

CENTRAL NEURAXIAL BLOCKADE IN A PATIENT WITH SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD

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The Case

28 year old primiparous woman presented to high-risk obstetric anaesthetic clinic in September 2022 with a history of subacute combined degeneration of the spinal cord (SACD) secondary to recreational nitrous oxide use. She was otherwise well and planned for a normal vaginal delivery. The question to be answered in clinic was whether regional anaesthesia would be safe and appropriate for her in labour. Her clinical progression of SACD is outlined below.

Timeline

NOVEMBER 2021

Multiple presentations to the emergency department with ascending paraesthesia, numbness and weakness, starting in hands and feet.

DECEMBER 2021

EMG – Normal
Vitamin B12: 140 (Normal range 191-663)
Hb: 128

CONFIRMED DIAGNOSIS OF SACD SECONDARY TO NITROUS OXIDE ABUSE

TREATMENT WITH HYDROXYCOBALAMIN

JUNE 2022

Vitamin B12: 657

July 2022

EMG: Normal
MRI spine: Normal

SEPTEMBER 2022

High risk obstetric clinic: patch of numbness over right thigh only

SEPTEMBER 2022

Spontaneous labour resulting in emergency caesarean section

NOVEMBER 2022

No new symptoms

The Literature

Despite multiple reviews of the literature, no evidence was forthcoming in the safety or risk profile of central neuraxial blockade in patients with SACD, pregnant or otherwise.

Searches were made on pubmed, NCBI and google scholar. Search terms included a combination of: subacute combined degeneration; anaesthesia; epidural; Central neuraxial anaesthesia; obstetrics

The Decisions

There was no consensus between anaesthetic consultants with regards to the safety of epidural and spinal anaesthesia in this patient.

The risks and benefits of regional anaesthesia were discussed with the patient in clinic and again after further research. It was agreed that regional anaesthesia would be appropriate if required.

The Outcome

The patient was admitted to the delivery suite several weeks later in spontaneous labour. She received a combined spinal epidural for labour, which was subsequently used for an emergency caesarean section. The patient was reviewed prior to discharge and appeared well with no deterioration in neurological function. She was then followed up over the next three months, in which time there was no development of neurological deficit.

Conclusion

There is no literature currently available that can guide decision making in this group of patients with regards to central neuraxial blockade. We hope that this case gives some evidence to its safety, although the question remains whether it would be appropriate in a patient that remained untreated and symptomatic at the time of delivery.

1. Qudsiya Z, De Jesus, O. Statpearls [Internet], NCBI Bookshelf, February 2023
2. Scott BK and Baranov D, Anaesthesia and Uncommon Diseases(Sixth edition), 2012
3. Schimana R, Ober H, Neuhaus O, Subacute combined degeneration of the spinal cord in vitamin B12 and copper deficiency Case Reports 2017;2017:bcr-2017-222446
4. HumanPhysiology.Academy. © HumanPhysiology.Academy 2014-2015
5. <https://www.b12-vitamin.com/benefits/>

Subacute Combined Degeneration Of The Spinal Cord (SACD):

An acquired, reversable neurological condition with sensory, motor, psychological and haematological manifestations.

It is characterised by demyelination in the dorsal and lateral columns of the spinal cord which can be seen on MRI and is a result of vitamin B12 deficiency¹

Clinical features of SACD²

SENSORY	MOTOR	PSYCHOLOGICAL	HAEMATOLOGICAL	RADIOLOGICAL
PARAESTHESIA REDUCED SENSATION LOSS OF PROPRIOCEPTION	SYMMETRICAL WEAKNESS HYPERREFLEXIA SPASTICITY PARAYLSIS INCONTINENCE	DEMENTIA DEPRESSION	MACROCYTIC ANAEMIA VIT B12 DEFICIENCY RAISED MMA and HOMOCYSTEINE	DEMYELINATION OF DORSAL AND LATERAL COLUMNS ON MRI

Main Causes of SACD¹

Poor nutrition	Lack of animal products and cereals
Reduced absorption	Gastric surgery, pernicious anaemia
Drugs	Long term PPI, H2 antagonist, nitrous oxide, metformin
Genetic	Rare

