INTERNATIONAL JOURNAL OF ADVANCED BIOLOGICAL RESEARCH

www.scienceandnature.org

RELATIONSHIP BETWEEN ECTOPIC KIDNEY & PARENTAL CONSANGUINITY IN AL- KHALIS PROVINCE & ASSOCIATED COMPLICATIONS

[a]Nadia Hassan Al Salihi, [b]Ghaida Abdul Nafi Fathi & [c]Ali Rodan Shuwelif
[a]Al-Khalis General Hospital /Diyala, FICMS (diag. radiology). Diagnostic Radiologist,
[b]Medical City Children Welfare Teaching Hospital, Pediatric Nephrologist, CABP; FICMS Nephrology
[c]Al-Kindey Teaching Hospital, General Surgeon, DGS, CABS.

ABSTRACT
Abnormality of kidney & Urinary tract are common & more in male than in female, in this study we found a strong relationship between the consanguinity factor & ectopic kidney & also study the associated complication that may be detected with ectopic kidney**.** Aim of this study is to detect the incidence of ectopic kidney in Al Khalis Province & the role of parental consanguinity & associated complications**.** This study was carried out in AlKhalis general Hospital for period of 2 years from (February 2013 to December 2014) for thirty two (32) patients with ectopic kidney taking full history & using ultrasound Equipment type (Sonata Plus) & by using (3.5 MHZ)probe for adults& (7.5MHZ) for children. All patients sent for (IVU: intravenous urography) & 3 cases only, who had complications sent for CT scanning (computerized tomography). The total number of patient (32) who had ectopic kidney, (19) were female & (13) were male, their ages range between (3months to 80 years), 19 of them had Rt. Side ectopic kidney & (12) of them had Lt. side ectopic kidney & (27) of total number presence of parental consanguinity while only 5 of them no relation between parental consanguinity & ectopic kidney. 5 Cases with crossed ectopia & only (3) cases had complication (stone, hydronephrosis or infection. We found that ultrasound is a very helpful technique in diagnosis of ectopic kidney & its associated complications; otherwise IVU is adjuvant to confirm the function of ectopic kidney. Ultrasound Scanning is very important for early detection of ectopic kidney to prevent the possible complications**.**

KEYWORD: Ectopic Kidney, Ultrasounography, parental consanguinity.

INTRODUCTION

Renal Ectopia: Failure of complete ascent of kidney to the level of 2nd lumber vertebra is relatively common. There is usually anomaly of blood supply with multiple renal arteries from aorta or iliac vessels at the level of the kidney. The kidney is often small, pelvic position & associated with increased risk of trauma vesico ureteric reflux & calculus formation due to urinary stasis. There is also increased rate of contra lateral renal anomaly including agenesis ectopia. When both kidneys remain in pelvis they may fuse producing small pancake kidney[1]. A pelvic kidney is encountered in 1/1000 live birth[1], while other study said that ectopic kidney have been found in frequency of 1:500 to 1:110 & one normal kidney & one ectopic kidney in 1:3000[2]. Ectopic kidney with associated vascular anomaly is very common[3]. An abnormal high ascent of the metanephros will generate a diaphragmatic defect & subsequent an ectopic kidney in the thorax, an intra thoracic ectopic kidney may be congenital or acquired .This condition is rarely bilateral & occur mostly on the left side with a preponderance in male[4&5]. Ectopic kidney may be pelvic, iliac, abdominal or contra lateral referred to as (crossed ectopia) with slight predominance on left side & in male[6].

Ectopic kidney is due to developmental anomalies. Kidneys normally start to develop in pelvis & migrate to their normal anatomical position in upper abdomen. The ascent of kidneys precedes the decent of gonads into the pelvis. They attain their adult position by the 9th gestational weeks. Factors which interfere with development of ectopic kidneys such as: teratogenic & genetic factors the ureteric Bud not meeting with nephrogenic blastema for normal nephrogenesis or metanephric maternal disease may result in abnormal migration of kidney resulting in renal ectopia[3&7].

