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Self assessment questions: Renal tubular acidosis

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1 Renal acid-base regulation:

(a) An average diet generates around 70 mmol of hydrogen ion to excrete in the urine each day
(b) Approximately 3,500 mmol of bicarbonate ion is filtered each day and most of it is reabsorbed by the proximal tubule
(c) The two main urinary buffers are ammonia/ammonium and phosphate
(d) The kidney distal tubule is the main site of ammoniagenesis
(e) Daily net acid excretion is calculated as ammonium plus phosphate excretion minus bicarbonate

2 Classification of RTA:

(a) There are four recognised types of RTA
(b) The two most common types are type 1 and type 4
(c) Type 4 RTA results from aldosterone or mineralocorticoid excess
(d) Type 2 is also known as proximal RTA and it rarely occurs in isolation, but is usually part of a renal Fanconi syndrome
(e) Type 3 RTA is a mixture of type 1 and type 2 disease

3 Diagnosis and features of RTA:

(a) Under acidotic stress, urine pH is normally in the range 4.5–5.3
(b) Patients with chronic renal failure (ESRD) or type 2 (proximal) RTA cannot lower their urine pH to <5.3 following an acid load (for example, after oral NH4Cl)
(c) Patients with type 1 or distal RTA usually have a very low urinary citrate concentration
(d) Patients with type 1 or distal RTA are more likely to have nephrocalcinosis, rickets (osteomalacia) and hypokalaemia
(e) The most common association of adult type 1 or distal RTA is with acquired autoimmune disease

Answers to these self-assessment questions can be found on page s92.