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Paediatric Radiology PICTORIAL ESSAY

MRI findings related to Image Defined Risk Factors (IDRFs) in children with neuroblastic tumours: Analysis for structured reporting

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ABSTRACT

Neuroblastic tumours constitute a heterogenous group of tumours with diverse presentation, variable malignant behaviour and prognosis. Image Defined Risk Factors (IDRFs) have been described in the International Neuroblastoma Risk Group Staging System (INRGSS). IDRFs refer to compartmental involvement, the effect of masses to vital organs or anatomic structures and their relation to neurovascular bundles and airway. CT has been traditionally recommended for imaging children with neuroblastoma. MRI is increasingly being utilised for the diagnosis, staging and follow-up of children with neuroblastic tumours and is considered an acceptable modality for clinical trials. Appropriate structured reporting is crucial for communication with surgeons. This pictorial essay focuses on the MRI appearances of neuroblastic tumours, aims to familiarise radiologists with relevant terminology and the routine use of IDRFs when reporting MR imaging studies preoperatively; it provides a concise checklist of the INRGSS relevant parameters for complete preoperative assessment of children with neuroblastic tumours. This terminology and approach may also prove useful for reporting not only neuroblastic tumours but abdominal paediatric tumours in general.

KEY WORDS

IDRFs; neuroblastoma; paediatric tumours; oncology; MRI; structured reporting

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Introduction

Neuroblastic tumours are the most common extra-cranial solid tumours affecting children. They constitute a heterogenous group of masses, which comprises of neuroblastoma, ganglioneuroblastoma and ganglioneuroma. Common sites of involvement are the adrenals (48%), the retroperitoneum (25%) and the chest (16%), while less common sites include the neck (3%) and the pelvis (3%) [1]. Accurate staging at the time of diagnosis is of outmost importance since clinical stage is the most statistically significant and clinically relevant prognostic factor, strongly influencing selection of treatment [2]. In the past, staging was provided postoperatively based on the extent of tumour removal according to the International Neuroblastoma Staging System (INSS) criteria [3]. The drawback of this staging system was that staging was completed postoperatively and varied, depending upon the surgical skills.

In 2009, numerous major cooperative groups formed the International Neuroblastoma Risk Group (INRG) Task Force, which developed the INRG Staging System (INRGSS), a proposed pretreatment staging system. Image-defined risk factors (IDRFs) constituted risk stratification criteria for patients with local-regional tumours and were considered reproducible and independent of surgical aptitude and technique [4]. Since surgical risk factors are related to imaging findings, it was decided to use the term "image-defined risk factors" (IDRFs) and these are presented in **Table 1**. IDRFs refer to compartmental involvement, to the effect of masses to vital organs or anatomic structures and their relation to neurovascular bundles and airway.

The INRGSS is being constantly evaluated; to date, results demonstrate that absence of IDRFs could indicate minimally invasive surgery resulting in efficient tumour resection [5, 6]. Absence of IDRFs is associated with complete tumour resection in many centers [7-10]. On the other hand, the presence of IDRFs may be associated with worse surgical outcomes, increased perioperative and post-operative complications and worse prognosis [6-10]. Therefore, positive IDRFs are considered useful warning signs of increased surgical risk and provide valuable information for pre-operative planning. It should be emphasised that IDRFs are not criteria for tumour resectability, because they may potentially overestimate surgical risk [11]. Hence, the presence of IDRFs does not constitute a contraindication for surgery.

Magnetic resonance imaging (MRI) is increasingly being utilised for the diagnosis, staging and follow-up of children with neuroblastic tumours, is considered an acceptable modality for clinical trials, while appropriate structured reporting is crucial for communication with surgeons [2, 3]. This pictorial essay focuses on the MRI appearances of neuroblastic tumours, aims to familiarise radiologists with relevant terminology and the routine use of IDRFs when reporting MR imaging studies preoperatively and provides a concise checklist of the INRGSS relevant parameters for complete preoperative assessment of children with neuroblastic tumours.

Discussion

Advantages of MRI against other imaging modalities for neuroblastic tumours and IDRFs assessment

Ultrasonography is the first-line imaging modality in the majority of abdominal masses because it does not involve ionising radiation, it is widely available and provides sufficient provisional information concerning the solid or cystic nature of the mass and its relationship with adjacent structures. However, ultrasonography has inherent disadvantages in the assessment of neuroblastic tumours: limitation to thoroughly investigate the relationship with important structures like neurovascular bundles, relative weakness to assess grossly-calcified lesions and mid-abdominal retroperitoneal lesions in children with air filled bowel, low reproducibility between examiners and difficulty to retrospectively review the extent of the lesion [2, 12].