Anomalies of kidneys are mostly asymptomatic & are often only seen during physical or radiological investigation in the hospital for urological or other medical complaints, sometimes these anomalous kidneys present in true pelvis , iliac fossa or lumbar or thoracic regions and confuse as tumors. The abnormal position of ectopic kidney may result in a pattern of direct & referred pain that is atypical for colic & may misdiagnosed as acute appendicitis or pelvic inflammatory disease in women [8]. Other symptoms are incontinence, palpable abdominal mass, UTI, reno vascular hyper tension secondary to an anomalous blood supply & dystocia from pelvic kidney[13]. Altough a simple ectopic kidney is seldom responsible for symptoms; the association with malformation of renal pelvis with calculus increases the risk of hematuria, hydronephrosis & stone formation with colicky pain [10,12]. Most renal anomalies are incidental findings, the diagnosis of ectopic kidney can be made by ultrasonography[11]. A search [14] which display a family history (four children & their mother) with cleidocrainal dysplasia and crossed ectopic kidney in one child & that skeletal anomaly are

common in children born to consanguineous parents. An ectopic kidney is a birth defect in which a kidney is located below, above or on the opposite side of its usual position. About one in 900 people has an ectopic kidney[15]. The incidence of crossed renal ectopia 1:7000. Other anomalies of urogenital systems are seen in fused & un fused crossed kidney: multicystic dysplasia, uretrocele, patent urachus, hydronephrosis, ectopic uretric orifice, vesicoureteric reflux, vaginal agenesis, hypospadias *etc*. Pelviureteric junction obstruction is also noted [16]. Ectopic thoracic kidney is a very rare congenital defect& is usually diagnosed incidentally & can be evaluated by using TCm99 Dimercaptosuccinic acid (DMSA) SPECT-CT [17]. In cases where a kidney was not identified in the lumbar fossa, a systematic search was made of the entire abdomen for ectopic renal structures, which were generally smaller than kidneys found in their normal position[18].

PATIENT & METHOD

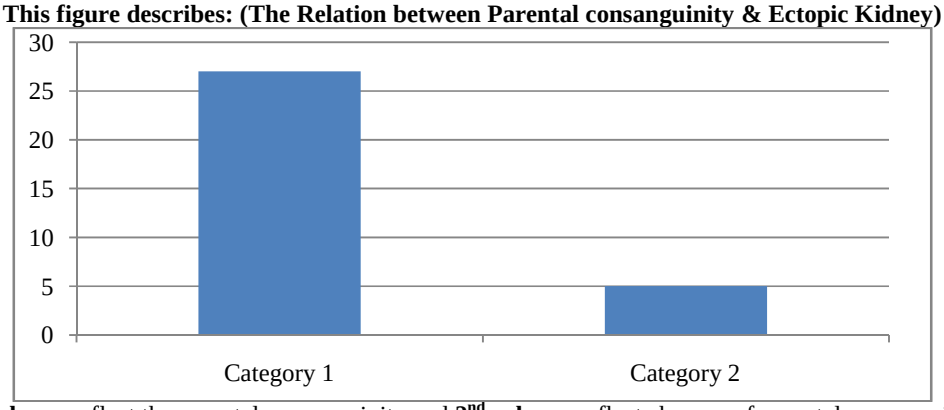
Ultrasound examinations are carried out in Al-Khalis General Hospital by using a hospital type ultrasound unit (Sonata Plus): (3.5MHZ) probe for adult & (7.5MHZ) probe for children**,** from (February 2013– December 2014) In Al Khalis Province, thirty two patients whose ages ranged from (3 months to 80 years) where analyzed. On a typical ultrasound, the normal kidney appeared elliptical in The total numbers of patients were (32), (13 male) & (19 female). (20) were Rt side Ectopic Kidney & (12) were Lt. side ectopic kidney. 27 of them with parental consanguinity & only (5 cases) with no parental consanguinity. Five (15.5%) cases were crossed ectopia, (4) of them Lt. side & (1) case Rt. Side crossed ectopia. (4male & 1 female). Of total number (32), (29:90.6%) were normal kidney & only (3:9.3%) had complications (renal stone 1 case, infection 1 case & hydronephrosis one case). In our shape, with the cortex represented by low –level echo pattern, and the medulla distinguished by a central echo complex of collecting tubules & calyces. All patients sent for intra venous urography (IVU). Only complicated cases sent for CT scanning.

