



Jornada sobre Protección Radiológica en Radiología Pediátrica. Criterio ALARA

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La Comisión Internacional de Protección Radiológica (ICRP), establece un sistema de protección radiológica basado en tres principios básicos:

1. Justificación
2. Optimización
3. Limitación de dosis

La directiva EURATOM 97/43 recomendó la elaboración de criterios de indicación para prácticas de carácter diagnóstico

Justificación del TC:

- La información esperada contribuirá a confirmar un diagnóstico u orientar la estrategia terapéutica.
- El beneficio esperado debe ser superior al que aportaría otra técnica alternativa que involucre menores dosis o que no implique exposición a radiaciones ionizantes.
- La mejor opción para reducir la dosis es no realizar el estudio cuando no esté indicado o existan técnicas de imagen alternativas.



Médico especialista

Contexto clínico
completo

Conocedor del
riesgo, ventajas-
inconvenientes de la
prueba solicitada

Radiólogo

Revisión sistemática
de las solicitudes
Utilizar la técnica de
imagen de elección

Tener acceso a las
diferentes técnicas
de Diagnóstico por
Imagen



- Hasta un 30% de los estudios de TC pediátricos son innecesarios o pueden ser substituidos por otras técnicas de imagen que no utilizan radiaciones ionizantes.

- 1.Indicaciones erróneas o discutibles (epilepsia, cefalea, apendicitis, urolitiasis, (*).....)

- 2.Motivos médico-legales.

- 3.Estudios repetidos (falta de comunicación)

*Donnelly LF. Reducing Radiation Dose Associated with Pediatric CT by Decreasing Unnecessary Examinations. Am. J. Roentgenol. 2005 Feb 1;184(2):655-657.

Oikarinen H. Unjustified CT examinations in young patients. Eur Radiol. 2009 1;19(5):1161-1165.

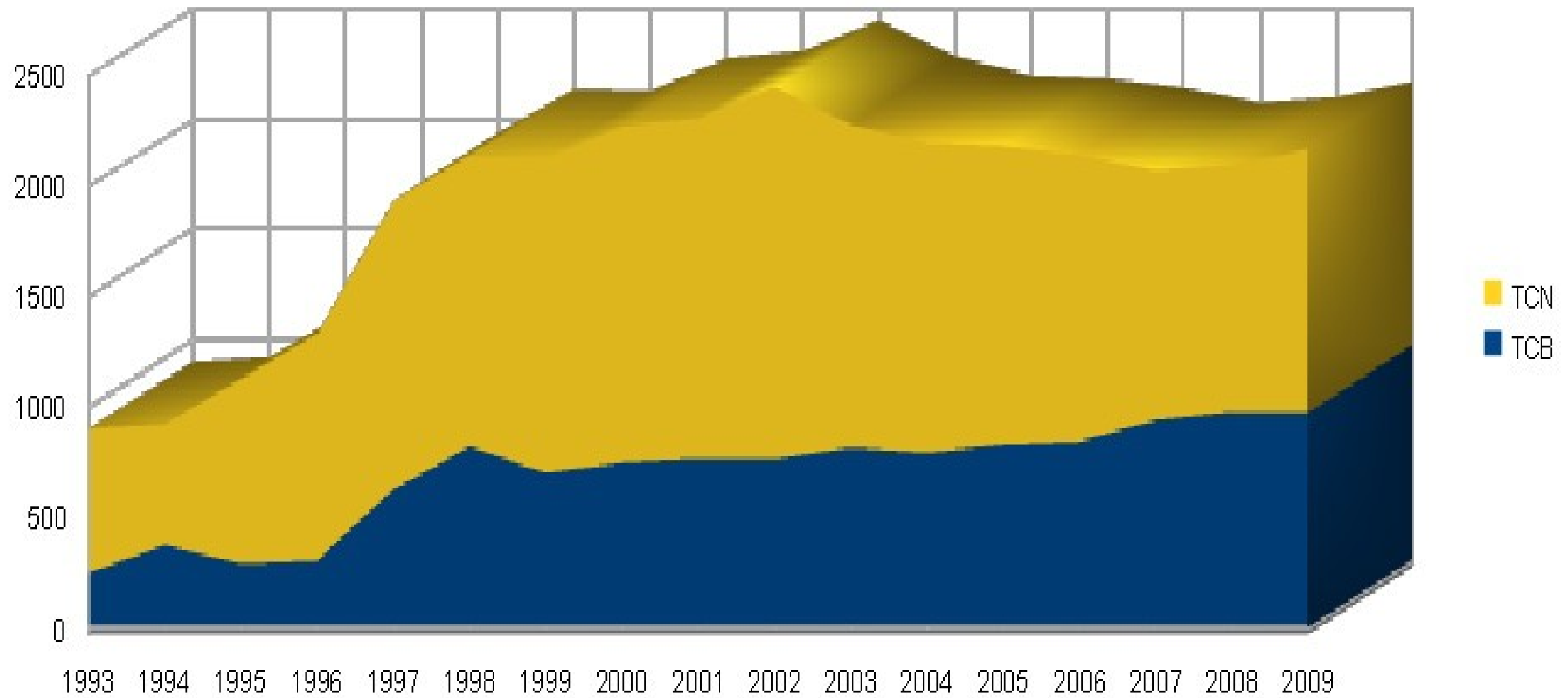
Table 2 Justification for the CT examinations analysed