Cross sectional imaging-computed tomography (CT) and MRI - is recommended for initial local staging and IDRFs assessment. CT's advantages comprise less artefacts due to increased speed of scans, multiplanar reconstructions, reference for radiation therapy and ability to provide adequate information for surgical planning, without the need of sedation [13]. Disadvantages of CT include radiation exposure and the need for iodinated intravenous contrast administration [14].

MRI is now considered the most appropriate modality for neuroblastic tumour assessment due to the absence of ionising radiation, high tissue contrast and spatial resolution, excellence in highlighting intra-spinal tumour extension and bone marrow metastatic disease [13, 15, 16]. Drawbacks include the potential need of anaesthesia and difficulties in artefact elimination [15, 17].

Table 1. Image-Defined Risk Factors in Neuroblastic Tumours after Monclair et al [2]

Anatomic region	*Description*
Ipsilateral tumour extension within two body compartments	Neck-chest, chest-abdomen, abdomen-pelvis
Neck	Tumour encasing carotid and/or vertebral artery and/or internal jugular vein Tumour extending to base of skull Tumour compressing the trachea
Cervico-thoracic junction	Tumour encasing brachial plexus roots Tumour encasing subclavian vessels and/or vertebral and/or carotid artery Tumour compressing the trachea
Thorax	Tumour encasing the aorta and/or major branches Tumour compressing the trachea and/or principal bronchi Lower mediastinal tumour, infiltrating the costo-vertebral junction between T9 and T12
Thoraco-abdominal	Tumour encasing the aorta and/or vena cava
Abdomen/pelvis	Tumour infiltrating the porta hepatis and/or the hepatoduodenal ligament Tumour encasing branches of the superior mesenteric artery at the mesenteric root Tumour encasing the origin of the coeliac axis, and/or of the superior mesenteric artery Tumour invading one or both renal pedicles Tumour encasing the aorta and/or vena cava Tumour encasing the iliac vessels Pelvic tumour crossing the sciatic notch
Intraspinal tumour extension whatever the location provided that:	More than one third of the spinal canal in the axial plane is invaded and/or the perimedullary leptomeningeal spaces are not visible and/or the spinal cord signal is abnormal
Infiltration of adjacent organs/ structures	Pericardium, diaphragm, kidney, liver, duodeno-pancreatic block, and mesenter
Conditions to be recorded, but ***not*** considered IDRFs	Multifocal primary tumours Pleural effusion, with or without malignant cells Ascites, with or without malignant cells

Currently, there is no consensus regarding the optimal MR protocol for patients with neuroblastoma. In most centers, MRI will be performed on 1.5 T MRI units with axial and at least one additional plane (usually coronal and occasionally sagittal) of the primary tumour using at least two pulse sequences (T1, T2, STIR, in/out of phase) [2, 17]. Each protocol should be adapted to available options for each institution, especially utilising motion-reducing sequences and respiratory or cardiac gating [2]. Slice thickness is determined by patient size and region covered, but it should be less than 7 mm. The smallest appropriate coil should be used. Post-contrast sequences are optional, i.e. in very young infants, they should be performed with fat-saturation to increase contrast against fatty tissues and could include MR angiography or MR venography for detailed vascular assessment. T2-weighted sequences with fat saturation have the advantage of an overview of pathology, especially in the neck and the disadvantage of inconspicuity of interposed fat planes between tumour and adjacent structures. Diffusion images in axial plane and balanced steady state free precession GE sequences in three planes may also prove informative and are routinely performed in some institutions [18, 19]. Neuroblastoma often has decay-times close to those of normal tissues and exhibits signal intensity similar to normal tissues, namely the kidney. Signal intensity may alter in cases of necrosis, haemorrhage or calcification. For IDRFs, evaluation of T2-weighted sequences without fat suppression appears to be of great value. A 3D high-resolution T2-weighted

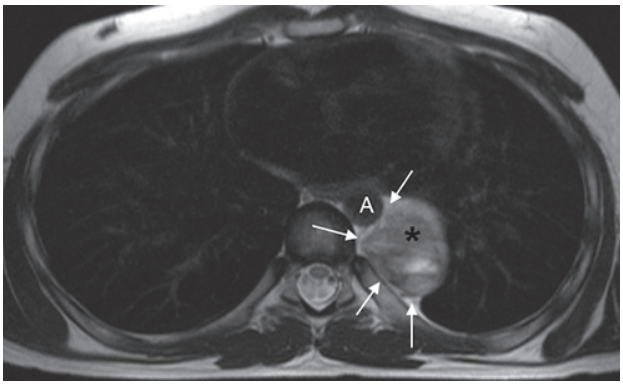

Fig. 1: *MRI of a 3-year-old male with paraspinal ganglioneuroma, axial T2-weighted TSE image (TR/TE/FA: 4500/100/150). There is hyperintense tissue consistent with fat (arrows) between the mass (*), the hypointense aorta (A), the vertebral body and the ribs. There is lung interposed between the lesion and the heart. Report should mention that the lesion is separated from the aorta, adjacent bones and the heart (IDRF negative)*

