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care se bazează pe:

A. **Nota de constatare şi confirmare a indiciilor de plagiat** prin fişa suspiciunii inclusă în decizie.

Fişa suspiciunii de plagiat / Sheet of plagiarism's suspicion		
Opera suspicionată (OS)		**Opera autentică (OA)**
Suspicious work		**Authentic work**
OS	SURCEL C.; MIRVALD C.; GINGU C.; UDREA Andreea; SAVU Carmen; and SINESCU Ioanel. Morphological aspects of the kidney: can normality be predicted?. *Rom J Morphol Embryol.* 2011, **52**(4). pp.1325–1330. ISSN 1220-0522 (print). ISSN 2066-8279 (online). Sursa suspiciunii: Pandora2 / 13 decembrie 2017 / www.antiplagiarism2014blog2. wordpress.com.	
OA	GLODNY Bernhard, UNTERHOLZNER Verena, TAFERNER Bernadette, HOFMANN Karin, REHDER Peter, STRASAK Alexander and PETERSEN Johannes. Normal kidney size and its influencing factors - a 64-slice MDCT study of 1.040 asymptomatic patients. *BMC Urology*. 2009, **9**(1), pp.1-13. Available: http://www.biomedcentral.com/1471-2490/9/19.	
Incidenţa minimă a suspiciunii / Minimum incidence of suspicion		
P01[1]	Abstract:07 - Abstract:10	p.02: 50d - p.03: 08s
P02	Abstract:10 - Abstract:12	p.03: 25d - p.03: 31d
P03	Abstract:12 - Abstract:15	p.04: 05s - p.04: 02d
P04	p.1327: 01d - p.1328: 04s	p.04: 04d - p.04: 09d
P05	p.1327: 01s - p.1327: 20s	p.04: 10d - p.05: 07s
P06	p.1328: 05d - p.1328: 11d	p.06: 08s - p.06: 13s
P07	p.1328: 12d - p.1328: :20d	p.06: 14s - p.06: 21s
P08	p.1326: Figure 1	p.03: Figure 1
P09	p.1326: 22s - p.1326: 36s	p.03: 11d - p.03: 25d
P10	p.1326: 34d - p.1326: 40d	p.03: 46d - p.03: 53d
P11	p.1329: 42s - p.1329: 54s	p.12: 15s - p.12: 26s
P12	p.1329: 55s -p.1329: 04d	p.12: 32s - p.12: 41s
P13	p.1329: 26s - p.1329: 38s	p.09: 09s – p.09: 05d
Fişa întocmită pentru includerea suspiciunii în Indexul Operelor Plagiate în România de la Sheet drawn up for including the suspicion in the Index of Plagiarized Works in Romania at www.plagiate.ro		

Notă: Prin „p.72:00" se înţelege paragraful care se termină la finele pag.72. Notaţia „p.00:00" semnifică până la ultima pagină a capitolului curent, în întregime de la punctul iniţial al preluării.

Note: By „p.72:00" one understands the text ending with the end of the page 72. By „p.00:00" one understands the taking over from the initial point till the last page of the current chapter, entirely.

B. **Fişa de argumentare a calificării** de plagiat alăturată, fişă care la rândul său este parte a deciziei.

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[1] Pn este numărul piesei de creaţie care constituie obiectul preluării neconforme.

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6.	Republicarea unei opere anterioare publicate, prin excluderea unui autor sau a unor autori din lista iniţială de autori.	
7.	Preluarea identică de pasaje (piese de creaţie) dintr-o operă autentică publicată, fără precizarea întinderii şi menţionarea provenienţei, fără nici o intervenţie personală care să justifice exemplificarea sau critica prin aportul creator al autorului care preia şi însuşirea acestora într-o lucrare ulterioară celei autentice.	✓
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12.	Preluarea identică de pasaje (piese de creaţie de tip text) ale unui cuvânt înainte sau ale unei prefeţe care se referă la două opere, diferite, publicate în două momente diferite de timp.	

Notă:

a) Prin „provenienţă" se înţelege informaţia din care se pot identifica cel puţin numele autorului / autorilor, titlul operei, anul apariţiei.

b) Plagiatul este definit prin textul legii[2].

