

# Hyponatremia

Zoltan Gyorgyi  
2nd Dept. of Pediatrics  
Semmelweis University

# Case 1 - 16mo old boy

- No relevant PMH
  - Fever for three days (max 39 C), coughing
  - Transported by ambulance because of febrile? seizure at home
  - Tonic-clonic seizure during hospital admission (lasting for approximately 3 mins., resolving spontaneously)
  - Now tenebrous
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- Diagnosis?
  - Anything suspicious?
  - Which ward should we put this patient?

# Case 2 - 9mo old girl

- No relevant PMH
  - Polydipsia-polyuria for 3 weeks (5 liters daily).
  - No weight gain for 2 months.
  - Seizure at home (no fever)
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- Diagnosis?
  - DM?
  - DI?

# Case 3 - 4yr old girl

- No relevant PMH
- Diarrhea for 2 days
- No fever
- Loss of appetite
- Became very picky while ill

On admission: signs of severe dehydration

Diagnosis?

# Case 4 - 11 yr old boy

- No relevant PMH
- Has been previously admitted to hospital for gastroenteritis 3 times, every time has developed hyponatraemia
- Iv. fluid therapy always normalized sodium levels
  
- Now came for general malaise, altered mental state
- Bronze skin, low blood pressure on admission
  
- Diagnosis?
- Other possible lab disturbances?

## Case 1

At home parents gave him 2 liters of tea (made of baby water) for calming in 7 hours' time.

## Case 2

- Only accepted baby water as drink.

Sodium levels: 121 mmol/l

## Case 3

Parents refused to give ORF.

# Diagnosis ?

## Case 4

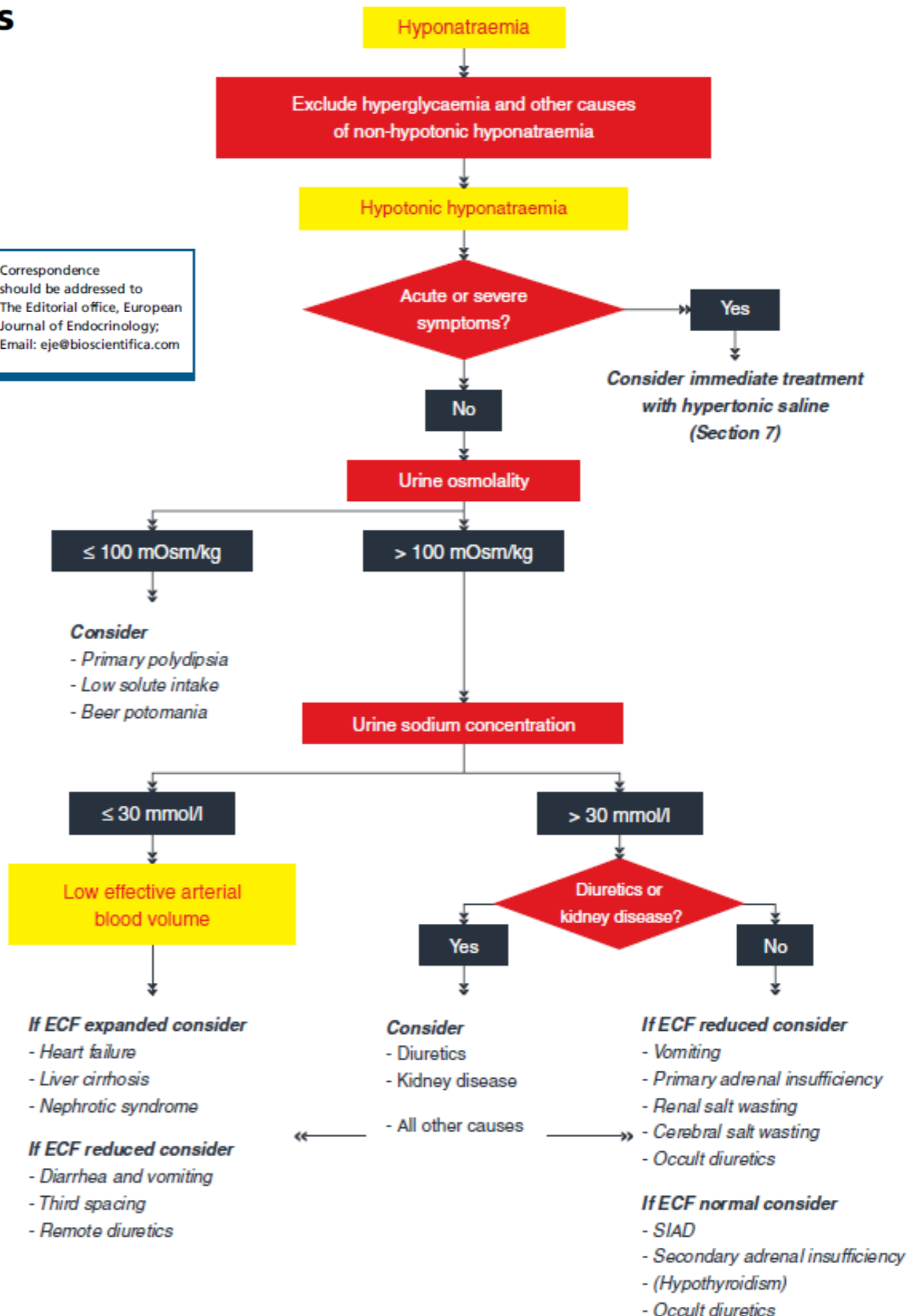
- Parents add: he has been sleeping way too much in the past months. His school performance deteriorated and he stopped karate.

