TRABAJOS ORIGINALES

La verdad está en los detalles. ¿Pueden ser los check-lists una buena idea para ecografía pediátrica de riñón y vejiga?

The truth lies in the details - would check-lists be a good idea for kidney/bladder pediatric ultrasound?

Lisieux Eyer de Jesus (MSc, PhD, TCBC, T-CIPE); Samuel Dekermacher (MSc, TiSBU, TCBC,T-CIPE); Carolina Manhães; Júlia Frota; Alexandre Santos Aguiar (T-CIPE).

Pediatric Surgery and Urology Division – Federal Hospital Servidores do Estado, Rio de Janeiro, Brazil.

RESUMEN

INTRODUCCIÓN: La necesidad de estandarizar los informes de ultrasonido (US) dirigidos a urólogos pediátricos (PU) y medir las dimensiones de las estructuras anatómicas específicas es bien reconocida. Nuestra investigación tiene como objetivo verificar la integridad y precisión de la información contenida en los ultrasonidos de riñón y vejiga (K/B) de los pacientes que acuden a nuestra clínica de referencia de la PU. MÉTODOS: Evaluación prospectiva de los parámetros descriptivos y mensurables de 47 ultrasonografías K / B Pediátrica en un período de 3 meses. Análisis comparativo entre radiólogos pediátricos y generales, enfermedades funcionales contra la enfermedades no funcionales, tipo de institución que lleva a cabo el examen y la solicitud de la ultrasonografía (estandarizado versus rutina). RESULTADOS: Los informes de ultrasonografía consideran una media del 53% de los posibles parámetros sugeridos y presentaron una media de 53% de las mediciones precisas cuando aplicable. La única variable que se relacionó de forma independiente para mejores informes fue el uso de las solicitudes normalizadas por la PU (media del 64% de los posibles parámetros considerados, el 69% de las mediciones de los parámetros aplicables). La realización del examen por Radiólogos pediátricos (PR) o en los hospitales docentes o en pacientes que sufrían de enfermedades funcionales no fueron determinantes independientes de la calidad de los informes.
CONCLUSIÓN: El uso de protocolos específicos y / o listas de verificación sería eficaz para normalizar y obtener una mejor calidad de informe en Ultrasonografía B / K en PU.

Palabras Claves: Ultrasonido Urología Pediátrica, Calidad.

ABSTRACT

INTRODUCTION: The need to standardize ultrasound (US) reports directed to Pediatric Urologists (PU) and to measure the dimensions of specific anatomical structures is well recognized. Our research aims to verify the completeness and precision of the information in kidney and bladder (K/B) US from patients presenting to our referral PU Clinic. METHODS: Prospective evaluation of descriptive and measurable parameters from 47 K/B Pediatric US in a 3-month period. Comparative analysis between pediatric versus general radiologists, functional versus non-functional disease, kind of institution that performed the exam and request for the US (standardized versus routine). RESULTS: The US reports considered a mean of 53% of the possible parameters suggested and presented a mean of 53% of precise measurements when applicable. The only variable that related independently to better reports was the usage of standardized requests by the PU (mean of 64% of the possible parameters considered, 69% of measurements of the applicable parameters). Accomplishment of the exam by Pediatric Radiologists (PR), in teaching hospitals or in patients suffering from functional diseases were not independent determinants to the quality of the reports. CONCLUSION: The usage of specific protocols and/or check-lists would be effective to standardize and get better quality B/K US reports in PU.

Keywords: Ultrasound, Pediatric Urology, Quality.

INTRODUCTION

Urinary tract diseases (UTD) are highly prevalent in children (circa 1%, 5% and 20% of fetal hydronephrosis, urinary tract infections and bladder dysfunction, respectively). US is frequently used for triage, diagnosis and follow up of Pediatric UTD. The exam is innocuous, flexible, low cost and easily available, does not rely on radiation, may be repeated and is easily accepted by patients.

Many variables determine the information obtainable by US: quality of the machines, collaboration of the patients, specific disease and expertise of the performer among others. Maybe due to the relative rarity of Pediatric Radiologists (PR)

and the unique characteristics of Pediatric UTD, the quality and extent of information obtained by K/B US varies a lot, limiting the usage of US to define clinical choices.

One problem to be considered is the subjective descriptions for some data, hindering comparison between examinations, especially if executed by different operators. This makes it difficult or even impossible to use US for follow up, to compare individual cases or different cohorts.