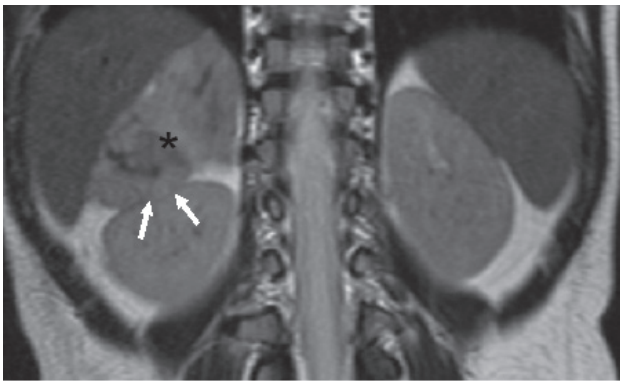

Fig. 2: *MRI of a 2.5-year-old male with adrenal neuroblastoma. T2-weighted TSE (TR/TE/FA: 4500/100/150) sequence, coronal plane. There is a mass (*) in contact with the upper pole of the right kidney (arrows) without interposing fatty or other normal tissue. Report should mention that the lesion is in contact with the kidney (IDRF negative)*

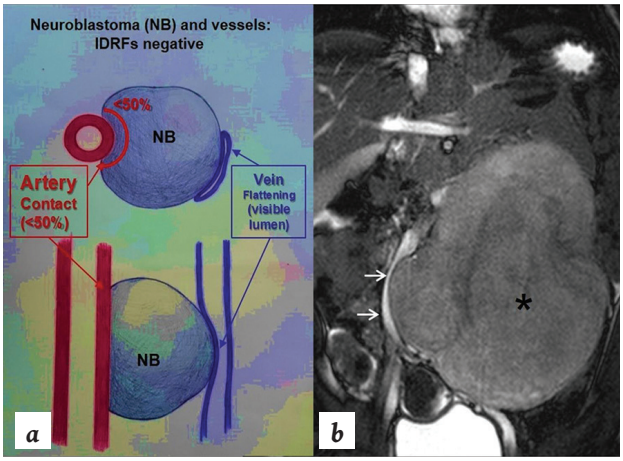

Fig. 3: a. *Schematic representation of vessel-related IDRFs negative, when the tumour is in contact with the arteries and veins.* ***b.*** *Illustrative MRI of a 4-year-old male with an abdominal neuroblastoma, balanced steady state free precession GE sequence (TR/TE/FA: 5/2.5/70), coronal plane. An abdominopelvic mass (*) compresses, displaces and flattens the inferior vena cava (arrows) which still exhibits a patent lumen. Report should mention that the mass flattens the vein, an IDRF negative. Note that in some centers this finding constitutes an indication for open and not minimally-invasive surgery [5]*

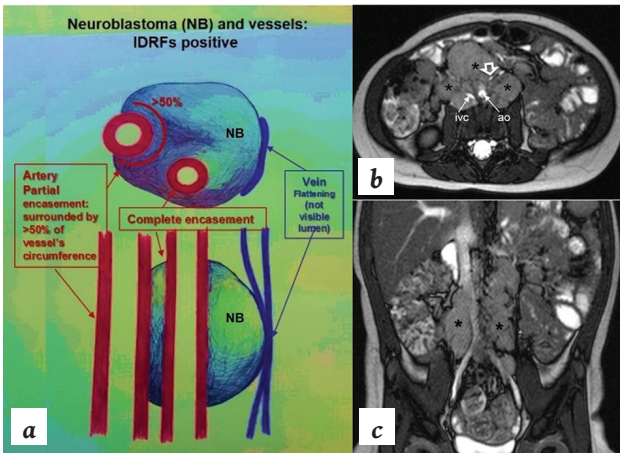

Fig. 4: a. *Schematic representation of vessel-related IDRFs positive, when the tumour encases the arteries and veins.* ***b.*** *MRI of a 2-year-old female with a retroperitoneal ganglioneuroblastoma at diagnosis. Balanced steady state free precession GE sequence (TR/TE/FA: 5/2.5/70), axial plane. There is a mass (*) which surrounds the aorta and IVC (arrows) by 360°, leaving an open lumen. Report should mention that the lesion is completely encasing the aorta (IDRF positive) and flattens the IVC (IDRF negative). Note encasement of inferior mesenteric artery branches (open arrow) which is not considered a positive IDRF.* ***c.*** *Same patient, balanced steady state free precession GE sequence (TR/TE/FA: 5/2.5/70), coronal plane. There is presence of adenopathy (*) which surrounds the aorta, visible at both sides*