> *„ …plagiatul – expunerea într-o operă scrisă sau o comunicare orală, inclusiv în format electronic, a unor texte, idei, demonstraţii, date, ipoteze, teorii, rezultate ori metode ştiinţifice extrase din opere scrise, inclusiv în format electronic, ale altor autori, fără a menţiona acest lucru şi fără a face trimitere la operele originale…".*

Tehnic, plagiatul are la bază conceptul de **piesă de creaţie** care[3]:

> *„…este un element de comunicare prezentat în formă scrisă, ca text, imagine sau combinat, care posedă un subiect, o organizare sau o construcţie logică şi de argumentare care presupune nişte premise, un raţionament şi o concluzie. Piesa de creaţie presupune în mod necesar o formă de exprimare specifică unei persoane. Piesa de creaţie se poate asocia cu întreaga operă autentică sau cu o parte a acesteia…"*

cu care se poate face identificarea operei plagiate sau suspicionate de plagiat[4]:

> *„…O operă de creaţie se găseşte în poziţia de operă plagiată sau operă suspicionată de plagiat în raport cu o altă operă considerată autentică dacă:*
> *i) Cele două opere tratează acelaşi subiect sau subiecte înrudite.*
> *ii) Opera autentică a fost făcută publică anterior operei suspicionate.*
> *iii) Cele două opere conţin piese de creaţie identificabile comune care posedă, fiecare în parte, un subiect şi o formă de prezentare bine definită.*
> *iv) Pentru piesele de creaţie comune, adică prezente în opera autentică şi în opera suspicionată, nu există o menţionare explicită a provenienţei. Menţionarea provenienţei se face printr-o citare care permite identificarea piesei de creaţie preluate din opera autentică.*
> *v) Simpla menţionare a titlului unei opere autentice într-un capitol de bibliografie sau similar acestuia fără delimitarea întinderii preluării nu este de natură să evite punerea în discuţie a suspiciunii de plagiat.*
> *vi) Piesele de creaţie preluate din opera autentică se utilizează la construcţii realizate prin juxtapunere fără ca acestea să fie tratate de autorul operei suspicionate prin poziţia sa explicită.*
> *vii) In opera suspicionată se identifică un fir sau mai multe fire logice de argumentare şi tratare care leagă aceleaşi premise cu aceleaşi concluzii ca în opera autentică…"*

[2] Legea nr. 206/2004 privind buna conduită în cercetarea ştiinţifică, dezvoltarea tehnologică şi inovare, publicată în Monitorul Oficial al României, Partea I, nr. 505 din 4 iunie 2004
[3] ISOC, D. *Ghid de acţiune împotriva plagiatului: bună-conduită, prevenire, combatere*. Cluj-Napoca: Ecou Transilvan, 2012.
[4] ISOC, D. *Prevenitor de plagiat*. Cluj-Napoca: Ecou Transilvan, 2014.