Many authors and medical societies have suggested that the utilization of standardized protocols and exact measurements of specific dimensions allow better comparability between reports follow up and determination of prognosis concerning individual cases (1-2).

The main objective of this research is to examine the range, quality and objectivity of data obtained from US K/B reports in Pediatrics. We also wanted to determine whether some variables influenced the execution and description of K/B US:

1. US performed by PR versus general radiologists (GR).
2. US requested by routine form versus exam requested by Pediatric Urologists (PU) using a standardized protocol.
3. US performed in teaching institutions versus private clinics versus hospitals without any teaching or research obligations.
4. US in patients suffering from voiding dysfunction versus exclusively anatomical disease.

METHODS

We evaluated prospectively B/K US reports from patients brought to PU clinic in Servidores do Estado Federal Hospital, Rio de Janeiro, Brazil (teaching institution, referral for PU) from May 1st to July 31st 2012. A mean of thirty 0-18 year-old

		PROFESSIONAL		REQUEST	
VARIABLE	Total	PR	GR	Standard	Routine
Kidney location	42 (89.4)	20 (87)	22 (91.7)	17 (89.5)	25 (89.3)
Echogenicity	14 (29.8)	8 (34.8)	6 (25)	8 (52.1)	6 (21.4)
Cortico-medullary transition	25 (53.2)	11 (47.8)	14 (25)	10 (52.6)	15 (53.5)
Kidney size	43 (91.5)	22 (91.3)	23 (95.8)	19 (100)	26 (92.9)
Cortical thickness	23 (48.9)	11 (47.8)	12 (50)	13 (68.5)	10 (37.7)
Pre-voiding AP pyelic diameter	41 (87.2)	21 (91.3)	20 (83.3)	17 (89.5)	24 (87.7)
Post-voiding AP pyelic diameter	7 (12.3)	5 (25)	2 (8.7)	7 (38.9)	0 (zero)
Ureteral diameter	10 (21.3)	7 (30.7)	4 (16.7)	5 (27.1)	2 (7.1)
Bladder wall thickness	28 (59.6)	13 (56.5)	15 (62.5)	12 (63.2)	16 (57.1)
Pre-voiding bladder volume	30 (63.8)	15 (65.4)	15 (62.5)	16 (84.2)	14 (50)
Post-voiding bladder volume	14 (32.6)	6 (30)	8 (37.5)	10 (55.6)	4 (16)
Mean	25.2 (53)	12.6 (55)	12.8 (53)	12.2 (64)	12.9 (46)
SD	13.2	6.2	7.2	4.6	9.3

	SPECIFIC DISEASE		INSTITUTION		
VARIABLE	VD	No VD	Teaching	Assistencial	Private
Kidney location	24 (96)	18 (98)	16 (84.2)	10 (90.9)	16 (94.1)
Echogenicity	10 (40)	4 (18.2)	8 (42.1)	2 (18.2)	4 (23.5)
Cortico-medullary transition	12 (48)	13 (59.1)	10 (57.6)	3 (27.3)	12 (70.6)
Kidney size	25 (100)	20 (90.9)	19 (100)	9 (81.8)	17 (100)
Cortical thickness	13 (52)	10 (45.5)	10 (57.6)	5 (45.5)	8 (47.1)
Pre-voiding AP pyelic diameter	22 (88)	19 (86.4)	17 (89.5)	10 (90.9)	14 (82.4)
Post-voiding AP pyelic diameter	2 (8.7)	5 (25)	5 (31.2)	0 (zero)	2 (12.5)
Ureteral diameter	9 (36)	1 (4,6)	2 (10.5)	1 (9.1)	7 (41.1)
Bladder wall thickness	20 (80)	8 (36.4)	10 (57.6)	8 (72.7)	10 (58.8)
Pre-voiding bladder volume	16 (64)	14 (63.6)	13 (68.4)	7 (63.6)	10 (58.8)
Post-voiding bladder volume	9 (39,1)	5 (25)	7 (47.7)	2 (18.2)	5 (31.2)
Mean (%)	14.7 (58)	10.6 (48)	10.6 (56)	5.2 (47)	9.5 (56)
SD	7.3	6.6	5.2	3.8	4.9

Table 1: Data description (n, %).

children are seen in PU clinics week, including new referrals and follow up cases. The examining radiologists were variable, as chosen by the patients in different institutions. A single US report was analyzed for each patient (the first brought to the clinics in the period if patients had more than one B/K scan during the study period). No UTD was excluded.

