Case Report

DOI: http://dx.doi.org/10.18203/2349-3291.ijcp20172707

Case report on neonatal renal failure due to prenatal exposure of Telmisartan

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Received: 01 May 2017 Accepted: 29 May 2017

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ABSTRACT

Telmisartan is an antihypertensive medication, which acts as an angiotensin II receptor blocker, and has an inhibitory effect on the renin-angiotensin system. Angiotensin receptor blockers(ARBs) are contraindicated in pregnancy (category D); adverse effects have been reported in both animal and human pregnancies, but still pregnant mothers do come with this medication with consequent neonatal adverse complications. We report 2 such cases of adverse neonatal outcomes in hypertensive mothers exposed to Telmisartan during pregnancy.

Keywords: Acute renal failure, Telmisartan, oligohydramnios

INTRODUCTION

The renin-angiotensin system (RAS) plays an important role in the regulation of the cardiovascular system and the homeostasis of body fluids. Angiotensin II promotes cellular growth via angiotensin II type 1 receptor (AT1 receptor). This function is essential for the development of the kidney, especially in later fetal life. Angiotensin converting enzyme inhibitors (ACEIs) or angiotensin receptors blockers (ARBs) are used in hypertension as 1st line drugs, fetal side effects of these drugs (ACE inhibitors/ARBs fetopathy) are related to hypo perfusion of fetal vasculature leading to renal insufficiency, tubular dysplasia, fetal anuria with oligohydramnios, hypocalvaria, pulmonary hypoplasia and intrauterine death.2

CASE 1

A Day 6, 1.9 Kg Mch, born at 32 weeks (New Ballard score-36 wks) to a hypertensive mother on Telmisartan +

Hydrochlorothiazide since last 2yrs, by NVD in hospital was admitted to our NICU with complaint of anuria since birth. Antenatal USG done at 32 wks revealed oligohydramnios.

Baby cried soon after birth and exclusively breastfed at home. At admission, he was anuric since birth with bilateral pedal oedema. Laboratory investigations showed raised BUN (serum urea- 73mg/dl and serum creatinine-3.8mg/dl) and serum potassium-5.6mmol/l. USG KUB revealed increased cortical echogenicity and decreased corticomedullary differentiation. Initially fluid challenge was given followed by inj. furosemide, but anuria persisted so AKI regimen was started and antibiotics were added in modified doses.

Renal function worsened gradually (serum urea-76 and serum creatinine-5.5mg/dl), peritoneal dialysis was started on D3 of hospitalisation for azotaemia and hyperkalemia (serum potassium-7mmol/L). After 5 days of PD, anuria persisted, renal function worsened and

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patient developed edema, anemia, shock, thrombocytopenia secondary to uremia and ultimately died on 14th day of life.

CASE 2

A 2kg, term Mch born to a hypertensive mother on tab Telmisartan (40) during pregnancy, by LSCS (indication-oligohydramnios) was admitted to our NICU on 1st day of life with complaints of respiratory distress and generalised edema since birth. Antenatal USG done at 34 wks of gestation revealed oligohydramnios. Baby was admitted soon after with respiratory distress & generalised edema.

The respiratory distress worsened gradually which was managed with mechanical ventilation, IV cefotaxime. There was no urination since birth for which fluid challenge followed by inj. furosemide was given at 6hr of life and AKI regimen was started subsequently. Baby started having urine after 36hrs of life. There was oligura (<0.2ml/kg/hr) and high BUN (urea- 66mg/dl and creatinine-2.8mg/dl). CXR done on 2nd day of life revealed hypoplastic lungs. BUN kept on rising subsequently, so PD was planned but postponed due to shock and baby died on 5th day of life due to refractory shock.

DISCUSSION

Side effects of ARBs are mostly due to suppression of renin-angiotensin system by angiotensin receptor blockade leading to disruption of renal perfusion and kidney function. It manifests mainly as oligohydramnios leading to other complications. Animal studies have shown reversible adverse effects of ARBs in 1st trimester of pregnancy.³

The early sign of fetal affection in both our cases are early third trimester USG showing oligohydramnios. Early detection and withdrawal of drug has led to reversibility of damage and better outcome.^{4,5}

In our case, outcome was fatal but many studies have shown that some patients have recovered with conservative management but reports of long term outcome is not available.

CONCLUSION

Maternal treatment with ARBs should be avoided during the second and third trimesters of pregnancy. Early third trimester USG showing oligohydramnios in hypertensive mother should arouse suspicion of fetal oliguria and use of maternal antihypertensive drug like telmisartan should be enquired and stopped for better neonatal outcome. After delivery, such affected babies should be admitted in Neonatal ICU and appropriate renal replacement therapy instituted for better outcome.

Funding: No funding sources Conflict of interest: None declared Ethical approval: Not required

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Cite this article as: Agrawal P, Upadhyay M, Upadhyay R, Satpathy SK. Case report on neonatal renal failure due to prenatal exposure of Telmisartan. Int J Contemp Pediatr 2017;4:1549-50.