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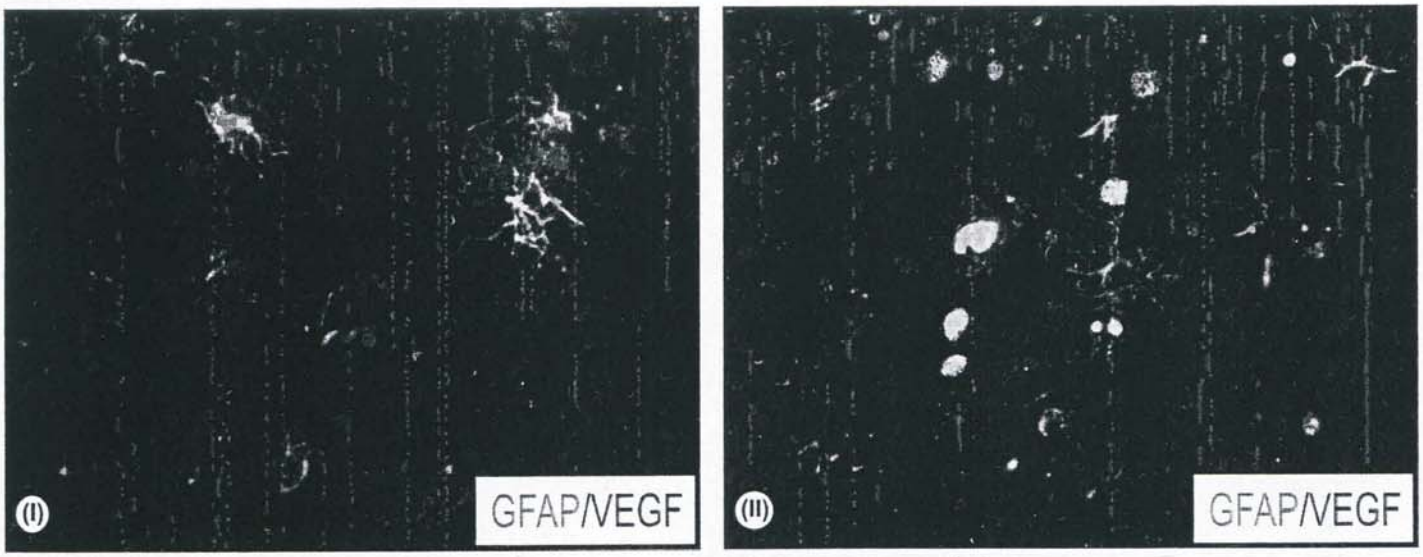

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Cover: (I and II) VEGF expression in and around fibrous astrocytes form the glial "scar". See p. 1287, OTILIA MĂRGĂRITESCU, D. PIRICI, CL. MĂRGĂRITESCU, *VEGF expression in human brain tissue after acute ischemic stroke*.

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ORIGINAL PAPER

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Morphological aspects of the kidney: can normality be predicted?

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Abstract

Purpose: Our study aimed to assess the normal parameters of renal parenchyma and upper urinary tract from a contrast enhanced computed tomography assessment in order to create a mathematical model of normal kidney. *Patients and Methods*: We conducted a retrospective observation study on 520 patients with a normal abdominal contrast enhanced CT scan in our Institute during November 2008–November 2010. All CT examinations were performed using 16 slices Siemens Emotion 2007 (Siemens Medical Solutions, Malvern, PA, USA). Two experienced radiologists evaluated all the evaluations and reformatted axial sections and after excluding patients with urinary tract pathology, the images were transferred to a separate workstation (eFilm Workstation™ 2.2.1, Merge Healthcare, Milwaukee, USA). Parameters measured were: the number of kidneys, craniocaudal diameter (CCD) in a coronar reconstruction, transverse diameter (TD) and anteroposterior diameter (APD) as the maximum diameter of the kidneys in the axial sections, parenchymal (PW) and cortical width (CW) in axial sections, kidney pyelon width (KPW), parenchymal index (PI), kidney rotation, measured in relation to the sagittal axial plane of reference (AR) and rotation of the kidney measured in the sagittal plane in relation to the coronary reference (SR). To identify factors that can influence the variables CCD, CW and PW, multivariate regression models were performed using SPSS software (SPSS 15, SPSS Inc., Chicago, Illinois, USA). We considered $p<0.05$ statistically significant. *Results*: CCD remains high until the fifth decade of life ($p=0.0053$ on the right side, $p=0.0012$ on the left, ANOVA), PW values were found to be somewhat increased ($p=0.0293$ on the right side, $p=0.2924$ on the left, ANOVA). There are linear correlations between height and CCD, CW and PW, with statistical significance ($p<0.05$ each, Spearman ρ between 0.13 and 0.4). In multivariate analysis, only BMI, male gender and height had statistical significance. *Conclusions*: There is a wide range in size kidney. Among factors that strongly influence the values of CCD, CW, and PW in adults, BMI, male gender and height are most important. Also, cranial and caudal position of the kidney influences renal size. As for the size of the renal cortex, the factor most influencing these values is the absence of a contralateral kidney.

P01 P02 P03

Keywords: computed tomography, kidney diameters, mathematical model.

Introduction

The dimensions of the kidneys vary in a large interval from birth to adulthood. Changes in kidney lengh, parenchymal width (PW), cortex width (CW), or volume can be associated with atherosclerotic renal disease [1], arterial hypertension [2], atherosclerotic renovascular disease [3], or diabetes mellitus [4], or be indicative of these. The renal dimensions can also be an indicator for the unilateral glomerular filtration rate [5].