THE FOLLOWING DATA WERE REGISTERED FOR EACH REPORT

1) Institution where the US was executed (the patients were free to choose the institution where the examination was to be done, independent of being seen by one of the two Pediatric Urologists in Servidores do Estado Federal hospital).
2) Specialist who executed the scan (PR versus GR).
3) Routine requests ("bladder and kidney US") versus standardized requests (asking specifically for kidney localization, echogenicity, size, cortical thickness, pre and post-voiding pyelic and ureteral diameter, bladder wall thickness, pre and post voiding bladder volume measurements).
4) Diagnosis involving or not related to voiding dysfunction (VD).
Data obtained comprised upper tract information (localization, size, cortical thickness, echogenicity of the kidneys, postero-anterior pyelic diameter, postural variations in pyelic diameter, pre and post-voiding ureteral diameter) and lower tract information (bladder wall thickness, pre and post voiding bladder volume). Quantifiable data were later classified into exact measurements and subjective evaluation.
Four patients were excluded from the evaluation of bladder and pyelic post-voiding volumes because of inability to void/ empty bladder (2 open bladder exstrophies and two vesicostomies).
Primary voiding dysfunction, neurogenic bladder, posterior urethral valves and prune belly cases were grouped as voiding dysfunction (VD).
Data were statistically evaluated by chi square tests, using as significant values $p<0.05$ and multivariate analysis.

RESULTS

47 US scans were evaluated (17 females, 30 males). Ages varied between 0 and 16 years-old, except for a 19 year-old patient (VUR post ureteral reimplant presenting with UTI and VD). Some patients had more than one diagnosis. Diagnoses were fetal hydronephrosis/ UPJO (n=13, 27.6%), primary VD (n=12, 25.5%), VUR (n=5, 10.6%), PUV (n=5, 10.6%), neurogenic bladder (n=4, 8.5%), bladder/cloacal exstrophy (n=3, 6.4%), urinary lithiasis (n=3, 6.4%), repetitive UTI (n=2, 4.3%) and other (n=4, 8.5%). General data obtained from the reports are described on table 1. Seventeen exams (36.2%) came from private institutions, 19 (40.4%) from teaching hospitals and 11 (23.4%) from assistance institutions. Data used for the analyses are on tables 1 and 2.

1. GENERAL ANALYSIS OF THE QUALITY OF REPORTS

No radiologist referred to Pediatric nomograms. There were no citations of kidney scars, characteristics of the calices or postural variations of pyelic diameter. Consideration of different parameters varied a lot (91.5% of the reports cited kidney size but only 12.3% gave consideration to post-voiding pyelic diameter). Some variables were considered in less than a 1/3 of the cases (renal echogenicity, ureteral diameter, post-voiding bladder volume). Only 3 of the chosen parameters were cited in > 80% of the reports (kidney localization and size, pyelic dimensions), though the exact measurement of pyelic diameter was done only in 29.8% of them. The only widely adopted measurement was kidney size. Post-voiding pyelic diameter and post-voiding bladder volume were rarely studied. For all other measurable variables subjective descriptions were preferred to exact measurements.

2.COMPARATIVE ANALYSIS BETWEEN PR (N=23, 48.9%) AND GR (N=24, 51.1%) REPORTS

The proportion of VD cases and standardized requests were similar in both groups (12/23 e 13/24 VD cases and 10/23 e 9/24 standardized requests, respectively). PR were disproportionately distributed in teaching institutions (16/23 scans). There were no significant differences between PR and GR relating to citation of parameters or obtainment of measurements when applicable.

