4797- SCORING SYSTEM IN ECHOGENIC KIDNEYS TO PROGNOSTICATE THE OUTCOMES - A combined RETROSPECTIVE - PROSPECTIVE study

Chavda D, Radhakrishnan P; Bangalore Fetal Medicine Centre, INDIA

BANGALORE FETAL MEDICINE CENTRE

Introduction: "Echogenic fetal kidneys" (EFK) is defined when the kidneys appear brighter in comparison to the liver. This is a subjective assessment. EFK is known to be associated with chromosomal abnormalities, adult and infantile polycystic kidney disease, Pearlman Syndrome, Beckwith-Wiedemann Syndrome and CMV infections

Objective: To determine the prognostic scoring system for fetal echogenic kidneys detected at 18 – 32 weeks based on kidney size, laterality, bladder size, amniotic fluid, and associated findings in retrospective analyses and verification in prospective study.
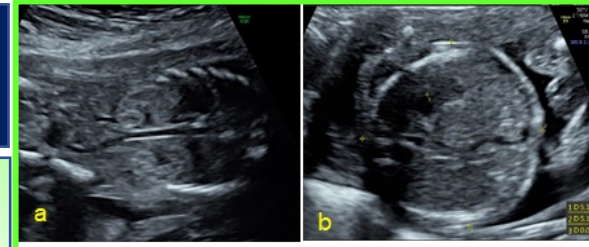

Fig 1. Echogenic kidneys (a) compared to liver (b)

Method
- **Retrospective Analysis:** Single centre study: 2005-2019; n = 113 cases with "EFK" at 18-32weeks (Fig 1)
- **Prospective Analysis:** May 2019 - March 2023; n = 68
- **Prognostic scoring included** (Fig 2)
  - Kidneys – laterality & renal volume
  - Bladder
  - Amniotic fluid
  - Associated anomalies
- The "scorer" was blinded to the postnatal outcome
- PN outcomes included – neonatal renal scan, status of renal function & general well being

Results
Retrospective group
- N = 113 cases
- Terminations = 67 (59.3%)
- Spontaneous miscarriage/IUDs = 7
- Neonatal death = 3
- LB Scoring = 37 fetuses with PN outcomes (Fig 3)
  - "Good" 4 – 6 = 21/ 37 (56.8%)
  - "Poor" 7 – 10 = 16/ 37 (43.2%)

Prospective group
- N = 68 cases
- Terminations = 24 (35%)
- Spontaneous miscarriage/IUDs/Selective reduction = 1
- Neonatal death = 4
- LB Scoring = 39 fetuses with PN outcomes (Fig 3)
  - "Good" 4 – 6 = 32/ 39 (82%)
  - "Poor" 7 – 10 = 7/ 39 (18%)

Components		Score
Kidney size/ Volume	Small/ Large	2
	Normal	1
Laterality	Bilateral	2
	Unilateral	1
Bladder size	Small/ Large	2
	Normal	1
Amniotic fluid	Oligo/ Poly	2
	Normal	1
Associated anomalies	Present	2
	Absent	0

Poor - 7 – 10   Good – 4 - 6

Fig 2. Echogenic kidneys Scoring system

Score	NND,IUD, Miscarriage(n=9)	Live births (n =37)	Accuracy of prediction
4	0	2	2/2
5	3 (1NND*, 1IUD, 1Misc)	25	25/25
6	3 (1NND**, 1IUD, 1Misc)	8	8/8
7	0	1	0/1
8	0	1 (NND- renal cause)	1/1
9	2 (1IUD, 1Misc)	0	
10	1 (Misc)	0	* FGR; ** severe Prematurity

Fig 3. Outcome of Retrospective group

Score	NND,IUD, Miscarriage, Selec FR (n=5)	Live births (n= 39)	Accuracy of prediction
4	0	1	1/1
5	0	25	25/25
6	1 (Renal Function deterioration, CMA normal)	6 (1 positive for ADPKD gene like father)	6/7
7	1 (selective FR in DCDA twins)	6 (resolving CPAM, choledochal cyst, ventriculomegaly, polydactyly; 2-normal RFT)	0/7
8	1 (poor RFT, ascites)	1 (poor kidney function)	2/2
9	0	0	
10	2	0	

Fig 4. Outcome of Prospective group

Conclusions
- Increased renal size, bilateral involvement, large/small/absent bladder, oligohydramnios/anhydramnios have a higher score leading to poorer prognosis as per both our study groups
- Scoring system will help in prognosticating fetuses with EKs detected antenatally and may prevent unnecessary terminations
- Compared to retrospective cohort, the number of live births is higher in our prospective study group, possibly due to better counselling based on retrospective study
- The poorer scorer with associated abnormality require further evaluation antenatally as well as postnatally with long term follow up

Limitations – Terminations in both groups without investigation is the main limitation in our study

Correspondence: drprathima@bangalorefetalmedicine.com