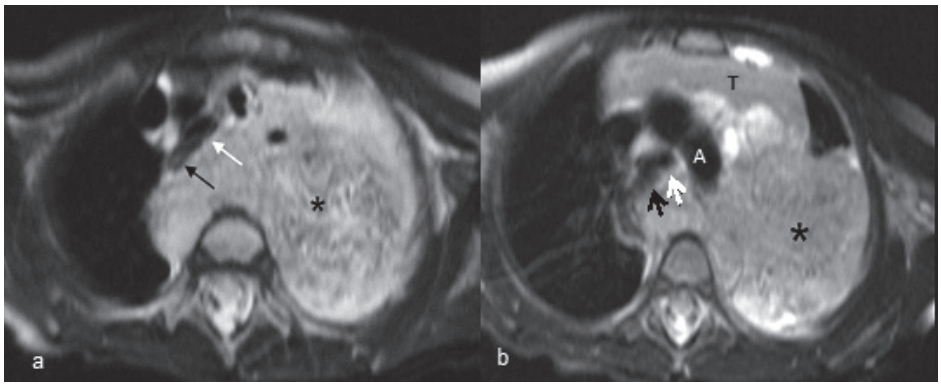

Fig. 5: *MRI of an 18-month-old female with neuroblastoma. a. T2-weighted image with fat saturation (TR/TE/FA: 2000/100/120), axial plane at the level of the major aortic branches. There is a mass (*) which displaces and reduces the short axis of the trachea (white arrow) and oesophagus (black arrow). b. T2-weighted sequence with fat saturation (TR/TE/FA: 2000/100/120), axial plane at the level of the aortic arch. The mass (*) partially encases the aorta (A), displaces and compresses the trachea (white arrow) and oesophagus (black arrow) and infiltrates the thymus (T). Report should mention that the lesion compresses the trachea and oesophagus (IDRF positive)*

spin echo sequence, when available, may ideally demonstrate the relationship of the masses with signal void from vessels and adjacent structures and is strongly recommended for paraspinal neuroblastomas to assess foraminal and intraspinal extension [2, 20].

Appropriate terminology - definitions

Terminology applied when reporting scans of children with neuroblastic tumours should directly communicate the absence or presence of IDRFs [2, 21].

Descriptive terms used to suggest the absence of an IDRF

Separation is the term used to describe the presence of a visible layer, usually fat, between the tumour and an adjacent organ or structure, consistent with absence of an IDRF (**Fig. 1**).

Contact is the term used to describe the absence of a visible layer, usually fat, between the tumour and the adjacent structure (**Fig. 2**).

For arteries, contact means that less than 50% of the vessel's circumference has lost a visible interposed layer, usually fat, between the vessel and the tumour. For veins the term *flattened* is used when the vein's diameter is reduced due to the tumour but the vein still has a visible lumen (**Fig. 3a**). In T2-weighted sequences, vessels appear hypointense due to flow void artefacts, depending on the direction of blood flow (**Fig. 1**). In balanced steady state free precession GE sequences, vessels appear hyperintense and the shape of their lumen adjacent to a neurogenic tumour may be clearly visible (**Fig. 3b**).

When a tumour is in contact with a vital structure or is flattening a vein, an IDRF is not present, with the exception of renal vessels. In this case the tumour is considered to invade the renal pedicle and this finding constitutes a positive IDRF (discussed in the following section).

Descriptive terms used to suggest the presence of an IDRF

Encasement is the term used when an organ or anatomic structure adjacent to a mass is surrounded by the tumour with loss of interposed fat planes. Total encasement means that a vital structure (organ or vessel) is completely surrounded by the tumour by 360° (**Fig. 4**). For arterial encasement, more than 50% of the artery's circumference should be in contact with the tumour (**Fig. 4**). For veins, encasement means that the vein is flattened, with no visible lumen. Note the exception of inferior mesenteric artery encasement which does not constitute an IDRF because this vessel is not considered a vital structure.

Compression is the term used exclusively for airways to describe compressive contact with the trachea or the bronchi, accompanied by reduction of the short axis of the airways (**Fig. 5**).