3.COMPARATIVE ANALYSIS OF ROUTINE (N= 28, 59.6%) VERSUS STANDARDIZED REQUESTS (N=19, 40.4%) (TABLES 1 AND 2)

Standardized requests were commoner in VD cases (12/25 - 48% versus 7/22, 31.8%, p=0.7) and in teaching hospitals (12/19 – 63.2% versus 7/28 – 25% in private or assistance institutions, p=0.02). Distribution was similar between PR and GR scans (10/23 versus 9/24 standardized requests). Reports corresponding to standardized requests were more uniform than reports that responded to routine requests and considered renal echogenicity, cortical thickness, ureteral diameter, bladder wall thickness, pre and post-voiding bladder volume more frequently. The differences were significant only for cortical thickness (p=0.03), post-voiding pyelic diameter (p=0.001), pre voiding bladder volume (p=0.02) and post-voiding bladder volume (p=0.006). All quantifiable variables were measured in the standardized request group more frequently. The differences were significant only for cortical thickness (p=0.02), pre-voiding pyelic diameter (p=0.001) and bladder wall thickness (p=0.013). Post-voiding pyelic diameter were considered only in the standardized requests group and always objectively measured.

4. COMPARATIVE ANALYSIS BETWEEN TEACHING, PRIVATE AND ASSISTANCE UNITS (TABLES 1 AND 2)

The number of VD cases did not differ between the 3 groups (10/19, 5/11 and 10/17 in teaching, assistance and private institutions, respectively). Most PR were concentrated in teaching and assistance institutions (16/19 and 7/11, respectively). No PR was found in private units. We also verified a higher concentration of standardized requests in teaching institutions (12/19, versus 1/11 in assistance hospitals and

VARIABLE	GENERAL	STANDARD REQUEST	ROUTINE REQUEST	PR	GR	TEACHING	ASSISTENCIAL	PRIVATE	VD	NO VD
Kidney size	0,95	1,00	0,85	0,91	0,91	1,0	0,67	0,94	0,92	0,90
Cortical thickness	0,25	0,73	ZERO	0,36	0,33	0,50	ZERO	0,38	0,31	0,40
AP pre-voiding pyelic diameter	0,59	0,65	0,13	0,48	0,20	0,10	0,10	0,22	0,22	0,47
Bladder wall thickness	0,14	0,33	ZERO	0,23	0,71	0,14	0,14	0,20	0,20	ZERO
Pre-voiding bladder volume	0,48	0,63	0,29	0,47	0,47	0,43	0,43	0,44	0,44	0,50
Post-voiding bladder volume	0,79	0,80	0,75	0,83	0,75	0,75	0,75	0,78	0,78	0,80
MEAN	0,53	0,69	0,33	0,55	0,45	0,60	0,35	0,48	0,48	0,51
MEDIAN	0,53	0,69	0,33	0,47	0,40	0,59	0,29	0,39	0,37	0,49
Standard deviation	0,31	0,22	0,38	0,27	0,32	0,26	0,31	0,40	0,30	0,32

Table 2: Number of exactly measured/ number of reports considering the specific variable. Post-voiding AP pyelic diameter was excluded because was considered exclusively in reports responding to standardized requests. Ureteral diameter was excluded because of the rarity of citation in the reports.

6/17 in private institutions). In general the performance of assistance institutions was inadequate and worse than that of the other institutions. Teaching hospitals tended to perform better relating to considering renal echogenicity, cortical thickness, pre and post-voiding bladder volume (differences not significant). Teaching institutions used exact measurements to evaluate quantifiable variables more frequently. Significant differences were found comparing teaching to assistance institutions (kidney size, cortical thickness and pre-voiding pyelic diameter, p=0.008, p=0.05, p=0.006, respectively). The only significant difference in the comparison between teaching and private institutions concerned pre-voiding pyelic diameter (p=0.002).

5.COMPARATIVE ANALYSIS BETWEEN SCANS FOR VD PATIENTS AND THE OTHERS

The proportion of VD cases did not differ between the different kinds of institution nor between PR and GR. Standardized requests sere more frequent in the VD group (12/25 versus 7/22, not significant, p=0.4). Bladder wall thickness was cited more frequently in the VD group (p=0.002), so as ureteral diameter (p=0.009). No differences were found for the other parameters or in the proportion of exact measurements taken. After multivariate analysis, the only variable that influenced the final quality of the reports was the usage of standardized requests.