	Justified n (%)	Unjustified n (%)	Total n
Lumbar and sacral spine	7 (23)	23 (77)	30
Head	32 (64)	18 (36)	50
Abdomen or upper abdomen	19 (63)	11 (37)	30
Nasal sinuses	24 (80)	6 (20)	30
Cervical spine	29 (97)	1 (3)	30
Trauma	30 (100)	0	30

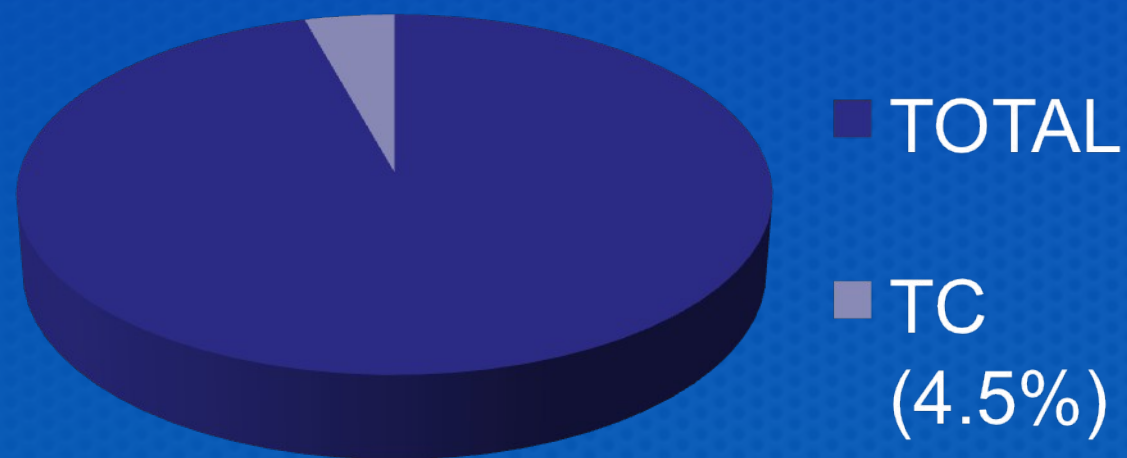
1. Utilización de “International Guidelines”
2. Organización en Órganos-Sistemas
3. Aumento de la disponibilidad de Eco y RM

- Guía de Protección Radiológica N° 118 de la Comunidad Europea “Indicaciones para la correcta solicitud de pruebas de diagnóstico por imagen” (2000).
- ACR Appropriateness criteria <http://www.acr.org>
- Referral guidelines of the royal College of Radiologists
<http://www.rcr.ac.uk>