Infiltration is the term used to describe tumour involvement of adjacent vital structures with loss of fat planes and ill-defined margins between the tumour and the infiltrated structure. Kidneys may be infiltrated

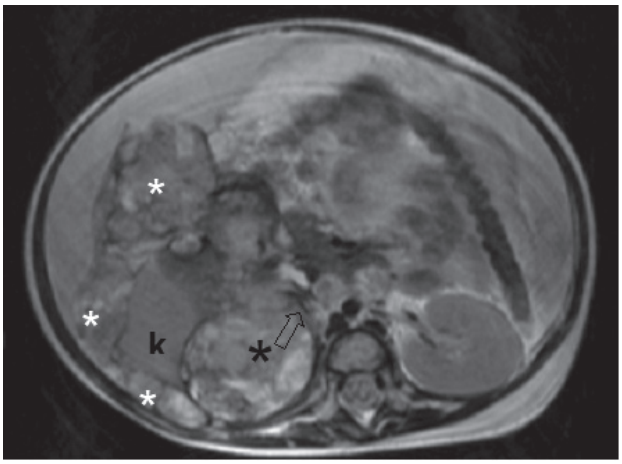

Fig. 6: *MRI of a 2-year-old female with right adrenal metastatic neuroblastoma at diagnosis. T2-weighted TSE image (TR/TE/FA: 4500/100/150), axial plane. There is an adrenal mass (black *) which surrounds the right kidney (k). There are also multiple peritoneal and retroperitoneal satellite masses (white *). Renal contour and margins between kidney and masses are ill-defined. Report should mention that the lesion infiltrates the right kidney (IDRF positive). Note that infiltration occurs from surrounding retroperitoneal masses (*) and at the renal hilum where there is renal pedicle invasion (open arrow)*

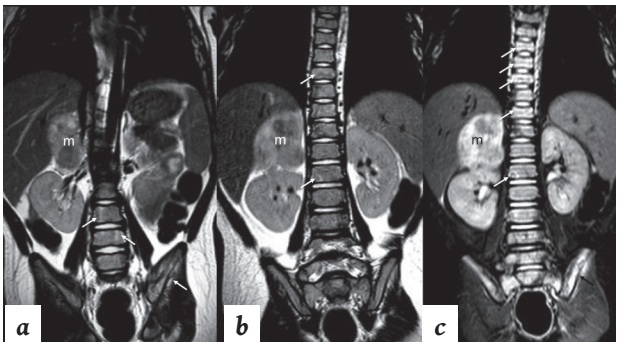

Fig. 7: *MRI of a 2.5-year-old male with metastatic adrenal neuroblastoma.* ***a.*** *T2-weighted TSE (TR/TE/FA: 4500/100/150) sequence, coronal plane. There is a mass (m) which is in contact with the right renal pedicle. Also note bone marrow metastases (arrows). Report should mention that the lesion invades the right renal pedicle (IDRF positive).* ***b.*** *T2-weighted TSE (TR/TE/FA: 4500/100/150) sequence, coronal plane at a more posterior level. Metastases are better appreciated as areas of inhomogeneous intensity at the bone marrow of the lower thoracic and lumbar spine (arrows).* ***c.*** *T2-weighted sequence with fat saturation (TR/TE/FA: 2000/100/120), same coronal plane as in b. Diffusely hyperintense bone marrow with visible focal lesions and moderately depressed vertebral bodies (white arrows) together with an expansile lesion at the left iliac bone (black arrow) are confirmed*

through the cortex by adrenal tumours, or through the renal hilum by retroperitoneal tumours (**Fig. 6**).

Invasion is the term used when the tumour is in contact with the renal vessels and suggests tumour involvement of the renal pedicle (e.g. contact) even when the criteria are not met for encasement (**Fig. 7**). "Invasion" is also applied to describe intra-spinal extension of more than one-third of spinal canal in axial plane, whenever the perimedullary leptomeningeal spaces are not visible, or when the spinal cord signal intensity is abnormal (**Fig. 8, 9**).

Staging according to the INRGSS

Staging according to the INRG Staging System (INRGSS) is based on the presence of IDRFs and/or metastatic disease, as described in **Table 2** [2, 4].

Stage L1 is defined as localised tumour in the absence of IDRFs (**Fig. 10**).

Stage L2 refers to loco-regional tumour with one or multiple IDRFs present (**Fig. 11, 12**).

Stage M applies to distant metastatic disease (**Fig. 13**), with the exception of *stage MS* which comprises of metastatic lesions confined to liver, skin and/or bone marrow in children younger than 18 months (**Fig. 14**).

Structured reporting

Structured uniform reporting safeguards that the radiologist will provide all clinically relevant data for the diagnosis and mapping of neuroblastoma, thus improving the reporting service and enhancing quality of care [22].

Structured reporting on neuroblastic tumours utilising IDRFs specific terminology aids the radiologist to emphasise potential surgical "red flags", promotes collaboration with surgeons and oncologists for better pre-operative planning and treatment selection. Moreover, it could contribute to uniformity of research and evaluation of clinical trials [2, 21]. It should be emphasised that during the learning process of the utilisation of IDRFs and associated staging, there might be delays in reporting by the inexperienced radiologist. Conversely, routine utilisation of IDRFs provides a subjective way of describing and classifying the lesions, which appears more useful when applied in multidisciplinary meetings during communication among radiologists, oncologists and surgeons.