Many studies analyze the diameters of the kidney using ultrasound [6–9] or CT [10]. CT and especially multi-slice computed tomography (MSCT) have a growing importance in the evaluation of kidney morphology and renal vessels [6]. Computed tomography has several advantages over the ultrasound examination, such as the capacity to show the morphology of the kidney and other surrounding structures while evaluating the kidney vasculature non-invasively in a short period. The CT has a narrow collimation, high spatial and temporal resolutions and nearly isotropic acquisition, and thus, it provides multi-planar imaging. On the other hand, the disadvantages of MSCT are radiation exposure and the dependence on contrast medium.

Purpose

Our study aimed to assess the normal parameters of renal parenchyma and upper urinary tract from a contrast enhanced computed tomography assessment in order to create a mathematical model of normal kidney.

Patients and Methods

We conducted a retrospective observation study on 520 patients with a normal abdominal contrast enhanced CT scan in our Institute during November 2008–November 2010. This study had no influence on the treatment or the initial indication for CT evaluation.

All CT examinations were performed using 16 slices Siemens Emotion 2007 (Siemens Medical Solutions, Malvern, PA, USA). Originally, native scan was performed in all patients from the diaphragm up to the iliac crest line. For contrast, we used 140 mL of

Iopamiro 350 (Iomeron 350, Bracco, Milan, Italy) at a flowrate of 3 mL/s through a cannula Ch 16 placed in a antecubital vein. Standard CT protocol included: 5 mm collimation, pitch-1, 2–5 mm reconstruction index, table speed -15 mm/s, noise index – 6; SFOV – 50, 120 kV, 100–120 mA; free interval between sequences: 30 s.

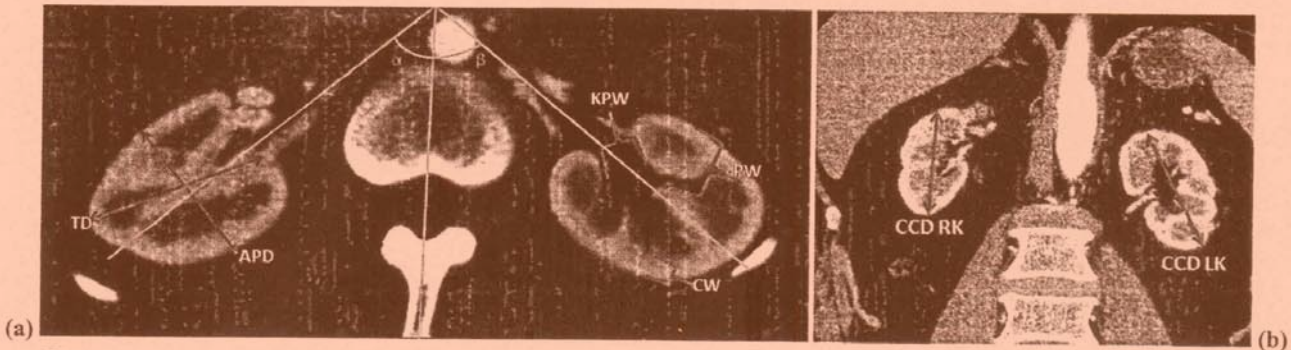
All the evaluations and reformatted axial sections were evaluated by two experienced radiologists and after excluding patients with urinary tract pathology, the images were transferred to a separate workstation (eFilm Workstation™ 2.2.1, Merge Healthcare, Milwaukee, USA).

Inclusion criteria: contrast in the abdominal aorta >100 HU in corticomedular phase at a collimation of 0.5 mm.

Exclusion criteria:

- incomplete evaluation of the kidneys;
- motion artifacts or technical defects of image acquisition;
- pre-existing renal pathology and imaging detection of pathological examination aspect (ureterohidronephrosis, renal/upper urinary tract tumors/kidney stones, cysts cortical, chronic pyelonephritis, renal tuberculosis, etc.) except for a congenital single kidney, duplex systems without hydronephrosis;
- age under 18 years;
- serum creatinine level >2 mg/dL or eGFR <50 mL/min./m^2.