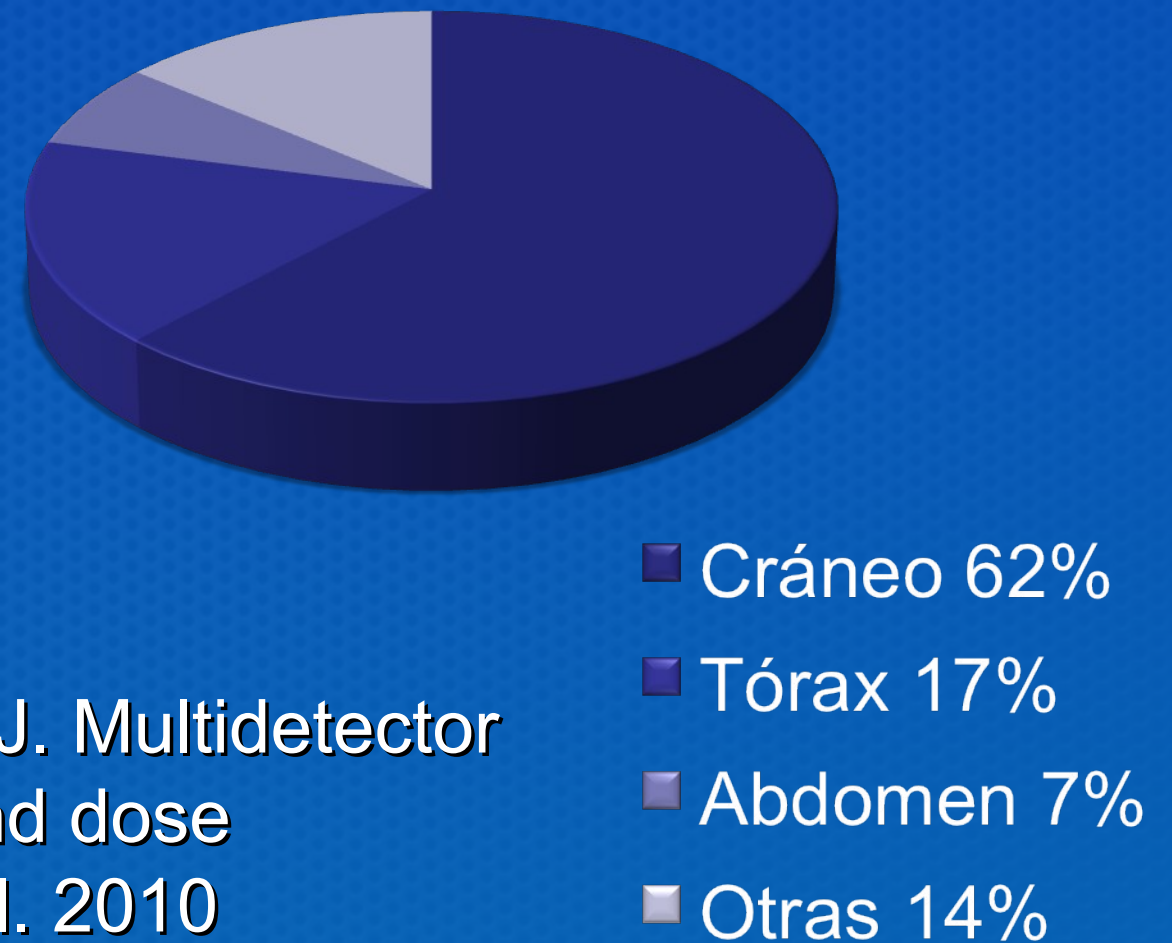
Nº TC Anual



Estudios de imagen



Indicaciones



Nievelstein RAJ, Dam IM, Molen AJ. Multidetector CT in children: current concepts and dose reduction strategies. *Pediatr Radiol*. 2010 6;40(8):1324-1344.

Wilhelmina Children's Hospital, University Medical Center Utrecht.

American College of Radiology ACR Appropriateness Criteria®

Clinical Condition:

Crohn's Disease

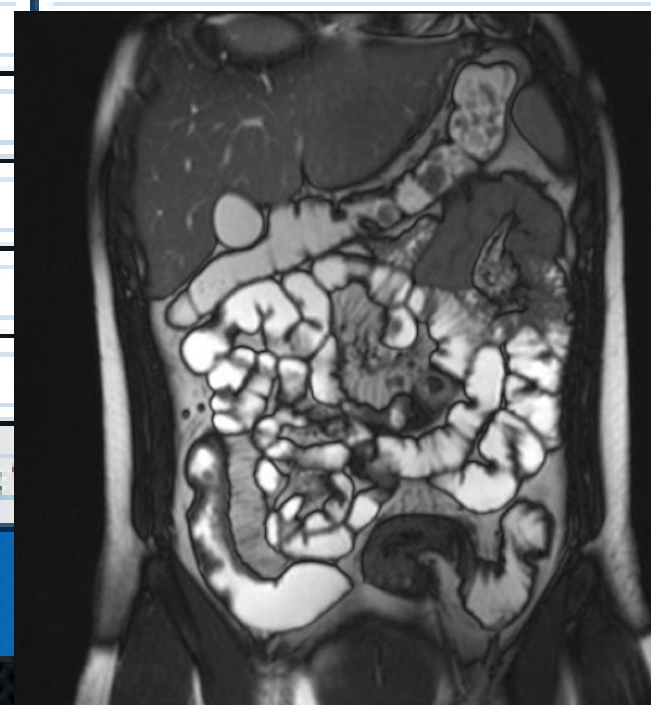
Variant 1:

Adult; initial presentation (abdominal pain, fever, or diarrhea); Crohn's disease suspected.

Radiologic Procedure	Rating	Comments	RRL*
CT abdomen and pelvis with contrast (CT enterography)	9		☼☼☼☼
X-ray small-bowel follow-through	7		☼☼☼
CT abdomen and pelvis with contrast (routine)	6		☼☼☼☼
X-ray contrast enema	6		☼☼☼
MRI abdomen and pelvis with contrast (MR enterography)	6	MR enterography may have sensitivity and specificity similar to CT enterography and avoids radiation risks. However, the choice of examination depends on institutional preferences and resources. MRI is the preferred modality for investigating perianal disease. See statement regarding contrast in text under "Anticipated Exceptions."	O
X-ray abdomen	5	May be useful to exclude free air if perforated hollow viscus is suspected.	☼☼☼
US abdomen and pelvis	5		O
US pelvis endorectal	3		O
Tc-99m HMPAO leucoscintigraphy	3		☼☼☼
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Clinical Condition:**Crohn's Disease****Variant 2:****Initial presentation of a child (less than 14 years of age); Crohn's disease suspected.**

Radiologic Procedure	Rating	Comments	<u>RRL*</u>
CT abdomen and pelvis with contrast (CT enterography)	9		☼ ☼ ☼ ☼
MRI abdomen and pelvis with contrast (MR enterography)	9	MR enterography may have sensitivity and specificity similar to CT enterography and avoids radiation risks. However, the choice of examination depends on institutional preferences and resources. MRI is the preferred modality for investigating perianal disease. See statement regarding contrast in text under "Anticipated Exceptions."	0
CT abdomen and pelvis with contrast (routine)	8		☼ ☼ ☼ ☼
X-ray small-bowel follow-through	7		☼ ☼ ☼ ☼
US abdomen and pelvis	6		
X-ray contrast enema	5		
X-ray abdomen	5		
Tc-99m HMPAO leucoscintigraphy	2		
US pelvis endorectal	2		
<u>Rating Scale:</u> 1,2,3 Usually not appropriate; 4,5,6 May be appropriate;			



Clinical Condition:

Crohn's Disease

Variant 6:

Child (less than 14 years of age) with known Crohn's disease; stable, mild symptoms.

Radiologic Procedure	Rating	Comments	RRL*
MRI abdomen and pelvis with contrast (MR enterography)	8	MR enterography may have sensitivity and specificity similar to CT enterography and avoids radiation risks. However, the choice of examination depends on institutional preferences and resources. MRI is the preferred modality for investigating perianal disease. See statement regarding contrast in text under "Anticipated Exceptions."	O
US abdomen and pelvis	6	Very operator dependent.	O
CT abdomen and pelvis with contrast (CT enterography)	6		☼☼☼☼
X-ray small-bowel follow-through	5		☼☼☼☼
CT abdomen and pelvis with contrast (routine)	5		☼☼☼☼
X-ray abdomen	5		☼☼☼
X-ray contrast enema	4		☼☼☼☼
Tc-99m HMPAO leucoscintigraphy	2		☼☼☼
US pelvis endorectal	2		O
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