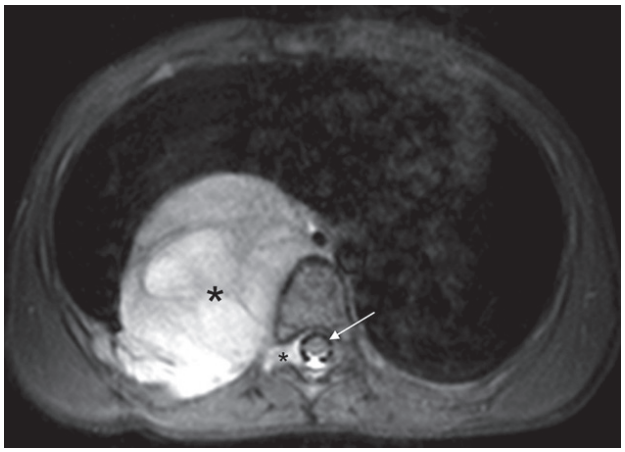

Fig. 8: *MRI of a 5-year-old male with paraspinal ganglioneuroma. STIR sequence (TR/TE/FA/IT: 7000/25/150/150), axial plane. There is a mass (*) which invades the canal through the intervertebral foramen (small *). Intraspinal extension does not exceed one-third of the spinal canal in axial plane (IDRF negative). Note that the perimedullary flow void at the leptomeningeal spaces is preserved (arrow) and that medullary signal is normal. Report should mention that there is intervertebral foramen invasion but no spinal canal invasion*

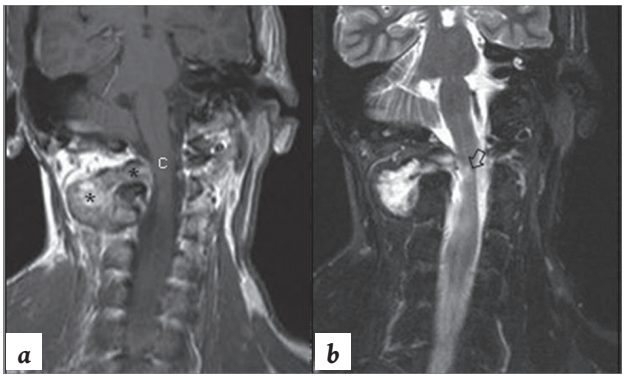

Fig. 9: *MRI of a 9-year-old male with cervical ganglioneuroma.* ***a:*** *T1-weighted post gadolinium administration sequence (TR/TE/FA: 500/15/90), coronal plane. There is a paraspinal neck mass invading the intervertebral foramen (*) and compressing the spinal cord (c). Intraspinal extension barely exceeds one-third of the spinal canal in axial plane (IDRF positive).* ***b:*** *STIR image (TR/TE/FA: 4500/100/150), same plane as in a. Note abnormal spinal cord signal consistent with transverse myelitis at the site of compression (arrow), a positive IDRF*

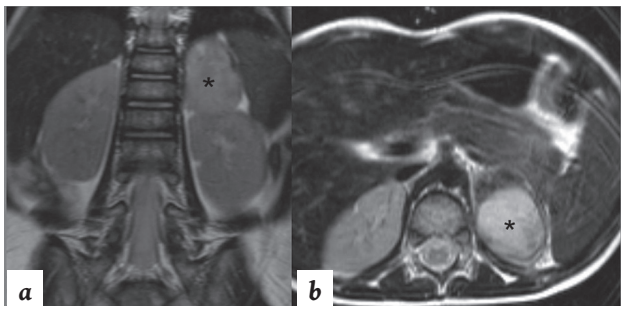

Fig. 10: *MRI of a 3-year-old male with adrenal neuroblastoma at presentation. Stage L1.* ***a.*** *T2-weighted TSE sequence (TR/TE/FA: 4500/100/150), coronal plane. There is an adrenal mass (*) in contact with the left renal upper pole and the diaphragmatic crus.* ***b.*** *T2-weighted TSE image (TR/TE/FA: 4500/100/150), axial plane. The adrenal mass (*) is separate from the spleen and pancreas*

