

# SIADH associated with neuromyelitis optica involving hypothalamus.

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## Introduction

- Syndrome of inappropriate antidiuretic hormone secretion (SIADH) is a cause of hyponatraemia which has been associated with many central nervous system (CNS) disorders. However, its association with neuromyelitis optica (NMO) or NMO spectrum disorders (NMOSD) is rare.
- NMO and NMOSD are inflammatory, autoimmune, demyelinating disorders of CNS predominantly affecting optic nerves and spinal cord but also certain brain regions. They are associated with the presence of IgG antibodies to aquaporin-4 (highly expressed in hypothalamus, brainstem, periventricle & spine).
- We report here a case of NMOSD relapse which presented with hyponatraemia due to SIADH.

## Case report

- A 21-year old Asian woman presented and admitted to the hospital with possible relapse of NMOSD (initial diagnosis at the age of 16 and confirmed positive anti-aquaporin-4 antibodies). She had headache, dizziness, right hand weakness and severe hyponatraemia (serum Na 116 mmol/l [135-145]).
- Emesis, dominant in previous relapses was absent and patient was euvolaemic.
- Medications included Prednisolone 20mg OD, Azathioprine, Proton Pump inhibitor (PPI).
- Investigations demonstrated serum osmolality ( $Se_{osm}$ ) was 250 mOsm/Kg, urine osmolality ( $U_{osm}$ ) 468 mOsm/Kg, FT4: 14 (normal range 9-25), TSH 2.7 (normal range 0.3 – 5.0). A diagnosis of SIADH secretion was made based on the above results.
- Hyponatremia improved to 129 mmol/l in 2 days with fluid restriction and conversion of PPI to histamine-2-receptor antagonist. Patient was discharged from the hospital with further follow-up appointments in the Endocrine and Neurology clinic as outpatient.

## Further relapse and management

- 2-weeks later patient reviewed in the Endocrine clinic where she reported increasing somnolence, increased frequency of urination without evidence of infection, and unchanged thirst.
- Documented fluid balance over a 24-hour period was normal as were repeat paired serum and urine test results ( $Na^+$ 141,  $Se_{osm}$ 293,  $U_{osm}$ 698).
- She appeared emotionally labile, expressed suicidal ideation, and fell into deep sleep mid-consultation precipitating urgent admission for treatment of further relapse with 5 days of IV methylprednisolone (1g once daily).
- Somnolence - a common symptom on NMOSD relapse - was likely secondary to central sleep apnoea confirming neurological progression as sodium was normal.
- MRI brain performed at this admission showed: "T2/FLAIR hyperintensity with associated contrast enhancement affecting the medial right thalamus/hypothalamus and left hypothalamus. Findings in keeping with active NMO."
- Symptoms improved with IV methylprednisolone and patient was symptom free and discharged after 5 days, on high dose of prednisolone. Patient was also offered treatment with Rituximab at the Neurology clinic which she is considering.

Table 1. Biochemical values

	10/5/17	13/5/17 (a)	13/5/17 (b)	14/5/17	15/5/17
Serum Na (mmol/l)	134	118	116	129	130
Serum Osmolality (mOsm/Kg)			250	270	
Urine Osmolality (mOsm/Kg)					468
TSH	2.7				

