Three dimensional modeling of bruise evolution for improved age determination
Stam, B.

Citation for published version (APA):
Stam, B. (2012). Three dimensional modeling of bruise evolution for improved age determination

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
The value of a child protection team in signaling and tackling child abuse: Clinical Lesson

Els Nadort, Barbara Stam, Arianne H. (Rian) Teeuw
On behalf of the Child Protection Team of the Academic Medical Centre, Amsterdam

Published in: Nederlands Tijdschrift voor Geneeskunde
154 : A1450 (2010)
Chapter 7

Abstract

The new indicator of the Dutch Inspection of Healthcare, affective from 2010, requires the presence of a Child Protection Team in each hospital. We illustrate the value of having such a team in the Academic Medical Centre with 3 cases. The team, a group of experts, offers each individual employee of the hospital advise in case of a suspicion of child abuse regarding diagnostics, treatment, possible intervention and communication and offers moral and legal support. The team gives training to better recognize and deal with child abuse and is responsible for guidelines and collaboration agreements. Since the installation of the team in the Academic Medical Centre, the number of suspicions and confirmed cases of child abuse has increased. The multi-disciplinary transmural character of the team ensures a better recognition and approach of child abuse.
The value of a child protection team in signaling and tackling child abuse: Clinical Lesson

Signaling child abuse and taking the necessary steps is of great importance and may sometimes even be lifesaving. Yet professionals in hospitals fall short; in 2008 only 6.01% of reported suspicions to the Dutch Advice and Registration Point Child Abuse (AMK) came from a hospital [1]. Also at family practices recognition of child abuse is low [2]. The Dutch Health Inspection has included a performance indicator child abuse in the guidelines of 2010. Part of this is the presence of a multidisciplinary child protection team (CPT) in each hospital, with the aim of improving recognition of child abuse. A number of experts, gathered in a CPT, can advise employees of the hospital upon suspicion of child abuse. This CPT should minimally contain a pediatrician, a social worker, a nurse from the emergency room, a nurse from the children’s department, a (child) surgeon/ER physician/orthopedist and a child abuse counselor from the AMK. Representation of a gynecologist, lawyer and radiologist on standby is recommended [3]. In 2004 a CPT of similar composition was founded at the Academic Medical Centre (AMC), with added regular team members a child radiologist, a gynecologist, a lawyer, psychologists from the departments Child medicine, Obstetrics and the Trauma centre of the academic centre for child and youth psychology, and a representative from the Board of Child Protection. A general physician and pediatrician provide the coordination and chairmanship respectively, and can be contacted daily for advice. The CPT meets every month to anonymously discuss new and existing cases, offer peer revision to employees of the hospital and warrant follow up. Members of the CPT also teach both inside and outside the hospital, and exchange information about education, training, protocols, literature and conferences [4]. In this clinical lesson we illustrate the value of a Child Protection Team using three cases.

Patient A, a 1.5 year old girl, was referred to the outpatient clinic child rheumatology of the Emma Children’s Hospital (part of the AMC), for a swelling on both elbows and suspicion of arthritis. Mother explained that she had noticed the swelling 6 weeks prior, after picking up her daughter from the family that provided day care. She went to the family doctor that same night and x-rays were taken the next day at a local hospital to exclude fractures. In the radiology report was mentioned specifically that no fractures were visible. Because of persistent swelling of both elbows the patient was seen by a pediatrician at the local hospital a month later, who referred her to the child rheumatology department at the AMC, upon suspicion of juvenile idiopathic arthritis (JIA). At the examination in the AMC, a neat, happy girl was observed with clearly painful swelling of both elbows and flexion- and extension restriction on both sides. There was no fever, and clinically arthritis was suspected. In complementary laboratory research no raised infection markers were found. An NSAID treatment was started and discomfort was reduced. Following protocol, with a diagnosis of JIA x-rays of the joints were taken as reference to assess future potential joint damage. On these x-rays a periost reaction and increased sclerosis of the humerus metafyse was found, fitting the diagnosis of a bacterial arthritis. However, the clinical view plead against this diagnosis. Reassessment in the AMC of the x-rays of the local hospital showed that fractures were visible: a distal humerus fracture left with some callus formation and a metaphysical angled fracture on the lateral side of the proximal humerus left (figures 7.1 and 7.2).
Chapter 7

This last fracture is, at this age, a very strong indicator of physical child abuse.

Figure 7.1. Lateral image of left elbow shows a periost reaction along the shaft of the humerus (arrow) and an intra-articular fracture (arrow point). Notable is the absence of hydrops of the joint which possibly lead to the earlier diagnose from the local hospital.

Figure 7.2. AP image of the left humeres shows next to the well known periost reaction (arrow) also a metafysical corner fracture of the proximal humeres (inlay). This fracture is at this age a very strong indicator of physical child abuse.

