, decreased total serum protein levels of 5.7 g/dl, and decreased serum albumin levels of 2.7 g/dl. His complete blood count showed an elevated total white blood cell count of 12.85 cells/uL. Culture testing identified the presence of Klebsiella pneumoniae, which was found to be resistant to cephalothin.

:04-Oct-22 10:33 pm — Referred By : Dr.NEUROLOGY UNIT I M.D — Report Date : 05-Oct-22 06:53 am

Test Name	Result	Units	Bio.Ref.Range	Methodolo
Renal Function Tests				
Urea -serum	*85	mg/dl	18 - 45 mg/dl	GLDH Urease
Creatinine serum	0.7	mg/dl	0.7 - 1.4 mg/dl	ENZYMATIC
Liver Function Tests				
Total Bilirubin serum	0.5	mg/dl	0 - 2 mg/dl	Diazo Metho
Direct Bilirubin serum	0.2	mg/dl	0 - 0.2 mg/dl	Diazo Metho
Indirect Bilirubin serum	0.3	mg/dl	0.2 - 0.6 mg/dl	calculated
Alkaline Phosphatase serum	81	U/I	53 - 128 U/I	Kinetic Meth
Aspartate Transaminase(SGOT) serum	23	U/L	< 35 U/L	Kinetic meth
Alanine Transaminase(SGPT) serum	22	U/I	< 45 U/I	Kinetic meth
Total Proteins serum	5.7	g/dl	6.3 - 8.2 g/dl	Biuret meth
Albumin serum	2.7	g/dl	3.5 - 5.5 g/dl	Bromocres method
Globulin serum	3	g/dl	2.5 - 3.5 g/dl	Calculated
A\G RATIO	0.9:1			Calculated