Parameters measured were: the number of kidneys, craniocaudal diameter (CCD) in a coronar reconstruction, transverse diameter (TD) and anteroposterior diameter (APD) as the maximum diameter of the kidneys in the axial sections, parenchymal (PW) and cortical width (CW) in axial sections (Figure 1, a and b), kidney pyelon width (KPW), parenchymal index (PI), kidney rotation, measured in relation to the sagittal axial plane of reference (AR) and rotation of the kidney measured in the sagittal plane in relation to the coronary reference (SR). For quality control, tests were performed twice on a random sample of 50 data sets.



(a) (b)

Figure 1 – *(a) Axial section at L2–L3 in corticomedular phase at 5 mm collimation. TD – Transverse diameter, APD – Anteroposterior diameter as the maximum diameter of the kidneys in the axial sections, PW – Parenchymal width, CW – Cortical width, KPW – Kidney pyelon width; α – Right kidney (RK) rotation to a coronar plane intersecting L3 spinal apophysis; β – Left kidney (LK) rotation to a coronar plane intersecting L3 spinal apophysis. (b) Coronar reformatting in corticomedular phase at 5 mm collimation. CCD – Cranio-caudal diameter of the kidneys.*

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Statistical interpretation

All values are presented as value ± standard deviation in standard normal tables. Descriptive statistics was performed using Excel (Microsoft, Seattle, Washington, USA). Kolmogoroff–Smirnov tests were used to analyze the data distribution. Correlation analysis was performed using Spearman. Comparisons between groups were made using Student *t*-test, parametric and non-parametric, and comparison between different data sets was performed using one-way ANOVA analysis. To identify factors that can influence the variables CCD, CW and PW, multivariate regression models were performed using SPSS software (SPSS 15, SPSS Inc., Chicago, Illinois, USA). We considered $p<0.05$ statistically significant.

Results

Of the 520 patients, 174 of them (33.4%) had CT evaluation for suspicion of abdominal tumors, 191 patients (36.7%) for cardiovascular pathology, 105 patients (20.1%) for biliary and pancreatic pathology, and 50 (9.61%) for other pathologies. The study included CT assessments of 228 women and 292 males (ratio male/female 1:1.28) with a mean age of 60±15.7 years (range: 19–91 years).

Anatomical variations

A comparison of 517 kidneys with 518 straight left kidneys was performed. Three right kidneys and two left kidneys were removed because of motion artifacts /faults in image acquisition. One of the patients had right kidney agenesis. The results were 12 (2.3%) of duplex systems in the right kidney and 10 (1.9%) left kidneys duplex systems. Of these, five (0.96%) were complete on the right and three (0.57%) were complete on the left.

P10

Normal kidney size and position

The normal values for the measured parameters are presented in Table 1. Patients with duplex kidney and congenital single kidney were excluded from this table.

For comparison of the two groups, Wilcoxon-pair test was used.

Table 1 – *Normal values for (CCD), transverse diameter (TD) and anteroposterior diameter (APD) parenchymal (PW) and cortical width (CW) in axial sections, kidney pyelon width (KPW), parenchymal index (PI), kidney rotation for both sexes, regardless of age*

	Location	Mean [mm]	Median [mm]	Standard deviation [mm]	P-value
Craniocaudal diameter (CCD)	RK	107.5	108	11.6	<0.0001
	LK	118.3	110	12.3	
Parenchymal width (PW)	RK	15.2	15.3	1.8	<0.0001
	LK	15.1	15.9	2.7	
Cortical width (CW)	RK	6.5	6.5	1.9	>0.05 (ns)
	LK	6.4	6.5	2.0	
Transverse diameter (TD) in the axial section	RK	51.9	50.8	7.8	<0.0001
	LK	51.7	53.9	8.2	
Anteroposterior diameter (APD) in the axial section	RK	53.7	57.4	8.0	<0.0001
	LK	52.9	52.9	8.2	
Kidney pyelon width (KPW)	RK	18.7	17.6	6.2	<0.0001
	LK	19.8	19.2	6.1	
Upper renal pole position relative to the spine	RK	0.6	0.6	0.8	<0.0001
	LK	0.4	0.5	0.9	
Kidney rotation in the coronary plane (grade)	RK	24.8	24.3	11.1	>0.05 (ns)
	LK	23.3	23.8	11	
Kidney pyelon rotation in relation to the sagittal plane (degrees)	RK	61.3	58.4	18.1	<0.0001
	LK	54.5	51.2	22.5	
Parenchymal index (PI)	RK	0.9	0.9	0.4	>0.05 (ns)

