Dr. Andrea Mezzetti: This is the case report of T.G., a 51-year-old man affected by Down’s syndrome and psychotic disorder. He was admitted to our Department of Internal Medicine in shock status, with marked hypotension (systolic blood pressure <70 mmHg), bradypnoea (respiratory rate 8/min), hypoglycaemia (34 mg/dl), hypothermia (35°C) and facial/head trauma with fracture of the right lateral orbital wall (the consequence of a bad fall). Electrocardiography showed idio-junctional rhythm with low heart rate (34 beats/min), promptly reverted by administration of i.v. atropin 0.5 mg.

Blood tests performed at admission in our department documented increased LDH and CPK; electrolyte changes (hypernatraemia, hypokalaemia and hypocalcaemia); and leukopenia with selective reduction of T cells. A urinary test demonstrated the presence of many bacteria with leukocyte cylinders.

Dr. Leopoldo Di Iorio: On the basis of this clinical presentation, four main hypotheses were considered and simultaneously investigated. First, a cardiogenic shock was considered (subjects with Down’s syndrome can often have multiple cardiac abnormalities, such as atrium-ventricular channel, ventricular or atrial defects, Fallot’s tetralogy), but echocardiography excluded significant alterations of the parietal kinesis or structural abnormalities.

Second, the presence of genital mycosis, marked hypocalcaemia, several symptoms indicative of acute adrenocortical deficiency (ions disorders, hypoglycaemia, hypotension, bradycardia) were all suggestive of type I polyglandular autoimmune syndrome (PAS, a syndrome characterised by muco-cutaneous candidiasis, hypoparathyroidism and Addison’s disease) [1]. However, results from specific laboratory tests (presence of hypercortisolaemia associated with normal levels of ACTH and PTH) definitely ruled out this clinical hypothesis.

Third, we excluded a neurogenic shock by performing a brain CT, which did not document signs of ischaemic or haemorrhagic lesions, but found an enlargement of the IV ventricle associated with congenital olivary cerebello-pons atrophy.

Dr. Marcello Toscano, Dr. Leopoldo Di Iorio, Dr. Enza Di Lembo: Finally, the presence of shock status associated with the presence of many bacteria with leukocyte cylinders in the urinary test was compatible with the diagnosis of “septic shock caused by acute pyelonephritis” [2, 3]. This clinical hypothesis was clearly confirmed by kidney ultrasonography (showing typical parenchymal hyper-echogenicity) and by abdominal CT scan (showing diff-
fused parenchymal hypodensities with faded borders and perirenal adipose tissue imbibition) [4].

Other concomitant diagnoses during the clinical course

Dr. Marcello Toscano, Dr. Leopoldo Di Iorio, Dr. Enza Di Lembo: During the following days of his stay in the hospital, the patient manifested copious polyuria and persistent reduction in blood electrolyte concentrations, all signs indicative of insipidus diabetes (nephrogenic post-pyelonephritis or neurogenic secondary to cranial trauma?). In order to confirm this diagnosis, we performed the water privation test [5]. The data at baseline (time 0) documented plasma hyperosmolality (>300 mosm/kg) and urinary hypo-osmolality (<300 mosm/kg; urinary specific weight <1010). After 10 h of water privation, we did not observe either diuresis contraction or augmentation of the urinary osmolality, while plasma osmolality was increased. After that, in order to do the differential diagnosis between the different forms of insipidus diabetes (neurogenic versus nephrogenic), we administered desmopressin, a synthetic analogue of vasopressin. This drug caused an immediate and dramatic diuresis contraction (from 4200 cc at baseline to 600 cc during the following 24 h), associated with an increment in the urinary osmolality of up to 50%. Together, these results definitely confirmed the diagnosis of “neurogenic insipidus diabetes”. Neurogenic insipidus diabetes may be caused by a wide range of cerebral disorders [6]. Between these, our interest was captured by some abnormal blood tests. In fact, abnormally high levels of AST, ALT and GGT suggested the presence of chronic hepatopathy unrelated to virus infection (HAV, HBV, HCV and CMV tests were negative) or alcohol abuse, and associated with a significant increase in serum ferritin concentration (>800 μg/l). Calculation of the percent of transferrin saturation (>56%), and the diffused parenchymal hyperdensities observed in the liver by abdominal CT scan suggested the clinical diagnosis of haemochromatosis [7]. This diagnosis was definitely confirmed by the genetic test, which identified the presence of a double mutation in heterozygosis (C282Y and H63D) [8, 9]. After that, a specific therapy was introduced (see below).

Management and clinical follow-up

Dr. Andrea Mezzetti: After this complex diagnostic and therapeutic course, the patient was discharged from our department in good clinical and laboratory condition. Our final diagnosis was: “Acute pyelonephritis complicated by septic shock and tubular salt-wasting nephropathy in a patient with Down’s syndrome. Central insipidus diabetes in haemochromatosis. Genital mycosis.”

Now the patient is in good heath, periodically followed by our Internal Medicine ambulatory. He is under chronic therapy with desmopressin nasal spray and subcutaneous desferoxamine, an iron-chelating agent (in this case blood-lettings are contraindicated by the concurrent presence of both anaemia and hypoalbuminaemia).

References