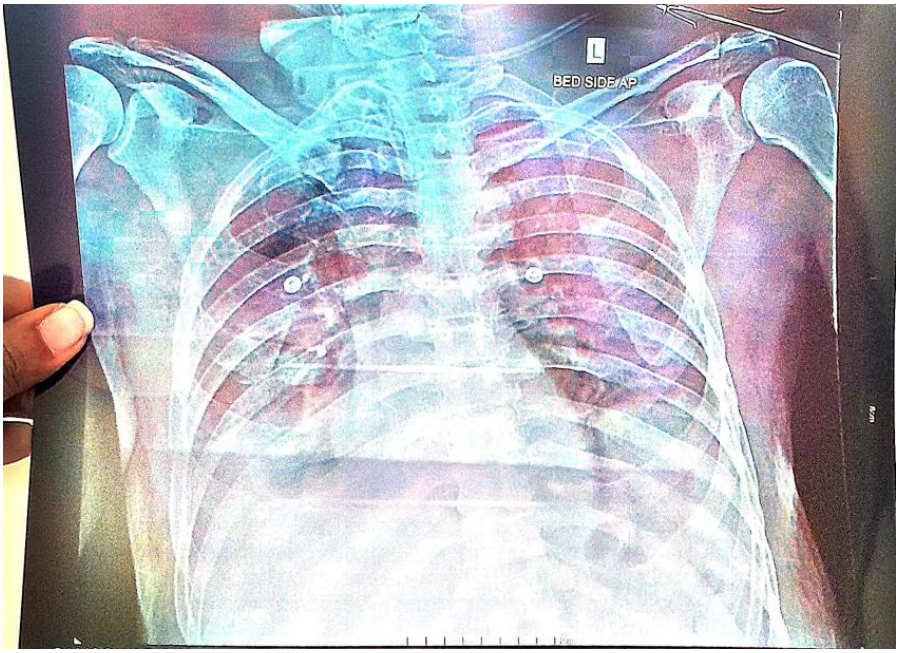
*** End Of Report ***

11-Oct-22 04:59 am — Referred By : Dr.NEUROLOGY UNIT I M.D

CBP/HAEMOGRAM — Report Date : 11-Oct-22 06:04 am

Test Name	Result	Units	Bio.Ref.Range	Methodology
Haemoglobin	11.4	gm%	13 - 17 gm%	Cynmethemoglobin method
TWBC	12.85	x10*3 cell	4.0 - 11.0 x10*3 cells/uL	Electrical Impedance
Neutrophils	77	%	40 - 70 %	Electrical Impedance
Lymphocytes	13	%	20 - 40 %	Electrical Impedence
Eosinophils	1	%	1 - 5.0 %	Electrical Impedence
Monocytes	8	%	1 - 7.0 %	Electrical Impedence
Basophils	0	%	0 - 1 %	Electrical Impedence
PCV	33.4	%	40 - 50 %	Calculated
Platelet count	232.0	x10*3/uL	150 - 400 x10*3/uL	Electrical Impedence
TRBC	3.86	millions/cum	4.5 - 5.5 millions/cumm	Electrical Impedence
MCV	86.5	fL	83 - 101 fL	Calculated
MCH	29.6	Pg	27 - 32 Pg	Calculated
MCHC	34.3	gm/dL	31.5 - 34.5 gm/dL	Calculated
RDW - CV	13	%	11.6 - 14 %	Electrical Impedenc

Peripheral smear Methodology - Manual microscopy



INTRODUCTION :

Guillain-Barré syndrome is an uncommon neurological disorder characterized by the immune system's assault on the peripheral nervous system. It can be instigated by an acute bacterial or viral infection, or even by vaccination.1

INCIDENCE :

The reported incidence of GBS is 1-2 cases per 100,000 individuals in the population, with a linear rise in frequency as age advances. Men are approximately 1.5 times more likely to be affected than women. A preceding infection, such as an upper respiratory tract infection, is a well-established event occurring 10-14 days before the onset of GBS.2,3

SIGNS & SYMPTOMS :

- Tingling and weakness originating in the feet and legs, then progressing to the upper body and arms.
- A sensation akin to pins and needles felt in the fingers, toes, ankles, or wrists.
- Difficulty walking steadily or climbing stairs, or an inability to do so.
- Difficulty in facial movements, such as speaking, chewing, or swallowing.
- Seeing double or experiencing immobility in the eyes.
- Difficulty controlling the bladder or bowel function.
- Intense pain that can be described as dull, shooting, or cramp-like, potentially worsening during nighttime.
- Difficulty breathing

- Rapid heart rate
- Low or high blood pressure [4]

RISK FACTORS :

- Campylobacter
- Influenza virus
- Covid-19 virus
- Cytomegalo virus
- Epstein – Barr virus
- Zika virus
- Hepatitis A,B,C & E
- Mycoplasmo pneumonia
- Covid-19 vaccines . [5]

DISCUSSION :

The presented case depicts a characteristic progression of Guillain-Barré syndrome (GBS), a rare autoimmune disorder affecting the peripheral nervous system. The patient's symptoms, starting with tingling sensations in the lower limbs and progressing to weakness over a ten-day period before extending to the upper limbs, align with the typical ascending paralysis observed in GBS. Additionally, the onset of difficulties in speech, swallowing, and motor function, coinciding with the initial tingling sensation in the lower limbs and exacerbating over the subsequent three days, underscores the rapid and progressive nature of GBS.

Laboratory findings further support the diagnosis of GBS. Elevated urea serum levels, coupled with decreased total serum protein and serum albumin levels, indicate systemic involvement, which is frequently observed in GBS cases due to autonomic dysfunction and muscle wasting. The elevated total white blood cell count signifies an active immune response, consistent with the autoimmune etiology of GBS.

The identification of Klebsiella pneumoniae in the culture test, along with its resistance to cephalothin, raises intriguing questions about the potential role of bacterial infections as triggers for GBS. While viral or bacterial infections often precede GBS, the presence of a specific bacterial pathogen, especially one resistant to cephalothin, adds complexity to the case. Notably, the patient's history of COVID-19 vaccination introduces another layer of consideration, as vaccination has been implicated as a potential risk factor for GBS in some instances.

CONCLUSION :

In summary, the patient's presentation aligns with Guillain-Barré syndrome, characterized by ascending paralysis and neurological symptoms. Laboratory findings support the diagnosis, indicating systemic involvement and an active immune response. The presence of Klebsiella pneumoniae, resistant to cephalothin, raises concerns about bacterial triggers. Additionally, the patient's COVID-19 vaccination history adds complexity to potential risk factors. Prompt recognition and management are crucial for optimizing outcomes in GBS.

Statement of Ethics: An informed consent form was taken from the patient

Conflict of Interest: The authors declared no conflicts of interest

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