LK – Left kidney; RK – Right kidney; ns – Not significant. Duplex systems and congenital single kidneys were not taken into account.

P05

Kidney size in relation to age, height and BMI

Figure 3 shows the average values for CCD, CW and PW in relation to age. CCD remains high until the fifth decade of life (p=0.0053 on the right side, p=0.0012 on the left, ANOVA), PW values were found to be somewhat increased (p=0.0293 on the right side, p=0.2924 on the left, ANOVA). CW values remain constant during this period. Starting with the fifth decade, the dimensions decrease for both sexes (p<0.0001 for each).

Average values of CCD, CW and PW compared to the size, are shown in Figure 4. There are linear correlations between height and CCD, CW and PW, with statistical significance (p<0.05 each, Spearman ρ between 0.13 and 0.4).

Figure 5 shows average values of CCD, CW and PW compared with BMI, regardless of gender. Except PW, these values were statistically significant (p<0.05 each, Spearman ρ between 0.13 and 0.24).

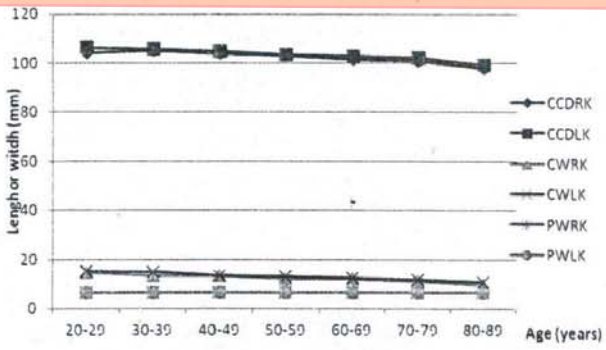

Figure 3 – *CCD, CW and PW for both kidneys depending on age, regardless of gender.*

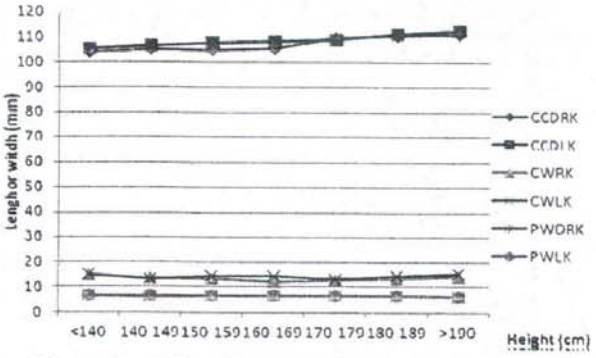

Figure 4 – *CCD, CW and PW for both kidneys depending on height, regardless of sex.*

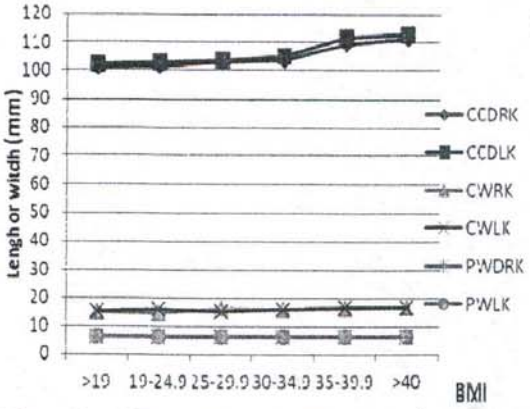

Figure 5 – *CCD, CW and PW for both kidneys according to the BMI, regardless of sex.*

Parenchymal index (PI)

Parenchymal index has an inverse correlation with age and BMI (Figure 5), correlation coefficients depending on ρ find -0.1010 (Spearman, p=0.0394) on

P04

the right and left side ρ=-0.0786 for women (Spearman, p=0.1090) and ρ=-0.1993 for men on the right side (Spearman, p<0.0001) and ρ=-0.1198 on the left (Spearman, p=0.0061).