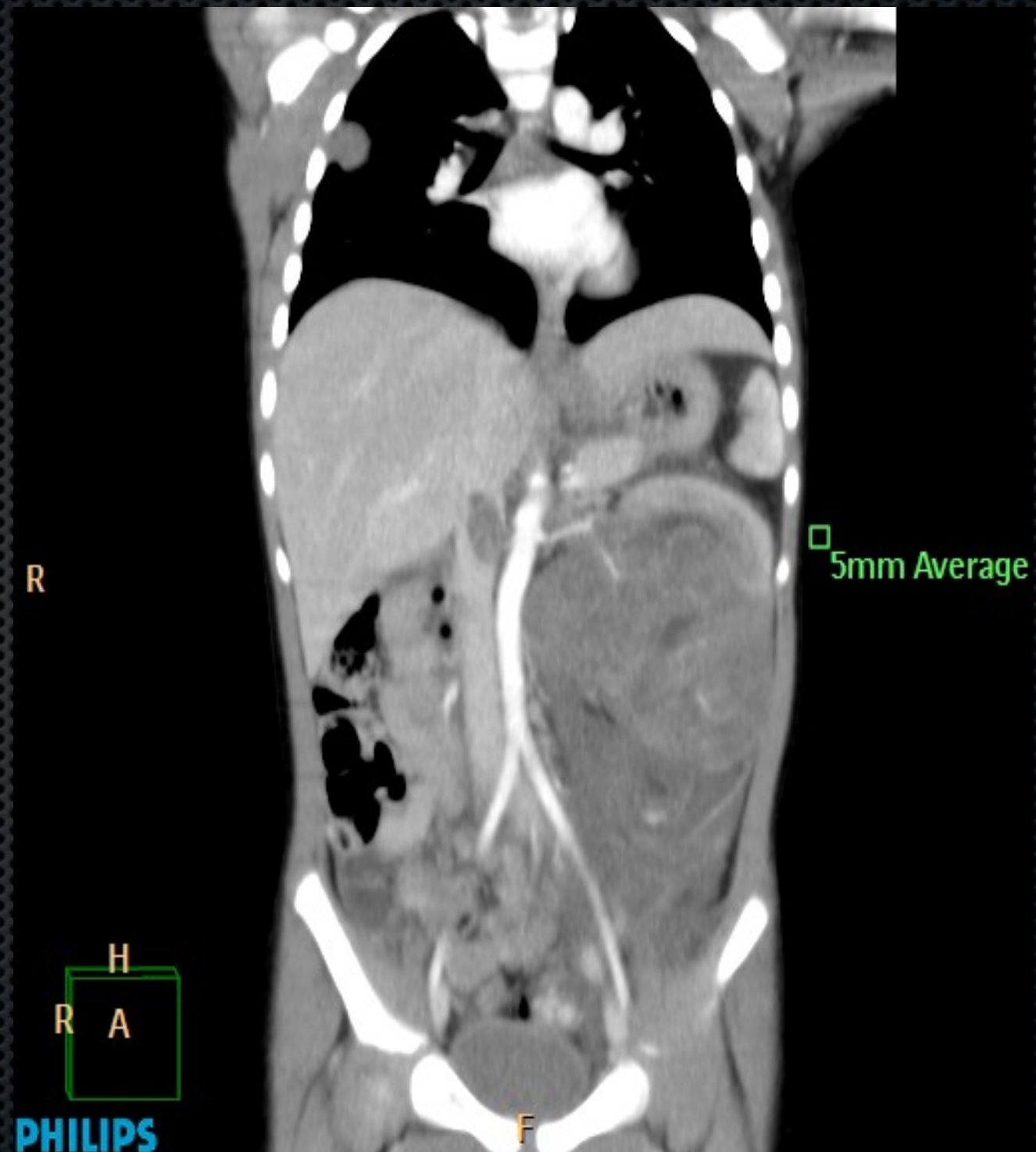
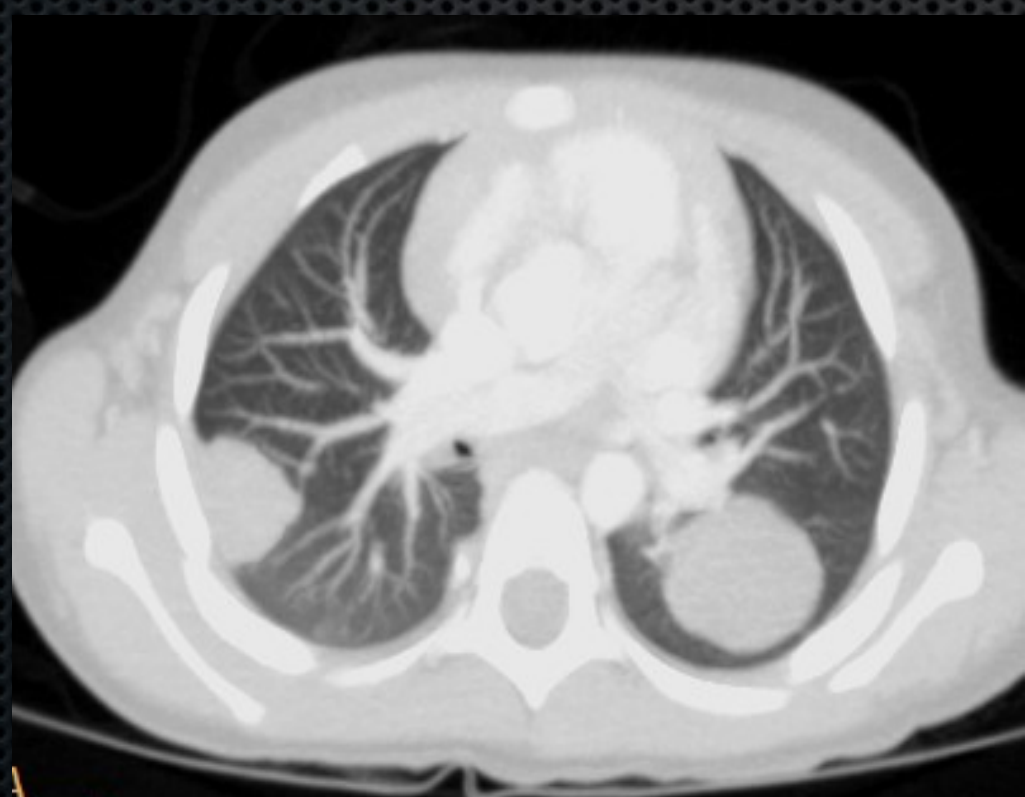
Clinical Condition:

