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Guidelines for Investigation of Children with Suspected Physical Abuse

Aim

To provide clinical guidelines for the radiological investigation of children with suspected physical abuse

Definition of terms

SPA = suspected physical abuse; CT = computed tomography; MRI = magnetic resonance imaging

Target Patient Population

Children with suspected physical abuse

Target Users

Health care professionals working in the paediatric setting

Assessment

Initial acute

(1) Children under two years of age with suspected physical abuse should have a skeletal survey. Children less than one year of age with suspected physical abuse should have a skeletal survey and non-contrast computed tomography (CT) head scan.
(2) Children older than one year who have suspected head trauma and/or abnormal neurological symptoms or signs should also have a non-contrast CT head scan.
(3) A skeletal survey may occasionally be indicated in older children on a case-by-case basis.
(4) When serious injury is identified in a child due to suspected physical abuse:
   a. Any multiple birth sibling(s) of an index case less than two years should have the same imaging as the index case
   b. Age-appropriate imaging should be considered in all siblings and children less than two years old living in the same household on a case-by-case basis.
(5) The investigation of suspected abdominal and thoracic injuries in suspected physical abuse should be imaged as appropriate, similar to accidental trauma.
(6) Frontal and bilateral oblique views of the chest form part of the skeletal survey, with these views repeated on the follow-up study. CT of the chest maybe used for further evaluation but does not form part of the routine imaging.
(7) Where a child has a clear indication for radiological investigation and these guidelines are not followed, the reasons for non-adherence should be recorded in the patient's notes by a senior clinician.
(8) When physical abuse is suspected, a referral to the hospital Social Worker and to TUSLA via the online referral portal must be made as soon as possible.
(9) Any healthcare professional who continues to have concerns regarding the safety of a child, despite assurances from a clinician that a referral to a Social Worker is not required, can make an independent referral to the hospital Social Worker and/or to TUSLA via the online referral portal.

Ongoing assessment

(10) Complete clinical information must be provided to the radiology team.
(11) The referring clinician should provide a clear explanation to the person(s) with parental responsibility of the reason for the imaging investigations. The person(s) with parental

responsibility should have a clear expectation of the imaging procedures involved. A parent/guardian information leaflet should be provided.

(12) Verbal consent to perform the required imaging studies should be obtained by the referring clinician and documented in the patient's chart.

(13) If consent is withdrawn during the radiological investigations, they should be stopped and the referring clinician informed.

(14) The required imaging should be completed and reported as a priority although it is likely most centres will only be able to do so during normal working hours.

(15) Two radiographers, at least one with training in radiography techniques in the imaging of suspected physical abuse, should perform the skeletal survey.

(16) If the admitting hospital is not in a position to perform and/or report the necessary imaging this facility should be accessed utilizing regional networks.

(17) Correct identification of the child by all radiographers performing the imaging should be completed and documented.

(18) In addition to the two radiographers and parent(s)/guardian(s), a staff nurse should attend to aid the completion of the necessary imaging, including help with immobilization.

(19) The child's parent/guardian may attend while the necessary imaging studies are acquired.

(20) The imaging should be obtained in a child-friendly environment and in an age-appropriate manner.

(21) Optimal imaging in young children usually requires immobilization which involves being held still for the radiographic exposures. This function should be provided by a parent/guardian or a staff nurse.

(22) Occasionally sedation may be useful or necessary for the imaging procedures but it is not routinely required.

(23) Anatomic side markers should be included in the primary beam but not overlying any bone.

(24) The standard skeletal survey views include the following: frontal and bilateral oblique views of the chest (3); abdomen and pelvis (1); frontal views of the upper and lower extremities, either each limb on a single view or more commonly two exposures for each limb (8); hands and feet (4); lateral spine (1); coned lateral views of the elbows, wrists, knees and ankles (8) (typically a total of 25 radiographic exposures).

(25) The radiographers acquiring the skeletal survey should document the following: identity of those present including their roles, identification confirmation procedures for the child, radiographic views obtained, radiographs repeated or additional views requested by the reporting radiologists.

(26) It is best practice if the skeletal survey is reviewed by the reporting radiologist(s) at the time of acquisition to allow for repeat or additional views if deemed necessary.

(27) The skeletal survey should be reported by two radiologists who have independently reviewed the radiographs with the final report agreed by consensus. The two radiologists should have experience or specialty-interest training in paediatric radiology.

(28) The report should be made available to the referring clinician promptly.

(29) Direct communication with the referring clinician should be undertaken if deemed necessary, either in person or by telephone. If the referring clinician is not available, the on call clinician should be notified.

(30) If required, the referring clinician should be facilitated to review and discuss the radiological findings in a multidisciplinary setting.

(31) If there are equivocal findings or diagnostic uncertainty after the standard imaging studies, further evaluation by means of alternative modalities should be considered.

Investigations

(32) A follow-up skeletal survey should be obtained in all children, ideally 11-14 days after the initial study. This can be limited to frontal and bilateral oblique views of the chest, frontal views of the limbs and follow up of positive, suspected or equivocal findings on the primary skeletal survey (typically a total of 11 radiographic exposures). A repeat of the full skeletal survey may be undertaken if there is significant concern for occult injuries.

(33) The follow-up skeletal survey should be regarded as part of the suspected physical abuse imaging protocol. The clinical team should document the reasons if this imaging is not completed in full.

(34) The non-contrast CT head examination should include the entire skull including the skull base and vertex.

(35) The examination should be reviewed with multi-planar and 3D reconstructions.

(36) An MRI brain and entire spine should be obtained as soon as available in all children with a skull fracture, intracranial haemorrhage or parenchymal injury on the CT brain examination.
(37) An MRI brain should be obtained as soon as available in all children with neurological symptoms or signs irrespective of a normal CT brain study.
(38) The entire spine should be imaged as part of the MRI brain study to assess for intra-spinal haemorrhage, cord injury, vertebral trauma or paraspinal soft tissue abnormality.
(39) Children older than 1 year should be considered for CT brain imaging if they present with injuries that may be associated with physical abuse i.e. rib fractures, spinal fractures, retinal haemorrhages or visceral injuries.
(40) The MRI brain and spine in the setting of suspected physical abuse should be reported by a radiologist with experience in acute paediatric neuroimaging or referred to a radiologist with the appropriate expertise for a second opinion.
(41) The brain and spine MRI should be obtained in a manner suitable for young children which is safe, minimizes movement artefact and with optimised paediatric MRI parameters.
(42) A repeat MRI brain should be obtained after a 3 month interval if there are ongoing neurological signs/symptoms, neurodevelopmental concerns or if there was extra-axial haemorrhage and/or parenchymal abnormality on the first examination.

Special Considerations

(43) In cases of Sudden Infant Death, a full skeletal survey should be obtained.

Companion Documents

- Parent information leaflet on Child Protection

Link to Reference List