Pancytopenia as a Complication of Primary Hyperoxaluria

Sir,

Primary hyperoxaluria is an autosomal recessive genetic disorder caused by mutation in different enzymes responsible in glyoxalate metabolism with subsequent increased production of oxalate which is secondarily deposited in various organs.[1-3] The kidney is involved more commonly, showing nephrocalcinosis and tubule-interstitial nephritis which leads to end-stage renal failure. Crystal deposition in other organs is followed by renal deposition. Bone marrow insolvent has been reported in primary hyperoxaluria, leading to various hematologic manifestations.[1-5] Herein, we report a case of primary hyepoxaluria who presented with pancytopenia due to widespread bone marrow oxalate crystal deposition.

The patient was an 18-year-old woman who referred for pancytopenia workups. She was a case of chronic renal failure on regular hemodialysis for three years. She had a previous history of allograft kidney transplantation for 2.5 years, but after about three weeks posttransplantation, she presented with acute tubule-interstitial nephritis due to calcium oxalate crystal deposition and gradually she developed allograft dysfunction requiring hemodialysis. Her family history was unremarkable. The diagnosis of primary hyperoxaluria type 1 was confirmed based on mutational analysis, using whole exome sequencing which showed two homozygous missense mutation in AGXT gene (p. Ala277Asp, c830C>A on exon 8 of AGXT gene and P. Ile340Met, c1020A>G on exon 10 of AGXT gene). The first mutation is likely to be pathogenic, but the pathogenicity of the second mutation is uncertain. Thus, she has been a candidate for simultaneous liver and kidney transplantation. In her pretransplantation workup, pancytopenia was detected (RBC: 1.7×10^6/μL, Hb: 8 g/dL, Hct: 24%, WBC: 2300/μL, and platelet: 90×10^3/μL); so, bone marrow study was performed which showed a hemodiluted aspiration containing some osteoclast-like giant cells and crystal deposition. Bone marrow trephine biopsy revealed complete replacement of hematopoietic elements by numerous rosette-like radially arranged calcium-oxalate crystals that cause foreign body-type giant-cell reaction and bone marrow fibrosis [Figure 1]. Abdominopelvic ultrasound showed an enlarged homogenous spleen with no space-occupying lesion. The native and transplanted kidneys were of small size and showed multiple echodensitis in favor of nephrocalcinosis.

Systemic deposition of excess oxalate occurs in the bone and all organs and tissues, except for the liver. The retina, arteries, peripheral nervous system, myocardium, thyroid, skin, and bone marrow are the major areas of oxalate deposition.[2,3]

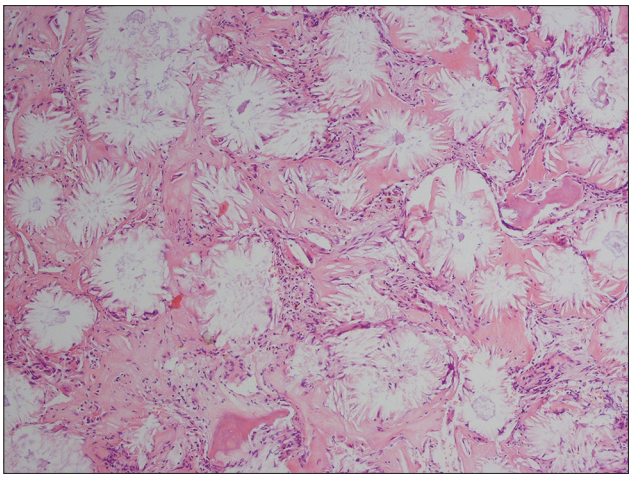

Figure 1: Bone marrow trephine biopsy showed numerous rosette-like crystal depositions, H and E, ×400

The bone marrow deposition is a rare event leading to various hematologic manifestations including anemia which is resistant to erythropoietin, myelophtisic anemia, and pancytopenia due to replacement of the marrow by oxalate crystals.[1-5] It has been stated that a decrease in the burden of oxalate in the body by kidney and/or simultaneous liver–kidney transplantation (which is regarded as treatment of choice in PH) will reverse the cytopenia.[5] However, some authors observed only partial recovery of anemia following liver transplantation.[1] Therefore, the recovery of cytopenia after transplantation is a controversial issue due to the rarity of bone marrow involvement in PH. In conclusion, although bone marrow involvement is a rare event in primary hyperoxaluria, any hematologic manifestations should alert the physician for further hematologic evaluation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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