Seizures — Child

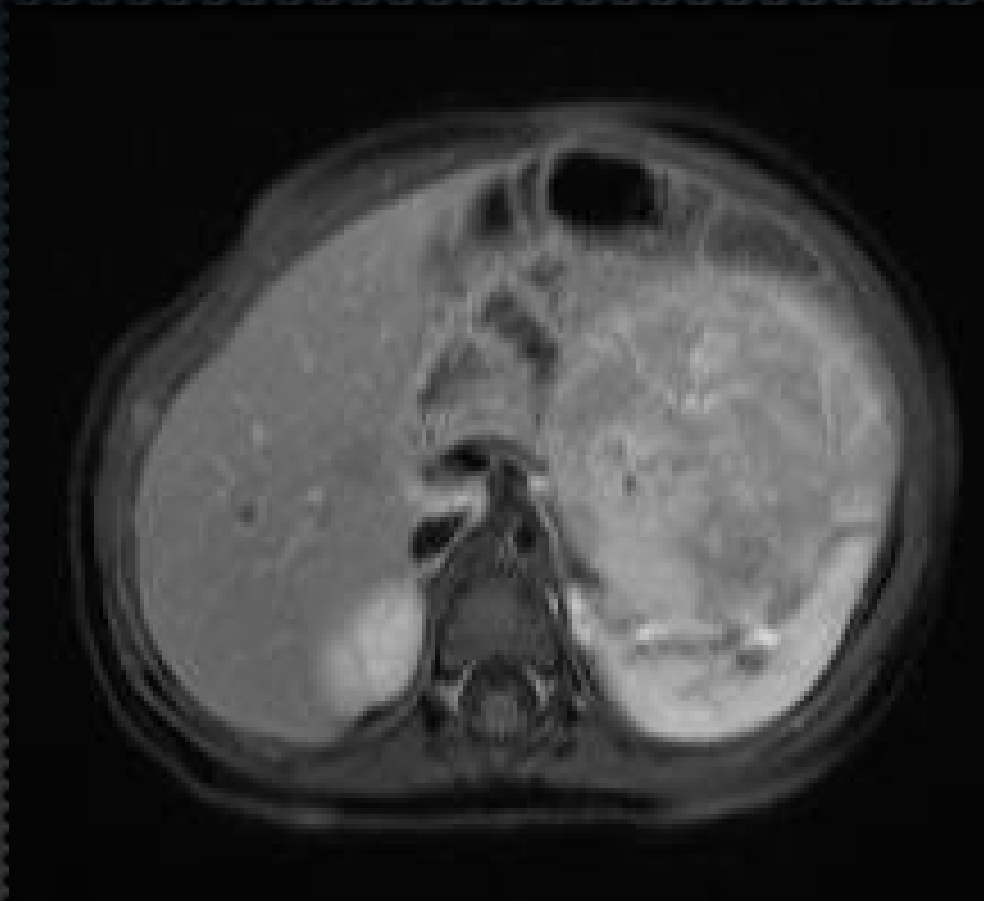
Variant 6:

Generalized seizures (neurologically abnormal).

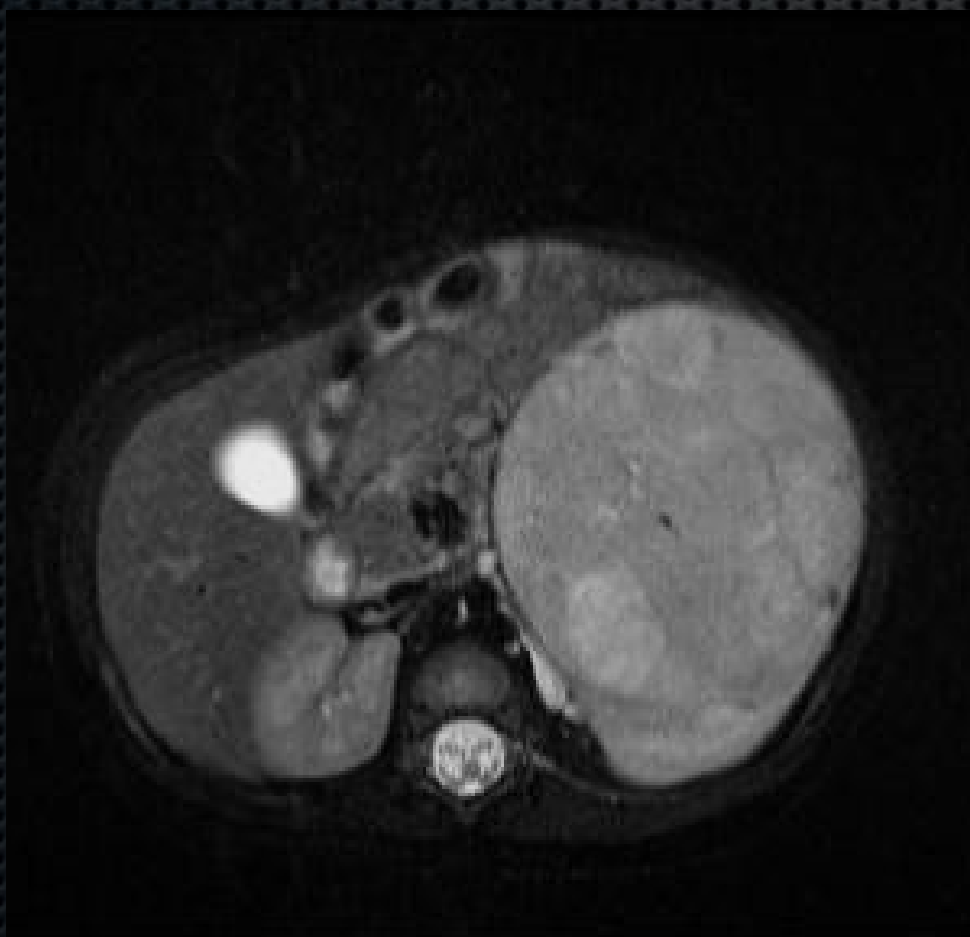
Radiologic Procedure	Rating	Comments	RRL*
MRI head without contrast	9		0
CT head without contrast	6		☼☼☼
MRI head without and with contrast	6	To clarify an abnormality on the noncontrast MRI or if considering infection or inflammation. See statement regarding contrast in text under "Anticipated Exceptions."	0
FDG-PET head	2		☼☼☼☼
CT head without and with contrast	2		☼☼☼☼
SPECT head	2		☼☼☼
US head	1		0
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