DISCUSSION

Pediatric specialists worry a lot about standardization of US exams. Many authors have commented on the need to adopt uniform descriptive parameters, avoid subjectivity and take exact measurements when applicable. American Society of Roentgenology, in particular, has suggested models for pediatric US (3). Similarly, Society for Fetal Urology (SFU) has proposed to substitute inexact data for objective measurement for fetal hydronephrosis (2). We are aware that some radiologists may only describe "significant" information on the reports, but the definition of "significant" may vary between specialists and between different clinical situations. Indeed, "negative" data may be as important as "positive" data. A standardized protocol seems to be a systematic way to provide information to be analysed by the clinician. Obviously, a protocol is no substitute for medical expertise: even the best protocol cannot compensate for the inability of the operator to interpret the images seen on the screen. Protocols are incapable of compensating for observer errors! Some diseases depend on the dynamics of the urinary tract: the severity or even the observation of some findings depends on the repletion status of the bladder. Variations of the pre and post-voiding pyelic diameter can help to differentiate obstructive from functional hydronephrosis. Specifically for VD cases those variations are critical for the diagnosis and evaluation of the results of treatment. For those children "non-invasive" protocols are the state-of-the-art, involving dynamic US, flowmetry and perineal electromyography. Most patients need comparisons between different moments of their evolution and exact measurements facilitate this job. Notably, voiding dysfunctions that may complicate or be causative to specific clinical situations are not necessarily obvious in children, even after exhaustive history taking, and US findings may be their first evidence.

We were able to find only one other paper concerning K/B Pediatric US reports characteristics (4). Govender et al present a retrospective evaluation of 366 reports/ 18 months (20.3/month versus 15.7/month in our study) in a Pediatric academic service. The complexity of their cases was probably lower than ours, as our clinic is a referral for PU and theirs a general Pediatrics service. The authors used a data index to qualify the reports and found a mean quality of 32%, slightly

better for fellows in training than for senior radiologists. We also did not find better reports when comparing PR to GR, contrary to our initial hypothesis. The explanation may be the tendency of experts to phocus specific aspects of the patient in spite of other characteristics and to value subjective judgments based on personal experience, while less senior or less specialized professionals tend to follow protocols. Again matching our results, kidney data analysis were more precise than data about renal pelvis, ureters and the bladder (41% versus 5% versus 29%): 92% of their cases did not have renal pelvis measured. Our data are a little better (tables 1 and 2), but clearly depend on the usage of standardized requests.

One unexpected observation is the high proportion of US coming from private institutions, as we are dealing with patients from a public hospital in a country served by an all-including governmental system of health. This suggests either that our patients are having difficulties in getting K/B US in public institutions or that our institution is providing clinical care that is not available from private hospitals/ professionals: consequently, our patients are referred to us for therapy, eventually opting for getting imaging from other institutions. In our opinion this last hypothesis may apply to complex cases, but is highly improbable for routine patients. Difficulties to get US in our institution or other public hospitals may be related to excessive working loads in radiology departments, insufficient availability of professionals or inadequate logistics. Another worrying aspect is the low quality of the exams originating from pure assistance governmental institutions.

Some data (nomograms for age, pyelic diameter postural variations) were never considered by the radiologists in the reports. Others were rarely studied (bladder wall thickness, data about the ureters). Echogenicity was also not much valued despite being important in Pediatrics (hyperechogenicity suggests kidney dysplasia). The low frequency of citation of those specific data may be due to technical difficulties or limitations of the method (ureteric diameter, kidney scars), restricted knowledge about the clinical usefulness of the specific information (pyelic diameter postural variations (5), inadequate parametrization (bladder wall thickness) (6) or logistical problems (difficulties to obtain post-voiding images because of non-collaboration of patients, lack of time from the professional, unavailability of adequate toilets for the patients).

A recent paper points to frequent discrepancies between the reports of General and Pediatric Radiologists (7): disagreements were found in > 40% of the reports, but the paper does not concern specifically genitourinary scans and phocuses in CT interpretation. Even so, Radiologists´ opinions differed in 2/3 cases of hydronephrosis. We could not replicate this finding in our paper. By using multivariate analysis, the only variable that influenced the final quality of our reports was the usage of standardized requests. This suggests that the adoption of standardized protocols and/or check-lists might be useful to get better and more uniform reposts for pediatric K/B US scans. Other authors have also suggested that the usage of check-lists in Pediatric Radiology may be of help (8).

CONCLUSION

The reports of Pediatri B/K US frequently lack important details. The usage of specific protocols and/or check-lists to ascertain the individual aspects to be considered in Pediatric B/K US scans would be effective to standardize and get better quality reports.