The suspicion of child abuse was discussed with the mother and following the AMC protocol child abuse, x-rays were taken of the entire skeleton, which were reviewed by a child radiologist of the CPT [4]. Apart from the abnormalities on both elbows and shoulder, old fractures in the hands were visible. These findings were discussed with the mother, and she explained that the 2.5 year old child from the family that provided day care could have pulled on the arms of the girl through the bars of the playpen. It was explained to the mother that that could not be a valid explanation for these fractures. After a peer consultation with the chairman of the CPT a report was filed to the AMK.
The value of a child protection team in signaling and tackling child abuse: Clinical Lesson

In their investigation the mother was cleared, but the investigation into the family that provided day care, where patient A no longer visits, is still ongoing.

Patient B, a 5 month old boy, was presented at the emergency room with a trauma capitis and multiple sparse hematomas resulting from a fall the day before. His father had fallen with the boy in his arms, and the boy landed on his head with the father on top of him. A this time, the father was home alone with three other children. Discomfort seemed to be minimal at first, but the next day a sister of the mother presented the boy at the ER for persistent crying and hematomas. Upon physical examination an alert boy with hematomas on his forehead and under both eyes (raccoon eyes, consistent with the sagging of a hematoma on the forehead). In his right eye a conjunctiva bleed was seen, and hematomas were also found on his abdomen and at the point of the scapula right, as well as some vague red marks on his thorax, abdomen and lower back. Because the statement did not seem to fit the injuries and the delay in presentation of the injuries, the patient was discussed with the ER physician by the ER nurse who was also a member of the CPT. A pediatrician was asked for a consult, and given the suspicion of physical child abuse, the patient was admitted. Following the AMC protocol child abuse, a CT scan, x-rays of the entire skeleton, normal photographs and a coagulation test were performed. The family doctor was contacted to inquire about risk factors for child abuse, and it was determined that the family was overloaded. Both parents supported the additional diagnostics, as they also wanted child abuse to be ruled out. During the time in the hospital, child neurologists, general physicians and a supervisor spoke with the parents, and the story about the circumstances remained very consistent. The additional diagnostics did not show anything extraordinary. After review by experts in the CPT, it was decided that the described mechanism that caused the injuries could indeed account for these injuries. Concerns about the delay in presentation were reduced because the parents consistently declared that the discomfort seemed to be minimal at first. The diagnosis child abuse was rejected. Because there were still concerns about the overloaded family situation, follow up by a social worker and a pediatrician were instated.

Because of a teen pregnancy patient C, a 14 year old girl, was intensely supervised by a social worker, who was a member of the CPT and the obstetrics department. The girl could not stay with her mother and did not want to be admitted to a teen mom facility. She was discussed within the CPT for lack of showing initiative to solve this problem, and lack of preparation for the arrival of the baby and motherhood; the team feared neglect of the (unborn) child. The CPT advised to inquire at all agencies involved to consider protective measures for both patient C and the unborn baby. Patient C did not show concrete preparation to the arrival of the baby and was non cooperative. This was determined at weekly meetings with her at different programs that provide support and advice for teen moms. The child abuse counselor from the AMK was able to monitor the effects of the meetings. Together it was determined that placement in a teen mom facility was necessary. The social worker filed a request for a guardianship at the Board of Child Protection for patient C, as she was still a minor. The Board of Child
Chapter 7

Protection filed a request at the court to take custody of the soon to arrive baby; in crisis situations, or if parental authority is missing completely, a child judge can place a child under temporary guardianship. Without this temporary guardianship a power vacuum could be formed with this minor as a mother and a father with no formal authority. The Board of Child Protection urged the child abuse counselor to hurry with the placement in the teen mom facility. By now the girl was 32 weeks pregnant, there was no family guardian and she was constantly fighting with her mother. The CPT strongly insisted to a fast placement and report to the Board of Child Protection. After 39 weeks of pregnancy, a healthy baby was born and temporary custody was appointed. Three days later mother and child were discharged to a teen mom facility. Regarding this discharge several agencies were contacted; the midwives practice, the teen mom facility, maternity care, the baby clinic, the family doctor, the family guardian and the mobile crisis team. Mother and child bonding and care giving were points on which special attention was spent during her stay at the teen mom facility, and mother shows a loving attitude towards her now 6 month old child.

Improving recognition

One of the values of the CPT is the improvement of the recognition of child abuse. At the ER, this is achieved by providing education and by promoting the structural use of tools for signaling child abuse. For every patient under the age of 18 a Head to Toe examination is conducted and a Sputovamo form (an injury registration list developed to recognize child abuse) is filled out by an ER nurse. The admittance of patient B followed after three times ‘yes’ on this Sputovamo form; the delay in presentation, the person who caused the injury did not accompany the boy to the ER, and upon superficial examination the injuries did not match the described mechanism that caused the injuries. When signals arise consistent with child abuse, a pediatrician is asked for a consult (case B) [4]. All Sputovamo forms are reviewed once more every month by 2 ER nurses appointed to the CTP. Cases where child abuse may have played a role are discussed within the team. All ER nurses and physicians take mandatory yearly training from the CPT in which, among others, communication training is given, important to reduce resistance of parents to perform a Head to Toe investigation and discuss the suspicion of child abuse [5]. Participation in the e-learning faculty ‘Signaling Child Abuse’ from the Augeo Foundation is also mandatory for all ER personnel. Moreover, the CPT points out that the e-learning ‘Reporting Child Abuse’ is open to everybody.