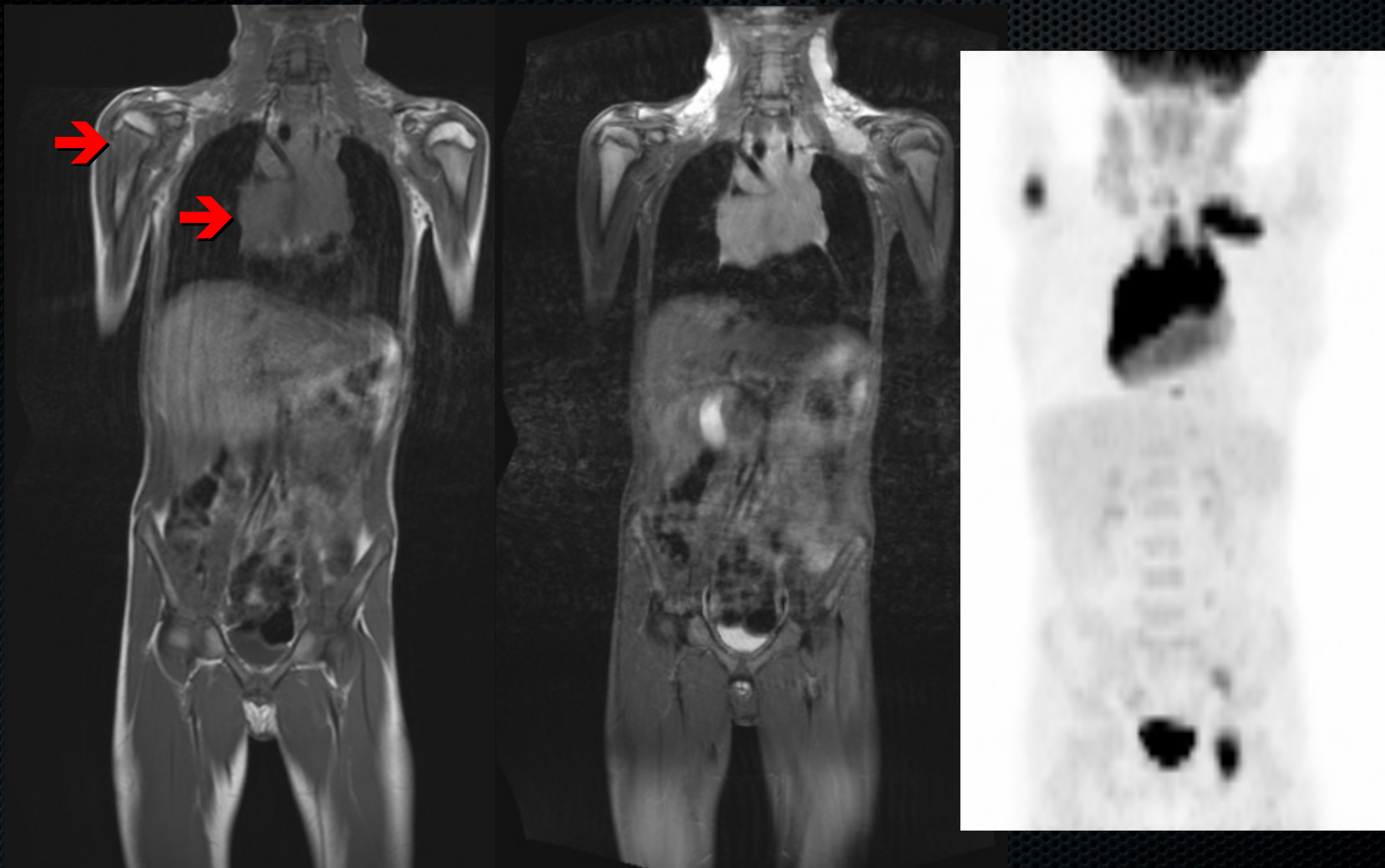


Tumor de
Wilms



Wilm's Tumour





RM: niño de 9 años con linfoma. Masa mediastínica, adenopatías laterocervicales e infiltración ósea



Gracias