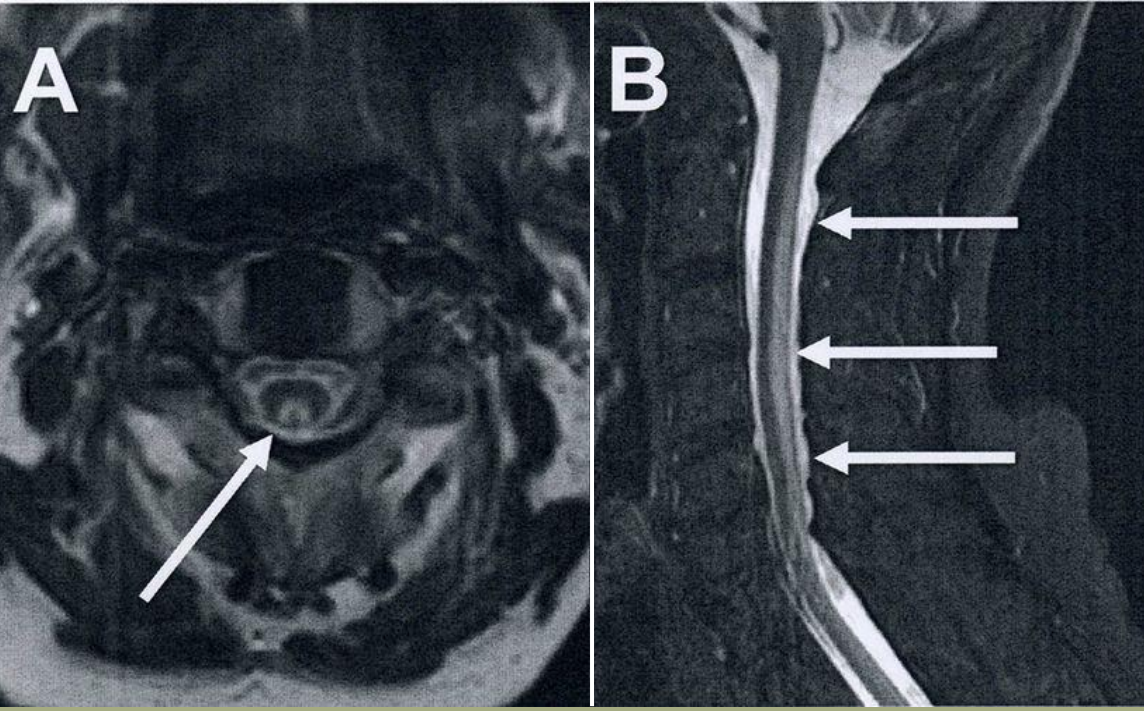


Fig 1.
A: 'V' sign of demyelination in dorsal columns of cervical spinal cord.
B: sagittal section showing demyelination of multiple cervical levels³

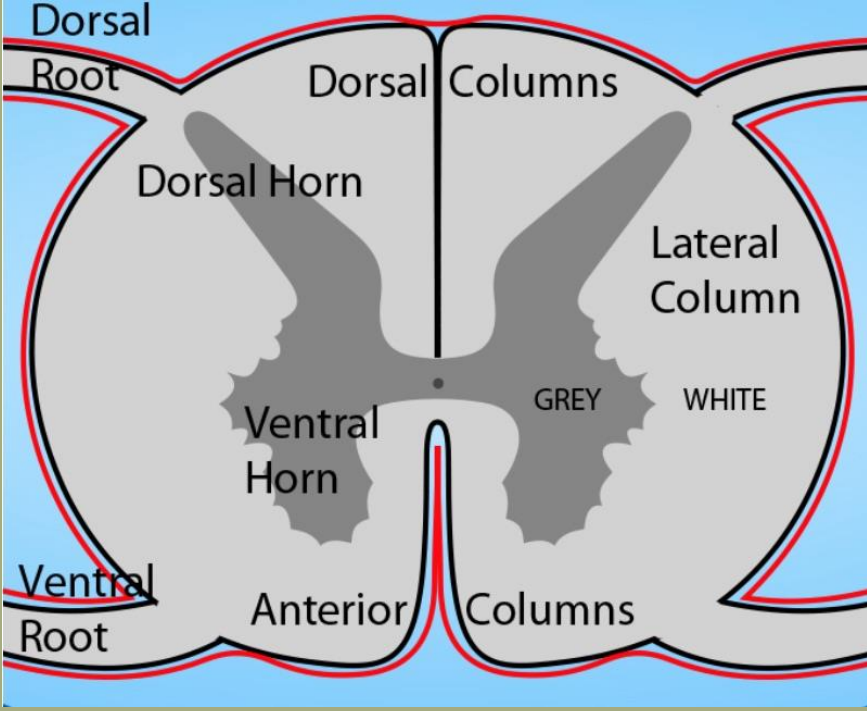


Fig2.
Anatomical representation of spinal columns⁴

THE ROLE OF VITAMIN B12⁵