# Clinical practice guideline on diagnosis and treatment of hyponatraemia

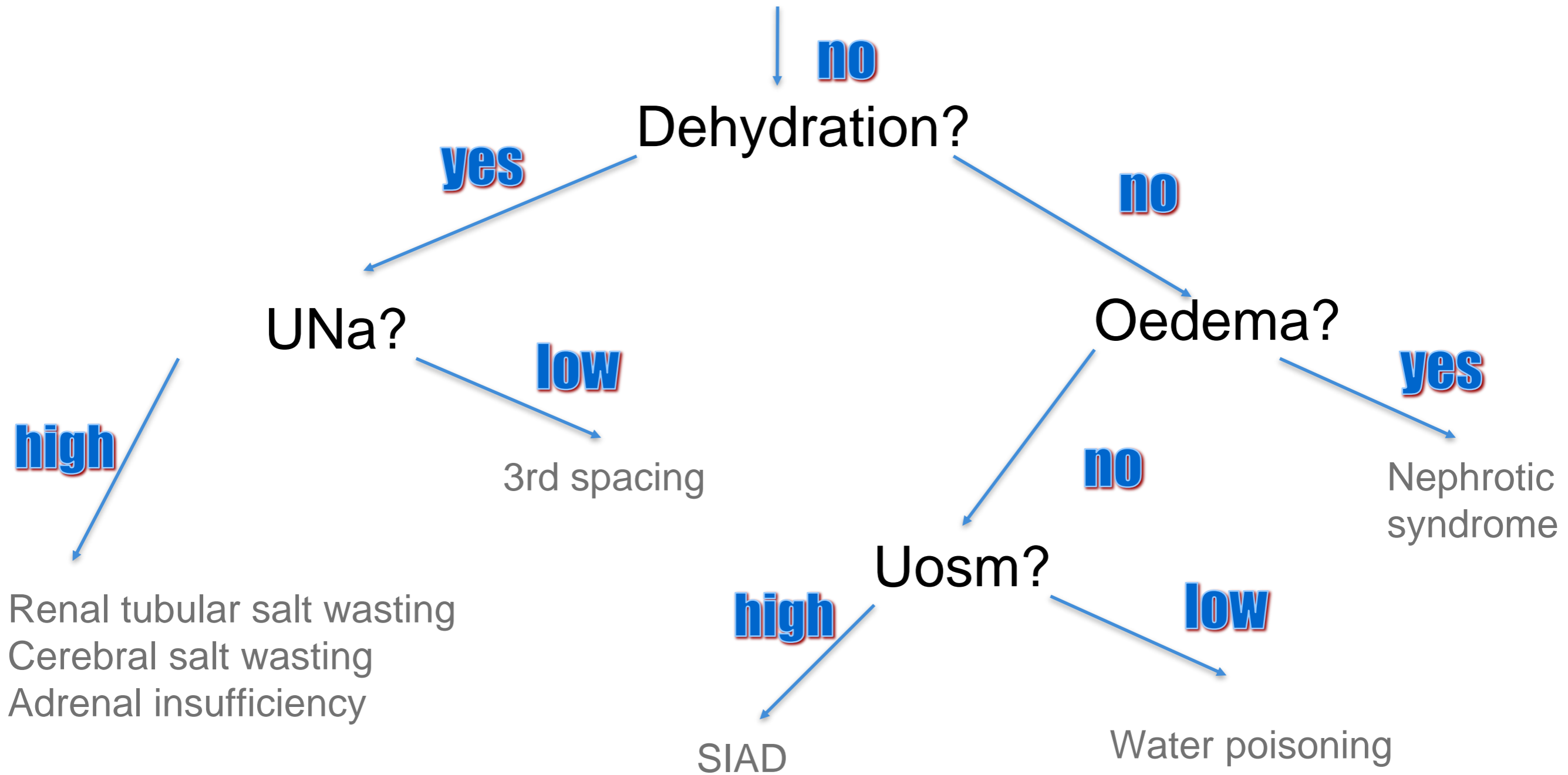
Goce Spasovski, Raymond Vanholder<sup>1</sup>, Bruno Allolio<sup>2</sup>, Djillali Annane<sup>3</sup>, Steve Ball<sup>4</sup>, Daniel Bichet<sup>5</sup>, Guy Decaux<sup>6</sup>, Wiebke Fenske<sup>2</sup>, Ewout J Hoorn<sup>7</sup>, Carole Ichai<sup>8</sup>, Michael Joannidis<sup>9</sup>, Alain Soupart<sup>6</sup>, Robert Zietse<sup>7</sup>, Maria Haller<sup>10</sup>, Sabine van der Veer<sup>11</sup>, Wim Van Biesen<sup>1</sup> and Evi Nagler<sup>1</sup> on behalf of the Hyponatraemia Guideline Development Group

