Transient 'Milky Urine' after Cardiac Catheterization: Another Unreported Cause of Non-Parasitic Chyluria

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Dear Sir,

Chyluria is a rare condition at present because the infection is caused by filaria disease. Although trauma has been reported to be one cause of non-parasitic chyluria [1], there is no report on the association of chyluria with those procedures which require the intravenous catheterization, such as angiography, cardiac catheterization, and so on. We reported here a rare case of chyluria associated with cardiac catheterization. A 60-year-old chronic hepatitis B carrier was admitted when a hepatic tumor (about 6 × 6 cm) was detected in the right lobe of the liver by sonography during follow-up. From the clinical picture and the celiac angiographic result, hepatocellular carcinoma was highly suspected and operation was considered to remove the tumor. Because the patient had had a history of chest pain and the resting ECG showed evidence of an abnormal Q wave over lead III and aVF, a treadmill exercise test was performed with a positive result.

Cardiac catheterization was thus arranged to confirm any possibility of coronary artery disease which may be a great risk factor during the hepatic operation. After receiving nothing per os for 8 h, he was sent to the cardiac catheterization room and a left ventriculography with selective coronary angiography was performed. The catheter was inserted via the right femoral artery and vein. In all 38-40 ml ioxaglate meglumine sodium (ioxaglate meglumine 39.3% and ioxaglate sodium 19.65%) was injected into the vessel as contrast medium. The course was smooth and lasted for about 1 h. No evi-

dence of complications, such as bleeding or chest pain, were noted during the procedure. After returning from the catheter room, the patient passed his first urine after the procedure.

Unexpectedly, about 200 ml of 'milky and oily' urine was voided (fig. 1). The patient had not had similar experience before, and during this urination, there was no dysuria, flank pain, or other abnormal sensations. The biochemical analysis of this urine sample revealed a high triglyceride level (> 988 mg/dl) and after mixing with ether, the turbidity nearly cleared (fig. 1). Routine urinalysis showed an acid urine (pH 5.0) and mild proteinuria, but no hematuria or pyuria could be found. Three hours later, the patient again urinated; however, the urine had returned to the normal yellowish color and no more 'chylous' could be seen. After this episode, we reviewed the abdominal CT scan performed after admission. Except for a small simple cyst

inside the left kidney, no renal or perirenal lesions could be found. There was neither a mass lesion nor any lymphadenopathy. The renal echo performed the next day showed similar findings on the CT scan. Because cardiac catheterization revealed only mild coronary lesions, the patient received right hepatic trisegmentectomy to remove the hepatoma 1 week later. The postoperative course was rather smooth. Because no other episodes of the chyluria were seen and there was no discomfort in the urinary tract, no further studies were done and the patient was discharged 1 month later. To date, we have followed this patient for

Fig. 1. Milky appearance of the urine after cardiac catheterization (right). The color became clear after ether was added (left).

half a year and no more chylous-looking urine has been found. Renal function is within normal limits and urination is smooth.

Cardiac catheterization itself may induce many complications such as acute myocardial infarction, bleeding, contrast medium

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allergy and so on. However, chyluria is apparently not one of them. We still cannot find even one single report of such an association in the previous literature. As far as this case is concerned, we suggest that it is definitely related to this catheterization process because (1) the close temporal relationship to the procedure, it happened immediately after catheterization and no similar episodes had been seen previously; (2) Taiwan is not an endemic area of filariasis and this patient had no history of travel to other endemic areas, thus filariasis was not likely [2], and (3) clinically, there was no retroperitoneal lymphadenopathy or abdominal aneurysm from the CT scan. During the follow-up period, there was also no evidence of secondary disorders such as tuberculosis, neoplasia, diabetes. The reason why this catheterization procedure induced chylous urine is not clear. Although trauma has been reported to be one of the etiologies causing chyluria [3], the whole course of catheter insertion in our case was rather smooth. There also seems to be no reasonable explanation why direct vascular injury would influence lymphatic drainage. On the other hand, catheter-induced trauma also cannot

explain the transient nature of chyluria in this case. From the previous theory about chyluria formation, a fistulous communication between the intestinal lacteals and the urinary drainage system must exist. This is most often due to lymphatic obstruction or trauma [4]. Thus, there might be some conditions that could induce transient lymphatic obstruction and then cause the lymphatic duct rupture with lymph leakage into the collecting system. The one possibility is contrast medium-induced damage. Because the contrast medium used in this procedure was hexa-iodinated monoacid (meglumine ioxaglate mixed with sodium ioxaglate), which has a high osmolality up to 600 mosm/kg, this substance might damage the lymphatic duct or precipitate in it if an excessive amount of contrast medium diffused out of the vessel into the interstitial space and then the lymphatic duct. Because the amount of contrast medium was small (38-40 ml in this case), the precipitate may be washed out later. Although the above mechanism is speculative, further demonstration or proof is difficult from this single case. We did not perform lymphangiography in this case due to the transient nature and there was no evidence of recurrence during the follow-up period. It is a kind of ethical consideration. However, if chyluria is recurrent or complicated with other conditions such as dysuria, fibrin clot or

malnutrition, this procedure may be mandatory to clearly delineate the possible existing anatomical site of the lymphaticorenal fistula and try to help us understand the mechanism of catheterization-induced chyluria. We hope that if more cases are reported in the future, some common technical pitfalls of the catheterization procedure may be found and thereby be avoided.

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Erratum

In the article by Pahl et al. entitled 'Studies in a Hemodialysis Patient Indicating that Calcitriol May Have a Direct Suppressive Effect on Bone' published in Nephron 1995;71(2):218-223, an error occurred on the y-axis of figure 1, bottom right-hand side. This new version is correct.

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