RESULTS

The total numbers of patients were (32) ;(13 male) & (19 female)**,** (20) of them were Rt .side Ectopic Kidney & (12) were Lt. side ectopic kidney. (27) With parental consanguinity & only (5): no parental consanguinity. Five cases were crossed ectopia, 4 of them Lt side & 1case Rt. Side crossed ectopia (4 male & 1female). Total number 32, (29) were normal kidney & only (3) had complications (renal stone 1 case, infection 1 case & hydronephrosis one case). In our study we found a strong relationship between Parental consanguinity & ectopic kidney, (27patients: 84.3%) presence the Parental consanguinity & only (5 cases: 15.5%) patients there is no Parental consanguinity. The relation between parental consanguinity & ectopic kidney is also seen in other research[14]. Most patients diagnosed accidentally during routine ultrasonograhic examination only 3 of them complained from abdominal pain, dysuria or hematuria. All cases proved by ultra sonography & intra venous urogaphy, complicated cases sent for CT scanning.

In this study we find a strong relationship between Parental consanguinity & ectopic kidney, (27) patients presence the Parental consanguinity & only (5) patients there is no Parental consanguinity. Most patient diagnosed accidentally during routine ultrasonograhic examination only (3) of them complained from abdominal pain, dysuria or hematuria. All cases proved by ultrasonography & intra venous urogaphy, complicated cases sent for CT scanning.

This figure describes: (The Relation between Parental consanguinity & Ectopic Kidney)



1st column reflect the parental consanguinity and **2nd column** reflect absence of parental consanguinity

TABLE 1: Gender Distribution

Gender	No.	%
Male	13	40.6
Female	19	59.3
Total	32	100

TABLE 2: Age distribution

Age	NO.	%
3months-10 y	9	28.1
11-20	7	21.8
21-30	9	28.1
31-40	1	3.1
41-50	2	6.2
51-60	1	3.1
Over 60	3	9.3
Total	32	100

TABLE 3: Parental consanguinity

	No.	%
Presence of parental consanguinity	27	84.3
Absence of parental consanguinity	5	15.5
Total	32	100

TABLE 4: Side of Ectopic kidney

Side	NO.	%
Rt. Side	20	62.5
Lt. side	12	37.5
Total	32	100

TABLE 5: Evidence of complication with ectopic kidney

	No.	%
Evidence of complication with ectopic kidney	3	9.3
Absence of complication	29	90.6
Total	32	100

DISCUSSION

An ectopic kidney is classified into abdominal, lumbar or pelvic kidney based on its location in the posterior abdominal cavity. It is rare in thoracic cavity[9]. Factors that may prevent orderly movement of kidney include ureteric bud mal development, defective metanephric tissue, genetic factors, maternal illness & tertogenic causes[10]. In our study we found a strong relation between ectopic kidney & parental consanguinity (84.3%) in comparison to absence of parental consanguinity only (15.6%), A search (14) which display a family history (four children & their mother) with cleidocrainal dysplasia and crossed ectopic kidney in one child & that skeletal anomaly are common in children born to consanguineous parents. Also we found that RT. side ectopic kidney (62.5%) is more than Lt. side (37.5%).

Ectopic kidney is detected more & early in younger age groups & neonate (50%) than in old age group (9.3%), and is mild more in female (59.3%) than in male (40.6%), (male to female ratio)=(1:1.4), while Julian E. Kabala [1] detected the reverse result (male to female ratio)= (1.5:1). Most renal anomalies are incidental findings[11] the diagnosis of ectopic kidney can be made by ultra sonography. Although a simple ectopic kidney is seldom responsible for symptoms, the association with malformation of renal pelvis with calculus increases the risk of hematuria, hydronephrosis & stone formation with colicky pain[10,12]. In this study we found that only (9.3%) associated with pain & complication while (90.6%) are normal & accidentally diagnosed by ultrasonography, which is the same finding of most other study like Kemper M J[11]. The abnormal position of ectopic kidney may result in a pattern of direct & referred pain that is atypical for colic & may misdiagnosed as acute appendicitis or pelvic inflammatory disease in women. Other symptoms are incontinence, palpable abdominal mass, UTI, reno vascular hyper tension secondary o an anomalous blood supply & dystocia from pelvic kidney[13].