State University Hospital Skopje, Skopje, Macedonia, <sup>1</sup>Ghent University Hospital, Ghent, Belgium, <sup>2</sup>Würzburg University Hospital, Würzburg, Germany, <sup>3</sup>Raymond Poincaré Hospital, University of Versailles Saint Quentin, Paris, France, <sup>4</sup>Newcastle Hospitals and Newcastle University, Newcastle, UK, <sup>5</sup>Sacré-Coeur Hospital, University of Montreal, Montreal, Quebec, Canada, <sup>6</sup>Erasmus University Hospital, Brussels, Belgium, <sup>7</sup>Erasmus Medical Centre, Rotterdam, The Netherlands, <sup>8</sup>Nice University Hospital, Nice, France, <sup>9</sup>Innsbruck University Hospital, Innsbruck, Austria, <sup>10</sup>KH Elisabethinen Linz, Linz, Austria and <sup>11</sup>Amsterdam Medical Centre, Amsterdam, The Netherlands

Correspondence should be addressed to The Editorial office, European Journal of Endocrinology; Email: eje@bioscientifica.com



# Pseudohyponatremia?



Others:

CKF, CLF, CHF, hypothyroidism, diuretics



**Sodium supplementation**  
**iv. normal saline**  
**Fluid restriction**  
**Specific therapy**

Pseudohyponatremia?



**no**

Dehydration?

**yes**

**no**

UNa?

**low**

**high**

3rd spacing

Renal tubular salt wasting  
Cerebral salt wasting  
Adrenal insufficiency

Oedema?

**no**

**yes**

Nephrotic syndrome

UOsm?

**high**

**low**

SIAD

Water poisoning

Others:  
CKF, CLF, CHF, hypothyroidism, diuretics

# Hyponatremia

- SeNa less than 135 mmol/l
- It is the most common electrolyte disorder (1)
- Its incidence can be up to 25% in hospitalized children (2)
- It is most commonly iatrogenic (3)
- It is a risk factor for higher mortality and prolonged hospital stay (3,4)
- Acute cases potentially develop brain oedema with severe CNS symptoms
- Chronic hyponatraemia is seldom symptomatic, but any further decrease can be quickly life threatening.
- When correcting, SeNa should raise by 0,5 (maximum 1) mmol/l/hour.

1 Eulmesekian et al.: Hospital-acquired hyponatremia in postoperative pediatric patients (*Pediatr Crit Care Med* 2011)

2 Wald et al.: Impact of hospital-associated hyponatremia on selected outcomes (*Arch Intern Med* 2010)

3 Hoorn et al.: Hyponatremia and mortality: moving beyond associations (*Am J Kidney Dis* 2013)

4 Spasovski et al.: Clinical practice guideline on diagnosis and treatment of hyponatraemia (*Eur J Endocr* 2014)

Feel free to ask.