REFERENCES

1. Riccabona, M; Avni, FE; Brickman, JG; Dacher, JN; Darge, K; Lobo, ML; Willi, U. Imaging recommendations in paediatric uroradiology: minutes of the ESPR workgroup session on urinary tract infection, fetal hydronephrosis, urinary tract ultraonography and voiding cystourethrography, Barcelona, Spain, June 2007. Pediatr Radiol. 2008 Feb;38(2):138-45.

2. Nguyen, HT; Herndon, CD; Cooper, C; Gatti, J; Kirsch, A; Kokorowski, P; Lee, R; Perez-Brayfield, M; Metcalfe, P; Yerkes, E; Cendron, M; Cmapbell, JB. The Society for Fetal Urology consensus statement on the evaluation and management of antenatal hydronephrosis. J Pediatr Urol 2010, 6(3):212-31.

3. http://www.radreport.org/specialty/pd, accessed in October 19th, 2012.

4. Govender, N; Andronikou, S; Goodier, MDM. Adequacy of pediatric renal tract ultrasound requests and reports in a general radiology department. Pediatr Radiol 2012, 42(2):188-95.

5. Sharma, G; Sharma, A; Maheshwari, P. Predictive value of decreased renal pelvis anteroposterior diameter in prone position for prenatally detected hydronephrosis. J Urol 2012, 187(5):1839-43.

6. Bright, E; Oelke, M; Tubaro, A; Abrams, P. Ultrasound estimated bladder weight and measurement of bladder wall thickness – useful noninvasive methods for assessing the lower urinary tract? J Urol 2012, 184(5):1847-54.

7. Eakins, C; Ellis, WD; Pruthi, S; Johnson, DP; Hernanz-Schulman; Yu, C; Kan, JH. Second opinion interpretation by specialty Radiologists at a Pediatric hospital: rate of disagreement and clinical implications. AJR 2012, 199:916-20.

8. Fuentealba, I; Taylor, GA. Diagnostic errors with inserted tubes, lines and catheters in children. Pediatr Radiol 2012;42(11):1305-15.

COMENTARIO SOBRE ARTÍCULO "THE TRUTH-LIES IN THE DETAILS ..."

Parto agradeciendo por la oportunidad de poder revisar este trabajo. Según lo expresado por los autores, el objetivo del paper es evaluar en la efectividad y precisión de las ecografías renales y vesicales realizadas a niños que asisten a una consulta de urología pediátrica.

En términos generales, me parece que es una buena idea el poder -en forma prospectiva- evaluar en un solo "receptor" como lo es un equipo de urología pediátrica, un examen tan común e importante como es la ecografía renal y vesical distintos ecografías renales. Todos los que hacemos clínica, sabemos que muchas decisiones se toman basados en este examen.

Sin embargo, al querer los autores evaluar tantos parámetros posibles, como orden pedida, lugar donde se hizo la ecografía, datos demográficos, datos clínicos, entre otros, lamentablemente se tienen tantos datos que cuesta leer e interpretar en el paper.

Por otro lado, y sin querer entrar en un análisis más profundo del paper en si, me parece hay segmentos que deben revisarse para que el mensaje del trabajo no se pierda. Principalmente la sección de resultados, donde si bien es cierto se intenta cierto orden al dividir los datos en subgrupos, los datos expresados en cada subgrupos son difícil de entender. Tal vez usar más gráficos y tablas permitirían al lector entender los resultados encontrados.

Con respecto a la discusión sugeriría tomar 2 a 3 ideas fuerzas y desarrollarlas basados en los resultados de este estudio. Por otro lado los autores sugieren el uso de un "check-list", que no se ve claramente, y que los invitaría a mostrar en forma expresa como conclusión y propuesta final de su trabajo.

Finalmente, y no por eso menos importante, el articulo esta escrito en inglés, lo que permitiría una mejor difusión del trabajo, y sin ser el ingles mi lengua materna, me permito sugerirle a los autores el revisar el escrito, idealmente por un "native speaker".

Para resumir, insisto en que me parece un tema motivante, que permite avanzar en unificar criterios de ecografía, lo que facilitaría la interpretación de datos entres centros e incluso países distintos. Nuevamente recomendaría a los autores considerar los puntos mencionados anteriormente, y re-enviar el manuscrito a la revista para su re-evaluación.

Espero que mis comentarios y revisión motive a los autores a seguir mejorando su articulo, y agradezco una vez mas la oportunidad por ver su trabajo.

Dr. Pedro José López
Urólogo Infantil
Hospital Exequiel González Cortés