CONCLUSION

Parental consanguinity was associated with high incidence of ectopic kidney & best detected by ultrasonography **.**Most ectopic kidney are asymptomatic &diagnosed accidently during routine ultrasonography. There is female to male preponderance & Rt. Side ectopia is more than the Lt. side.

Recommendation

Ultrasound Scanning is important for early detection of ectopic kidney to prevent the possible complications.

REFERENCES

[1]. Julian E. Kabala (2003) Congenital Lesions And Variants, Renal ectopia, David Sutton, 7th edition; vol. 11, 2003: 930- 931.

[2]. Beisara, S.M., Chimmalgi M., Vidya, S.A., Sent S.M. (2002) Ectopic kidney & associated anomalies: A case report J Anat Sac India, 51:238-238.

[3]. Moor, K.L., Presud, T.V.N. (2008) the developing Human: Clinically Oriented Embryology .8th ed, Philadelphia: WB Saunders, 2008: 244-256.

[4]. Lozano, R. Rodriquez, C. (1975) Intrathoracic ectopic kidney: report of a case, J Urol 1975; 114:601-602.

[5]. Sfaxi, M., Miladi, M., Loussaief, H., Munif, A., chebil M., Ayed, M. (2002) Thoracic ectopic kidney

by diaphragmatic herniation. Pregres en Urologie, 12: 447-78.

[6]. Bauer, S.B. (1998) Anomalies of the kidney & uretro pelvic junction. In: Walsh PC, Retik AB, Vaughan Ed .Jr,eds.Campbell's Urology.7th ed, Philadelphia: WB Saunders, 1998: 1709-55.

[7]. Walsh, P., Gittes R., Perimutter, A. Cambell's Urology. edition Philadelphia: WB Saunders, 1986: 1674-5.

[8]. Sashi Kumar, M.D., Srinivasa Rao Bolla, Msc; venkata Raman Vollala, PhD, Unilateral ectopic kidney in pelvis – A case Report, Feb. 21,2011.

[9]. Diaz, F. (1953) Renal ectopy, report of a case of crossed ectopy without fusion, with fixation of kidney in normal position the extra peritoneal route. J int Coll Surg 1953;19: 158-69.

[10]. Rascher, W., Rosch, W.H. (2005) congenital abnormalities of the urinary tract. Oxford textbook of clinical Nephrology. Oxford: oxford University Press, Inc, 2005: 1402-12.

[11]. Kemper, M.J., Muller-Wiefel, D.E. (2001) Renal anomalies of the kidney and urinary tract. Curr opin Urol 2001; 11: 571-5.

[12]. Malek, R.S., Kelalis, P.P., Burke, E.C. (1971) Ectopic kidney in children and frequency of association with other malformations, Myo Clin Proc. 46: 461-7.

[13]. Kang, I.J., Lee, S.H., Lee, S.M., Lim, C.H., Yoon, J.H., Kim, T.W., Soe, S.M., Kim, B.S., Chang, Y.S. (2005) A case of congenital single ectopic kidney in pelvis of patients with proteinuria. Korean J Nephrol 2005; 24: 137-40.

[14]. PubMed -MEDLINE, (2009) A family with cleidocranial dysplasia and crossed ectopia kidney in one child, AUG: 75(4):521-7.

[15]. Bauer, S.B. (2007) Anomalies of the upper urinary tract. In: Wein A, ed. Campbell-Walsh Urology .9th ed. Philadelphia: Saunders Elsevier, 3269-3304.

[16]. Samaila, I. Shuaibu (FWACS) and Shuaib K Aremu (FWACS) (2011). Case Report: Ectopic kidney – Case Report and Contemporary literature Review in North Eastern Nigeria: Urology news: BJUI.

[17]. Harmandeep Singh, M.D., Aftab Hasan Nazar, M.D., Kalpajyoti Das, MBBS, Niraj Naswa, MD, Suhas Singla, MD, and Rakesh Kumar, MD, PHD. Ectopic Thoracic Kidney Evaluation Using TC99m Dimercapto succinic acid SPECT-CT. Clin Nucl Med 2012; 37: e 170-e172.

[18]. Philip Magak, Charles H. King, Edmund Ireri, Hilda Kadzo, John H. Ouma and Eric M. Muchiri. High Prevalence of Ectopic Kidney in Coast Province, Kenya .Tropical Medicine and International Health 2004; volume 9, No5: 595-600.