Figure 1. MRI brain - SAG T2 FLAIR

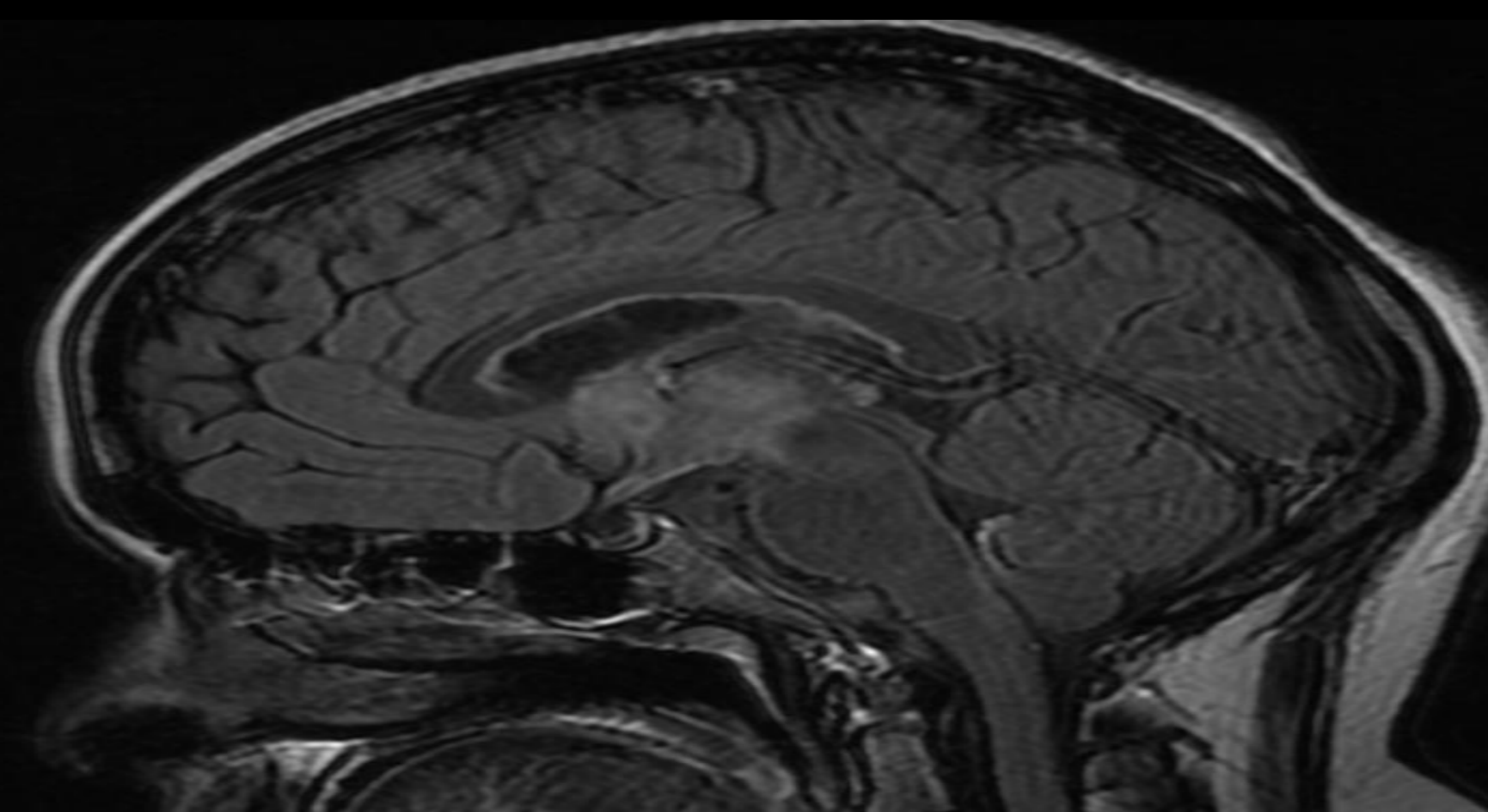
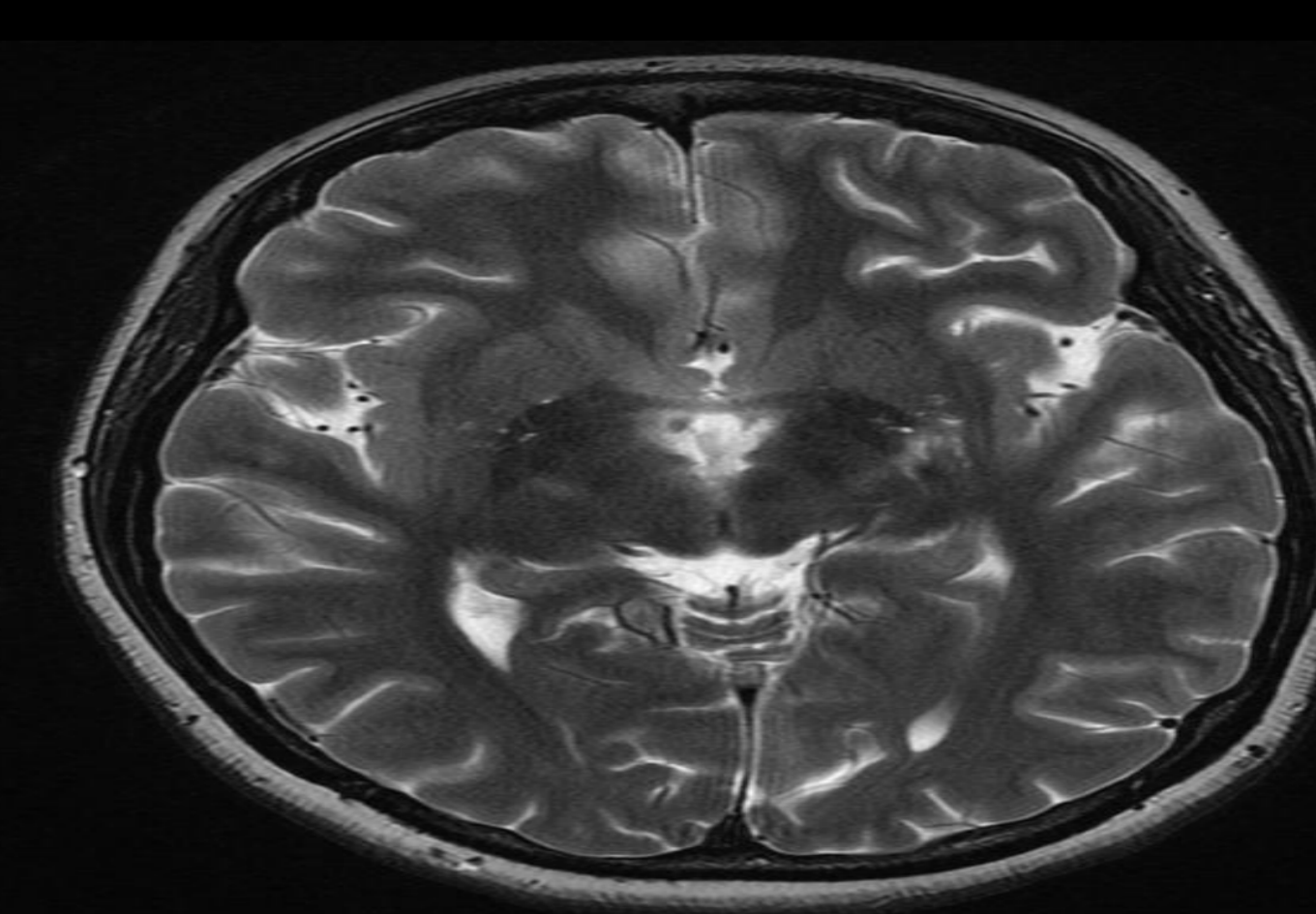


Figure 2. MRI brain - Axial T2 TSE



## Discussion

- Previous case series have shown that approximately 15% of patients with NMO/NMOSD and positive IgG antibodies for aquaporin-4 meet the criteria for SIADH<sup>1,2</sup>.
- Hypothalamic lesions may be common in patients with SIADH on background of NMO with positive anti-aquaporin-4 antibodies<sup>1</sup>.
- SIADH may reportedly precede an exacerbation of NMO, or accompany & resolve after a relapse.
- Unlike autoimmune idiopathic hypophysitis which typically causes central-Diabetes Insipidus, SIADH has been reported more commonly with NMO.
- Increasing awareness of NMO-associated-endocrinopathy, especially of SIADH is needed. Other endocrinopathies associated with NMO/NMOSD include type 2 diabetes mellitus, diabetes insipidus, hyperprolactinaemia with or without galactorrhoea, hyperphagia and consequent obesity, amenorrhoea and hypothyroidism.

## References

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2. Iorio R, Lucchinetti CF, Lennon VA, Costanzi C, Hinson S, Weinshenker BG, Pittock SJ. Syndrome of inappropriate antidiuresis may herald or accompany neuromyelitis optica. Neurology. 2011 Oct 25;77(17):1644-6.