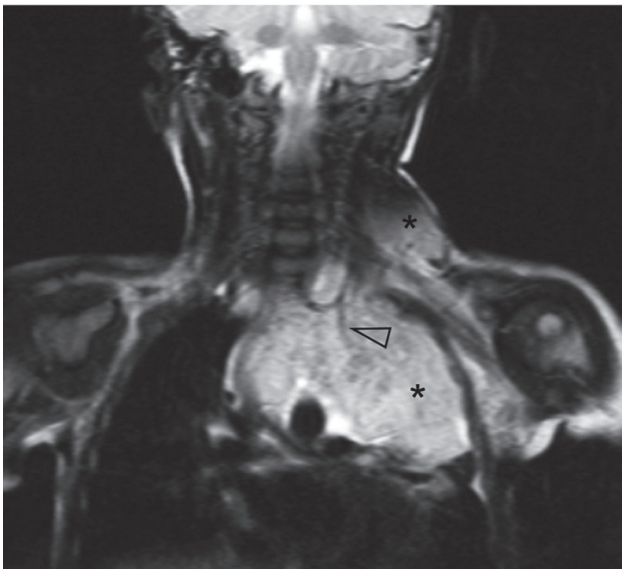

Fig. 11: *MRI of an 18-month-old female with lower cervical and mediastinal neuroblastoma, presenting with a palpable neck mass. Stage L2. T2-weighted image with fat saturation (TR/TE/FA: 2000/100/120), coronal plane. Multi-compartmental (neck and chest) mass (*) completely encasing the subclavian artery (arrowhead) and the brachial plexus*

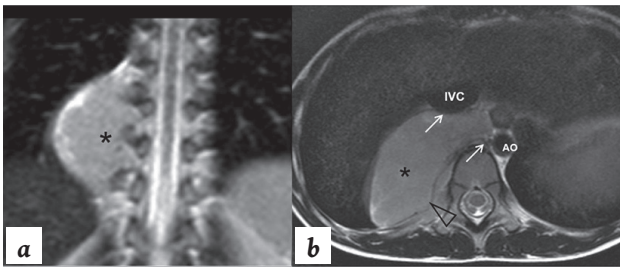

Fig. 12: *MRI of a 4-year-old female with lower respiratory tract infection and a posterior mediastinal mass (ganglioneuroblastoma) identified radiographically. Stage L2.* ***a.*** *T2-weighted TSE image (TR/TE/FA: 4500/100/150), coronal plane. There is a multi-compartmental (chest and abdomen) mass (*) infiltrating the costovertebral junction at the level at the level T9-T12.* ***b.*** *T2-weighted TSE sequence (TR/TE/FA: 4500/100/150), axial plane. The mass (*) is in contact with the inferior vena cava (IVC), separate from the aorta (AO) and infiltrates the right hemidiaphragm (arrowhead). Arrows point at the tumour's edges*

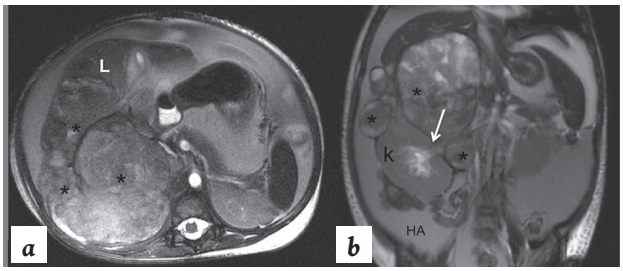

Fig. 13: *MRI of a 4-year-old female with neuroblastoma presenting with abdominal distention and haematocrit drop. Stage M.* ***a.*** *Balanced steady state free precession GE sequence (TR/TE/FA: 5/2.5/70), axial plane. Large confluent retroperitoneal abdominal masses (*), infiltrating the liver (L).* ***b.*** *Balanced steady state free precession GE sequence (TR/TE/FA: 5/2.5/70), coronal plane. The masses (*) invade the right renal hilum (white arrow), the right kidney through its upper pole and lateral aspect and are accompanied by peritoneal masses (not shown), haemorrhagic ascites (HA) and marrow hyperintensities (not shown)*

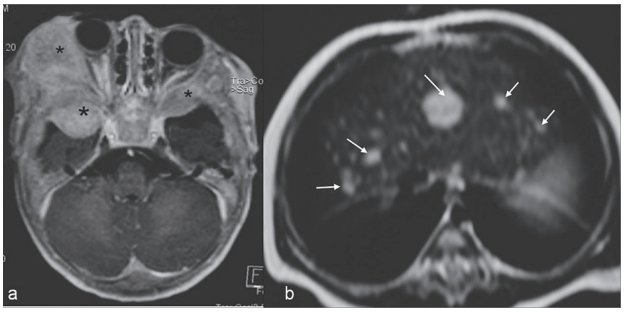

Fig. 14: *MRI scans of a 7-month-old male with metastatic neuroblastoma presenting with raccoon eyes. Stage MS.* ***a.*** *Axial reconstruction image of the brain, post-contrast ultrafast spoiled GE volumetric interpolated sequence (TR/TE/FA: 1570/3/15). There are expansile sphenoid bone metastatic masses (*).* ***b.*** *T2-weighted TSE image (TR/TE/FA: 4500/100/150), axial plane. There are liver metastases of various size (arrows). The primary tumour was not identifiable. Histological diagnosis was based on bone marrow biopsy*