Earlier in this magazine was shown that an increase occurred in both the number of suspicions of child abuse and the number of confirmed cases of child abuse at the VU medical centre after a CPT was instated. The increase was attributed to the increased attention for child abuse through the different departments represented in the team, the newly formed guidelines and the use of the Sputovamo form [6]. In the AMC a similar increase is seen since the instatement of the CPT (figure 7.3).
The value of a child protection team in signaling and tackling child abuse: Clinical Lesson

Figure 7.3. Data of the CPT since instatement. Number of suspicions, number of confirmed cases of child abuse, number of confirmed cases of non abuse and number of unclear cases. The number of cases in 2009 is estimated based on the number up to September. The high number of unclear cases is due to ongoing investigations.

Coordination and support

Another value of the CPT is the offering of peer review upon suspicion of child abuse. During meetings advice is given about diagnostics and treatment of physical and psychic damage, such as trauma treatment for the child. Necessary treatments and intervention to prevent future recurrence are discussed and the case is followed until the team is satisfied that safety and treatment is sufficient. Feedback about progress and handling is given to employees involved in the case. Through the CPR, all suspicions and the approach taken are centrally registered. The CPT also gives moral support to employees that come into contact with child abuse. The team can ask a lawyer for a consult when uncertainties arise, for example regarding exchanging patient data at unclear suspicions or whether to alert or not alert the parents about a report to the AMK.

Case A illustrates the value of peer review by experts. Because the child radiologist became involved in the case through the CPT the abuse was discovered. The performance indicator child abuse from the Dutch Inspection of Healthcare justly states that the representation of a specialized (child) radiologist is recommended. Using the knowledge of the team members, alarm symptoms can be placed in the right context and (in hindsight) wrongly suspicions can be recognized, as in case B. A previous study has shown that the presence of a multidisciplinary team can prevent unnecessary diagnostics and even placement in foster care [7]. Case C illustrates the importance of the multidisciplinary, transmural composition of the CPT. Through the participation of the child abuse counselor and the representative of the Board of Child Protection the necessary care could be instated sooner.

The CPT also provides an up to date protocol in which all AMC employees can find information about policy and collaboration with partners such as the AMK and the Board of Child Protection upon suspicion of child abuse.
Chapter 7

Research and education

Another value of the CPT is to promote scientific research and education regarding child abuse. In this way, the CPT participates in a study about the use of spectroscopy in the age determination of hematomas, the value of imaging techniques after deaths suspicious of child abuse, and the value of the use of tools for signaling child abuse at the ER (such as the Sputovamo form). The renewed code of conduct for physicians gives them the obligation to act upon suspicion of child abuse\(^\text{a}\). Recognizing and tackling child abuse is not straightforward and requires knowledge. Child abuse should therefore be an intricate part of the education for physicians, and at the CPT had ensured this in the medicine curriculum of the University of Amsterdam.

The CPT also provides training within the AMC for employees of the ER, children’s department, obstetrics department etc, and externally provide workshops and contribute to the nationwide training for pediatricians. In 2009 the first of many conferences ‘Dealing with Child Abuse is to Overcome Resistance’ took place. Within the CPT information about relevant literature, symposia, work visits and projects elsewhere is exchanged. And on the internal AMC website a dossier child abuse can be found, where the protocol child abuse, addresses of relevant agencies, literature and news are gathered.

Child abuse is a large-scale problem with serious consequences for the child and society [8-10]. Diagnostics and policy upon suspicion of child abuse should be dealt with in the same systematic and thorough manor as any other chronic or potentially fatal disease. The performance indicator child abuse of the Dutch Health Inspection says that starting 2010 every hospital should have an active CPT. The team should gather at least 4 times a year to discusses open cases. Next to internal experts a child abuse counselor should take place in the team. This transmural character ensures professional peer review and promotes cooperation with partner agencies. Cases A,B and C show the value of a multidisciplinary transmural CPT. These values encase promoting recognition of child abuse, coordination, support, research and training.

Learning points

A multidisciplinary transmural Child Protection Team in a hospital promotes signaling and tackling (suspicions of) child abuse through several channels. First, the team promotes the use of tools for signaling child abuse. Second, the team offers professional peer review in the field of diagnostics, treatment and intervention, and moral and legal support to all employees confronted with suspicions of child abuse. Third, the team provides training such as communications training. Fourth, the team promotes scientific research. Fifth, the team appoints child abuse officers in all relevant departments. Sixth, the team promotes transmural cooperation with partner agencies. And finally, the team guarantees the follow up and prevents future recurrence.
References

1. AMK, Jaarverslag, Adviezen en Meldingen over Kindermishandeling 2008.
4. AMC, Protocol Kindermishandeling.
5. AMC, Beleid Kindermishandeling Spoedeisende hulp.

a. www.thenextpage.nl