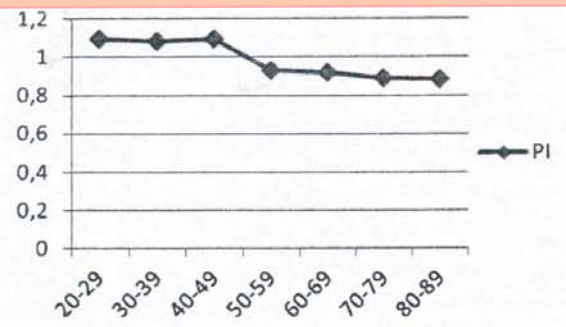

Figure 6 – *Variation of parenchymal index according to age, regardless of sex.*

Kidney diameters in axial sections

In men there is a weak correlation between APD and age (Figure 3), and between APD and height there is no correlation (p>0.05 for each) (Figure 4). APD is correlated with BMI, the Spearman ρ=0.2802, 0.2958 on the right and left side in women and 0.3873 and 0.3525 on the right side in men (p<0.0001 each). TD values decrease with age (Figure 5), but increase with BMI. The correlation coefficients are 0.1106 for women (p=0.0383) and 0.1123 on the right side (p=0.0352) on the left, and 0.0905 for men (p=0.0566) and 0.1030 on the right side (p=0.0300). There is a correlation between TD and height (values of Spearman ρ – 0.2985 for women (p<0.0001) and 0.1994 on the right side (p=0.0002) on the left, and 0.1346 for men (p=0.0045) and 0.1493 on the right side (p=0.0016).

Single kidney size

P06

In our study we had 12 patients with congenital single kidney, with sizes of 127±12.7 mm, which were longer (p<0.0001, WMT) than patients with both kidneys. CW and PW were 8.6±1.8 mm (p=0.0004 WMT) and 19.5±2.8 mm (p<0.0001, WMT), these values were higher than average.

Duplex kidney size

P07

Kidneys with unilateral duplex system (n=32) with CCD of 115.1 (116) compared with 109.4±14.6 mm (107) ± 11.3 mm on the contralateral side were longer (p=0.0254) than the contralateral kidneys. Duplex kidney (n=44) generally had CCD of 116.8 (119) ± 13.4 mm, a higher value compared with other kidney (p=0.0003). No differences were observed size values and parenchymal index (p>0.05).

Factors influencing the cortex width, width and length of kidney parenchyma

The independent predictors of the craniocaudal diameter, cortical width and parenchymal width are shown in Table 3. Forward stepwise selection procedures were applied.

Table 3 – *Multivariate analysis of factors influencing length of pole (CCD), cortical width (CW) and parenchymal width (PW) for each kidney, regardless of age*

	CCD				CW				PW			
	RK		*LK*		*RK*		*LK*		*RK*		*LK*	
	HR	*P*-value	HR	*P*-value	HR	*P*-value	HR	*P*-value	HR	*P*-value	HR	*P*-value
Height [mm]	0.35	<0.001	0.34	<0.001	0.22	0.002	0.152	0.002	0.22	<0.001	0.19	<0.001
Age [years]	0.114	<0.001	0.19	<0.001	0.123	0.002	-0.151	0.002	0.15	<0.001	0.17	<0.001
BMI [kg/m^2]	0.22	<0.001	0.17	<0.001	-0.114	0.001	0.142	<0.001	0.12	0.05	0.14	<0.001
Sex – M	0.15	<0.001	-0.14	<0.001	0.105	<0.001	0.079	<0.001	-0.1	<0.001	-0.14	<0.001
No. of renal arteries ≥2	0.12	<0.001	0.13	<0.001	-0.084	<0.001	-0.114	<0.001	-0.1	<0.001	0.11	<0.001
Solitary kidney	0.16	<0.001	0.1	<0.001	-0.074	<0.001	0.105	<0.001	-0.09	<0.001	-0.09	<0.001
Parapyelic cysts	-0.157	ns	-0.1	ns	0.71	0.021	-0.084	0.0121	0.084	0.005	-0.08	0.002
Caudal position	0.102	<0.001	0.14	<0.001	-0.071	<0.001	0.102	<0.001	0.73	<0.001	0.32	<0.001
Cranial position	0.09	<0.001	0.13	<0.001	0.069	0.026	0.09	0.02	-0.19	0.026	-0.19	0.012

LK – Left kidney; RK – Right kidney; HR – Hazard ratio; BMI – Body Mass Index; ns – Not significant.

