Red Urine due to Factitious Myoglobinuria

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Dear Sir,

Factitious illness represents a broad spectrum from simple malingering to Munchausen's syndrome [1, 2]. Feigned hematuria and factitious feculent urine [2] have been reported, but we are not aware of reports of feigned myoglobinuria. Here we present such a case.

Case Report

A 45-year-old housewife complained of intermittent red discoloration of the urine. She had never had a medically related occupation, and had previously received psychological assistance for marital conflicts. During the preceding years she had been examined at two different hospitals. Urinalysis, performed 5 times, never disclosed more than 2 red blood cells/high power field, but the ortholi-dine dipstick was always positive. Proteinuria ranged between 2 and 4 g/l. Serum chemistry showed no evidence of either hemolysis or rhabdomyolysis. A muscle biopsy was reported as normal on optic and electron microscopy as well as on histochemical analysis. The patient came to us with the same complaint. Physical examination was normal. The urine was red with only 2 red blood cells/high power field. No pigmented casts were seen in the urinary sediment. The ortholidine dipstick test was positive. A dipstick for protein gave a very positive reaction and the 24-hour urine contained 2.9 g protein. Serum taken simultaneously had a normal color, the red blood cell and reticulocyte counts were normal and serum levels of haptoglobin, bilirubin and lactate dehydrogenase were normal. Serum levels of myoglobin (radioimmunoassay) and creatine kinase were also normal. Figure 1 shows the results of the cellulose acetate electrophoresis at pH 8.6 of the patient's serum (fig. 1a) and urine (fig. 1b). Serum electrophoresis is normal, while urine electrophoresis discloses 17% β -globulin and 72% γ -globulin, consisting mainly of 2 bands. One of the fractions observed has an electrophoretic mobility similar to that of a commercially available (Sigma Chemical Co, St. Louis, Mo.) horse myoglobin standard (fig. 1c), but different from that of hemoglobin (fig. 1d) prepared by detergent lysis of human erythrocytes. Urine immunoelectrophoresis against polyvalent anti-human serum only showed very weak precipitation arcs for albumin and transferrin, whereas the bulk of the urinary

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Fig. 1. Cellulose acetate electrophoresis of the patient's serum (a), her red urine (b), a horse myoglobin standard (c), human hemoglobin (d) and normal urine to which beefsteak juice was added (e).

proteins did not react with anti-human antiserum. When urine was obtained by bladder catheterization, its color and analysis were entirely normal, proteinuria being absent. By mixing normal urine with some fresh beefsteak juice we reconstituted 'urine', having a color and an electrophoretic pattern (fig. 1e) similar to those of the patient's red urine (fig. 1b). Moreover, isoelectric focusing with broad range ampholytes (pH 3.5–9.5) was performed on the patient's red urine as well as on the reconstituted 'urine'. In both samples, the major bands observed had an isoelectric point between 7.2 and 7.9.

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Comment

The red urine gave a positive ortholidine test, indicating the presence of either hemoglobin or myoglobin. The urinary pigment had a migration on electrophoresis and on isoelectric focusing typical for myoglobin but different from that of hemoglobin [3]. The two bands with gamma mobility observed on cellulose acetate electrophoresis (fig. 1b) correspond to human myoglobin and other muscle proteins, such as metmyoglobin [3]. However, this patient had no evidence of rhabdomyolysis: a muscle biopsy performed 1 year earlier was normal and the serum levels of myoglobin and creatine kinase were normal. One should keep in mind, however, that the serum half-life of myoglobin is short, varying between 1 and 3 h, while that of creatine kinase is about 1.5 days [4, 5]. As the bulk of the urinary proteins reacted immuno-logically as non-human, malingering was suspected and corroborated by the fact that the urine obtained by bladder catheterization was normal. Surreptitious admixture to the urine of beefsteak juice seemed the most likely explanation. Indeed, such a reconstituted mixture and the patient's red urine had a similar color and pattern on electrophoresis as well as on isoelectric focusing. Horse myoglobin is reported to react with the dipstick for protein to the same degree as does human albumin [5]. If the same is true for beef myoglobin, it could explain the strongly positive reaction for protein observed in our patient. Myoglobinuria is frequently accompanied by pigmented granular casts in the urinary sediment [6]. Its absence in this case is readily explained by the absence of rhabdomyolysis.

In a recent survey, Reich and Gottfried [2] found that factitious disorders fall into four subgroups: self-induced infection; simulated illness; chronic wounds, and self-medication. In the present history, rhabdomyolysis was simulated by fabricated myoglobinuria. This case illustrates the challenge to the clinician as well as to the laboratory physician of a new peculiar variant of simulated illness.

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