Table 2. International Neuroblastoma Risk Group Staging System

Stage	*Description*
L1	Localized tumour not involving vital structures as defined by the list of image-defined risk factors and confined to one body compartment
L2	Locoregional tumour with presence of one or more image-defined risk factors
M	Distant metastatic disease (except stage MS tumour)
MS	Metastatic disease in children younger than 18 months with metastases confined to skin, liver, and/or bone marrow

A concise checklist of IDRFs follows in the form of a templated report with the addition of a space for narrative text, which offers an option for analysing and clarifying potentially relevant information.

Of note is that the spleen and pancreatic tail are not separately included in the traditional list of vital adjacent organs/structures, probably because splenectomy and pancreatic tail excision can be performed in children with an infiltrated spleen or pancreatic tail and in situations with intraoperative trauma to these organs, without further complications. One should also keep in mind that a pelvic tumour at the level of the sacrum is considered to be crossing the sciatic notch when on axial scans its lateral aspect extends laterally to the line connecting the spine of the ischium with the lateral aspect of the sacrum or coccyx [2].

Conclusion

Familiarisation with MRI appearances of IDRFs described above and appropriate reporting are important for communication with surgeons, meticulous preoperative planning and therapy selection.

Strict reporting terminology should be applied separately for arteries, veins, organs, renal hilum, airway, sciatic notch and the spinal canal and could be useful for reporting not only neuroblastic tumours but abdominal paediatric tumours in general. The complete checklist of parameters that should be included in the MRI report of a child with a neuroblastic tumour is provided. **R**

Conflict of interest:
The authors declared no conflicts of interest.

Checklist for IDRFs assessment and INRGSS Staging of patients with Neuroblastic Tumours

PATIENT NAME /ID:

SECTION A

EXTENT OF PRIMARY TUMOUR - IDRFs	YES	NO	N/A
A. Ipsilateral tumour extension within two body compartments			
A.1 Neck-chest			
A.2 Chest-abdomen			
A.3 Abdomen-pelvis			
B. Neck			
B.1 Tumour encasing carotid and/or vertebral artery and/or internal jugular vein			
B.2 Tumour extending to base of skull			
B.3 Tumour compressing the trachea			
C. Cervico-thoracic junction			
C.1 Tumour encasing brachial plexus roots			
C.2 Tumour encasing subclavian vessels and/or vertebral and/or carotid artery			
C.3 Tumour compressing the trachea			
D. Thorax			
D.1 Tumour encasing the aorta and/or major branches			
D.2 Tumour compressing the trachea and/or principal bronchi			
D.3 Lower mediastinal tumour infiltrating the costo-vertebral junction between T9 and T12			
E. Thoraco-abdominal			
E.1 Tumour encasing the aorta and/or vena cava			

F. Abdomen/pelvis			
F.1 Tumour infiltrating the porta hepatis and/or the hepatoduodenal ligament			
F.2 Tumour encasing branches of the superior mesenteric artery at the mesenteric root			
F.3 Tumour encasing the origin of the coeliac axis, and/or of the superior mesenteric artery			
F.4 Tumour invading one or both renal pedicles			
F.5 Tumour encasing the aorta and/or vena cava			
F.6 Tumour encasing the iliac vessels			
F.7 Pelvic tumour crossing the sciatic notch			
G. Intraspinal tumour extension whatever the location provided that:			
G.1 More than one third of the spinal canal in the axial plane is invaded and/or the perimedullary leptomeningeal spaces are not visible and/or the spinal cord signal is abnormal			
H. Infiltration of adjacent organs/structures			
H.1 Pericardium			
H.2 Diaphragm			
H.3 Kidney			
H.4 Liver			
H.5 Duodeno-pancreatic block			
H.6 Mesentery			
H.7 Other organ (H.8) considered to be of similar significance			
H.8 Organ (H.7) infiltrated:			
I. Other conditions considered equivalent to the above listed IDRFs			
I.1 Condition (specify):			

Checklist for IDRFs assessment and INRGSS Staging of patients with Neuroblastic Tumours

PATIENT NAME /ID:

IDRF status of the primary tumour at diagnosis:	
IDRF negative - All rows were checked «No» or «N/A»	
IDRF positive - One or more rows were checked «Yes»	

SECTION B

J. Conditions to be recorded, but *not* considered IDRFs	YES	NO	N/A
J.1 Multifocal primary tumours			
J.2 Right sided pleural effusion			
J.3 Left sided pleural effusion			
J.4 Ascites			

Comments:

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Date Radiologist 1 Radiologist 2 (optional)

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