Clinical Report

SIADH following laparoscopic cholecystectomy

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Purpose: To present an unusual case of inappropriate antidiuretic hormone secretion syndrome after a minor surgical procedure in a healthy patient.

Clinical features: A 71-yr-old woman underwent uneventful laparoscopic cholecystectomy for gallstones under general anaesthesia. Fifty-two hours post operatively she began convulsing and was found to have a serum sodium concentration as low as $112 \text{ mmol}\cdot\text{L}^{-1}$. Serum osmolality, urinary sodium concentration and urine osmolality suggested a diagnosis of inappropriate antidiuretic hormone secretion. Subsequent treatment with anticonvulsants followed by strict fluid restriction which increased serum sodium concentrations led to rapid recovery.

Conclusion: The syndrome of inappropriate ADH secretion has several well documented causes including major surgery. Few episodes have been described following minor surgery in healthy patients and the only possible risk factor evident in this patient could be her advancing years.

Objectif : Rapporter un cas inusité de sécrétion inappropriée d'hormone antidiurétique (SIADH) après une procédure chirurgicale mineure chez une patiente en bonne santé.

Éléments cliniques : Une patiente de 71 ans a subi une cholécystectomie laparoscopique pour cholélithiase sous anesthésie générale. Cinquante-deux heures après l'intervention elle a présenté des convulsions et le dosage du sodium sérique a révélé un taux de $112 \mu\text{mol}\cdot\text{L}^{-1}$. L'osmolalité sérique, l'osmolalité urinaire de même que la concentration urinaire de sodium évoquaient un diagnostic de SIADH. Le traitement institué, soit anticonvulsivants suivis de restriction liquidienne stricte entraînant une augmentation de la natrémie, a permis un contrôle rapide de la situation.

Conclusion : Le SIADH a plusieurs étiologies bien documentées, dont la chirurgie majeure. De rares épisodes ont été rapportés après chirurgie mineure chez des patients en bonne santé. Le seul facteur de risque possible et plausible chez cette patiente réside dans son âge relativement avancé.

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THE patient was a 71-yr-old woman with a two-year history of intermittent right upper quadrant pain which was diagnosed by ultrasound to be due to gallstones. She had no history of jaundice and was admitted routinely for a laparoscopic cholecystectomy. She had no relevant medical history and was not taking any medication.

Physical examination was unremarkable and pre-operative laboratory investigation revealed serum Na⁺ 136 mmol·L⁻¹, K⁺ 4.0 mmol·L⁻¹ and normal renal and liver function. Her chest x-ray was normal.

Anaesthesia was induced with 120 mg propofol and maintained with oxygen 33% in nitrous oxide with isoflurane 0.5–1.0 %. Neuromuscular blockade was achieved with vecuronium. A total of 10 mg morphine *iv* was given during the procedure, which lasted 75 min. Neuromuscular blockade was reversed with 2.5 mg neostigmine and 0.5 mg glycopyrrolate. Approximately 1500 ml Ringer's lactate solution were infused in theatre.

Over the following 24 hr, the patient received 2–3 L dextrose saline with 20 mmol KCl. For pain relief, she received 150 mg diclofenac *pr* and acetaminophen *po* as required. Within 48 hr, her pain settled and she had a normal oral intake of fluids and light diet. However, she was noted to be slightly confused and lethargic. Fifty-two hours after surgery, the patient was found unconscious with generalised tonic-clonic seizures which were controlled with 20 mg diazepam *pr* and she received supplemental oxygen by mask. Two subsequent blood samples revealed serum sodium concentrations of 116 and 112 mmol·L⁻¹ respectively. Potassium, urea and creatinine concentrations were within normal limits. Measured serum osmolality was 237 mOsmol·kg⁻¹, urinary sodium concentration was 87 mmol·L⁻¹ with a urine osmolality of 556 mOsmol·kg⁻¹.

The patient was placed on a strict fluid restriction regimen of 400 ml *po* for 24 hr which was gradually increased. She experienced no further convulsions and four days later she was discharged, with a normal serum sodium concentration, 141 mmol·L⁻¹. At review one week later, she was in good health with a normal electrolyte balance.

Discussion

The syndrome of inappropriate antidiuretic hormone secretion (SIADH) is characterised by hyponatraemia, low plasma osmolality and an inappropriate antidiuresis i.e., a urine osmolality higher than anticipated for the degree of hyponatraemia. These criteria, outlined by Bartter and Schwartz have been the accepted definition for SIADH for many years.¹ The patient described in this clinical report fulfilled these criteria.

There are several well documented causes of SIADH. It occurs in the presence of some malignant tumours which produce substances which mimic normal ADH action, particularly malignant tumours of the lung. Many cases of SIADH have also been reported following head injury and neurological tumours and infections. A number of drugs, including barbiturates, anticonvulsants, opioids and some hypoglycaemics are known to increase ADH secretion or potentiate its effects. Major surgical procedures such as open heart surgery may result in SIADH developing in the post operative period.²

Patients with SIADH have concentrated urine despite being hyponatraemic. To restore urine osmolality and normal plasma sodium concentrations, patients are placed on a strict fluid restriction regimen, with appropriate supportive management of symptoms should they occur. In severe cases, drugs such as demeclocycline, which antagonise the action of ADH on the renal collecting ducts, have been successfully employed.

The patient described had normal adrenal, renal and lung function and no evidence of hypovolaemia. She bore no symptoms or signs of respiratory or neurological disease before surgery. Whilst the surgical stress of a major procedure has been shown to be a risk factor for the development of SIADH, it is not well documented after simpler, less invasive procedures. Only three cases of SIADH after minor surgery have been reported in the literature, following appendicectomy, testicular exploration and cataract extraction (under local anaesthetic).^{3–5}

Miller *et al.*⁶ report the findings of a large study of apparent idiopathic hyponatraemia in an ambulatory geriatric population which supports the hypothesis that aging is a risk factor for the development of an SIADH-like hyponatraemia in some older patients who do not have any other apparent underlying aetiology. The elderly patient described here had a pre operative serum sodium concentration at the lower end of the normal range (136 mmol·L⁻¹). It is reasonable therefore, to postulate that she may be part of a subset of elderly people at risk of developing SIADH without other risk factors, and that a relatively minor surgical procedure may have raised her susceptibility sufficiently to develop the syndrome overtly.

Laparoscopic day case and short stay surgery is becoming more common. It is possible that they could have a greater degree of surgical stress than traditionally anticipated. It is conceivable that for a small group of older patients, SIADH could infrequently be a dangerous complication.

References

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