Discussion

The values of craniocaudal diameter (CCD) correspond closely to those obtained by ultrasound [11]. In addition to its assessment in coronary reconstructions, which represent the most accurate method of measuring the CCD [12], sagittal reconstructions and individual reformatting were used, depending on the degree of rotation of the kidney.

However, limitations of this study should be pointed out. The group of patients was not chosen randomly from the general population, since this would require a CT screening of the population and unnecessary increase the exposure to radiation. To minimize this bias, we included in this study a representative population sample that is super imposable on the general population.

Renal size can be estimated by ultrasound, MRI, IVP and CT [13]. Kidney length can be estimated better through CT than with other methods, but none of these investigations is foolproof [14]. It is anticipated that renal length data obtained by CT should be more accurate since the images are acquired at sections of 2.5 mm and, in the worst case; we estimate a margin of error up to 14 mm in Z-axis, artifacts due to partial volumes.

Assessment of renal size has a great clinical importance because a large number of diseases are

associated with renal size modifications [11]. Normal size range is large [15], and normal status depends on many factors. In the standard deviation, values are included <9 cm in women and elderly with low BMI and up to 13 cm for men are in the fifth decade of age. In the presence of factors such as normal or supra-numerary renal arteries or obesity, there may be cases where CCD values of <8 or >14 cm can be considered normal and should not be considered to in the pathological range. Data from a recent study that does not take into account gender or age [16–18], according to which the right kidney has a length of 11±1 cm and the left of 11.5±1 cm, or a length of 11 and 12 cm, a width of 5 and 7 or 7.5 cm and a thickness of 2.5 or 3 cm is not very useful in the clinic. Factors influencing the size should be considered individually to reach a conclusion could be relevant.

Decreased CCD [11] and PW [17] in relation to age are well known. Elevated CCD in men after 50 years was documented by Simon AL [18, 19]. Although CCD values are only slightly higher in men compared to women around the age of 30 years, after the age of 50 years, CCD is about 10 mm higher in men, 10% of CCD, an effect thought to be secondary to sex hormones, but without statistically significant findings. It should be noted that age is the most powerful negative factor influencing, CW and PW values.

P13

The influence of high BMI values CCD, CW and PW was anticipated due to the known influence of weight and BSA [20]. The influence seems to be greater in women. Differences between mean values of patients with obesity and morbid obesity compared with normal weight patients [21–23], were up to 20%.

The influence of height on the CCD is well-documented [11], height being by far the largest independent predictive factor. Influence on PW is comparable to that of BMI, but has no effect on the CW [24]. The influence of kidney position on its size is obvious, as it is positioned further cranial and dorsal, the longer the kidney is. These data are known in particular cases of with pelvic kidney localization [25].

P11

Duplex kidneys are longer than the contralateral kidney [26]. These kidneys frequently receive additional blood supply than 'normal' kidneys by some polar arteries [21]. A hypothetical explanation of the correlation between CCD and the number of blood vessels that supply a kidney can be the persistency of additional blood in kidneys with increased CCD.

Because the width of the kidney does not increase in women, and in men there is only a slight thickening with age, while renal pyelon size increases considerably both in women and in men, IP values decrease accordingly. It can be assumed that renal tissue is replaced by fat and fibrotic tissue.

Conclusions

P12

In conclusion, we can say that there is a wide range in size kidney. Among factors that strongly influence the values of CCD, CW, and PW in adults, BMI, male gender and height are most important. In addition, cranial and caudal position of the kidney influences renal size. As for the size of the renal cortex, the factor most influencing these values is the absence of a contralateral kidney.

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