

Correspondence

Status asthmaticus and the syndrome of inappropriate secretion of antidiuretic hormone

Sir,—The features of the syndrome of inappropriate antidiuretic hormone (ADH) secretion include¹ (1) hyponatraemia with consequent hypo-osmolality of the serum and extracellular fluid; (2) absence of clinical evidence of extracellular fluid volume depletion; (3) urine less than maximally dilute; (4) normal renal and adrenal function; (5) in characteristic cases no oedema (where oedema has been reported^{2,3} it has been due to tumour causing superior vena caval obstruction). Therefore the patient of Dr GFA Benfield and his colleagues (*Thorax* February 1982, p 147) did not have the syndrome.

She was breathless for seven days before admission and would thus have increased fluid losses from the respiratory tract; we are not told what fluid replacement she was able to take during this time. Her kidneys would have been influenced by endogenous and exogenous mineralocorticoids as well as ADH secreted as part of the stress response. On admission she was said to be "mildly dehydrated" but no evidence is given for this assessment. She was then treated with large amounts of intravenous 5% dextrose, itself a common cause of hyponatraemia. There are no data on the type of fluid given on subsequent days. She became grossly salt and water overloaded, as shown by her oedema. The figure shows that the nadir of the plasma sodium and osmolality exactly corresponded with the point of maximal fluid overload. The significance of the high urine osmolality is difficult to assess; we are not told if it was an aliquot of a 24-hour collection or a random sample, or if it was checked in the laboratory or by calculation, or what urinary component caused the high osmolality. The high urine potassium concentration was clearly very appropriate. Successful treatment with fluid restriction is compatible with the syndrome of inappropriate secretion of ADH and fluid overload; for the latter,

diuretics should be given.

In conclusion, this woman had iatrogenic fluid overload, not syndrome of inappropriate ADH secretion; the case illustrates the care needed in giving intravenous fluids to patients with status asthmaticus.

ANDREW BUSH
Renal Unit
St Mary's Hospital
Praed Street
London W2 1NY

¹ Bartter FC, Schwartz WB. *Am J Med* 1967;42:790-806.

² Bower BF, Mason DM, Forsham PH. *N Engl J Med* 1964;271:934-8.

³ Barraclough MA, Jones JJ, Lee J. *Clin Sci* 1966;31:135-44.

We sent this letter to the authors, and Dr BH Davies replies below.—ED, *Thorax*.

Sir,—Our patient had been unable to take significant amounts of oral fluids for three to four days prior to admission. She was clinically dehydrated as assessed by forehead skin turgor. Large amounts of intravenous fluids were not administered. Indeed a fluid replacement of three litres daily in severe asthma is regarded by some as conservative. The accompanying table illustrates the pattern of fluid balance for the first nine days after admission. On 16 December 1980 she was given intravenous frusemide before the diagnosis had been confirmed. Urinary osmolalities were determined on aliquots of 12-hour collections. We remain convinced this patient had the syndrome of inappropriate secretion of antidiuretic hormone.

BRIAN H DAVIES
Asthma Research Unit
Sully Hospital
Penarth, Glamorgan

Fluid balance, electrolytes, urea, and urine osmolality in woman with status asthmaticus

| December: | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|------------------------|------|------|------|------|-----|------|------|
| Intravenous fluid (ml) | 1000 | 2250 | 2500 | 2242 | 814 | 1480 | 1260 |
| Oral fluid (ml) | 500 | 500 | 475 | Nil | | | |
| Fluid output (ml) | 400 | 675 | 575 | 840 | 210 | 837 | 490 |
| Sodium (mmol/l) | 130 | | | 115 | 110 | 123 | |
| Potassium (mmol/l) | 4.1 | | | 6.0 | 5.8 | 3.9 | |
| Urea (mmol/l) | 6.2 | | | 7.2 | 6.3 | 9.4 | |
| Osmolality (mmol/l) | | | | | 228 | 255 | |

SI to traditional units: conversion—Urea: 1 mmol/l = 6 mg/100 ml; sodium and potassium: 1 mmol/l = 1 mEq/l; osmolality: 1 mmol/l = 1 mosmol/l.