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Fracture femur : a clinical sign of child abuse,
a case report in a 3 month old infant

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A 3 month - old infant presented with right leg weakness for two days. He was normal since birth , well nourish and well development for age. He was looked after by a baby - sitter from a private company. He was unhappy, cry all the time. On examination, he was alert, normal tone, unable to weight on right leg, asymmetry of tendon reflexes, tenderness at right knee , no sign of imflammation. X - ray at right leg showed fracture at lower part of femur which will be present. Other laboratory findings were normal. Child abuse was diagnosed and management.

Key words: *Child abuse, Fracture femur.*

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สุวรรณี พันเจริญ, เครียวพันธ์ บุญศิริ. กระดูกพีเมอร์หัก : ลักษณะหนึ่งของเด็กถูกกระทำทารุณ
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เด็กถูกกระทำทารุณ อาจเป็นได้ทั้งการทารุณกรรมทางร่างกาย ทางอารมณ์ การกระทำทารุณ
ทางเพศ และการถูกทอดทิ้ง ซึ่งจะเกิดขึ้นตามวัฒนธรรมของแต่ละประเทศ

รายงานผู้ป่วย 1 ราย อายุ 3 เดือน ซึ่งเป็นเด็กคลอดปกติ ได้รับการเลี้ยงดูโดยบิดามารดา จน
กระทั่งอายุ 2 เดือน ได้ให้พีเลียงซึ่งเป็นพีเลียงจากบริษัทเอกชนมาเลี้ยงเด็กได้นาน 1 เดือน เด็กเกิดอาการ
ไม่ใช้ขาข้างขวา 1 วันก่อนมาพบแพทย์ ชักประวัติได้ความว่าถูกพีเลียงบังคับให้นั่งกระโถนและหลังจาก
นั้นเด็กไม่ยอมใช้ขาข้างขวาก็ การตรวจร่างกายพบว่าเด็กปกติดีทุกส่วน ไม่มีรอยขีดตามตัวหรือตาม
ผิวหนัง การรู้สึกดีดี พบความผิดปกติเฉพาะที่ขาขวา เจ็บบริเวณหัวเข่าขวา การตอบสนองรีเฟรกบริเวณ
เข่าซ้ายปกติและเข่าขวาน้อยลง เด็กจะร้องมากเมื่อถูกบริเวณหัวเข่า ตรวจ X-ray ขาขวาพบรอยหักของ
กระดูกพีเมอร์ บริเวณมุมของส่วนปลายทั้ง 2 ด้าน ซึ่งเป็นลักษณะที่พบบ่อยในกลุ่มเด็กเล็กที่ถูกกระทำ
ทารุณ โดยถูกแรงกระแทกอย่างแรง

การรักษาได้ใส่เฝือกให้ผู้ป่วย และผู้ปกครองได้ฟ้องร้องทางบริษัทเอกชนที่ส่งพีเลียงมา

ร้อยละ 50 - 75 ของกระดูกพีเมอร์หักในเด็กเล็กต่ำกว่า 2 ปี พบในกรณีที่เด็กถูกกระทำทารุณ
มากกว่าอุบัติเหตุ ดังนั้นเมื่อพบเด็กที่มีกระดูกหักในบริเวณที่ไม่ควรเกิดขึ้น ควรค้นหาต้นเหตุของการหัก
และตำแหน่งที่หักจะเป็นข้อมูลในการวินิจฉัยที่ถูกต้องต่อไป

Child abuse

The term "child abuse" encompasses a spectrum of disorders ranging from the well documented physical and sexual abuse to emotional abuse, neglect, deprivation and abandonment. It is prevalent throughout the world with the presentation frequently differing in different cultures.

Reports of all types of abuse increased 50 % from 30 per 1,000 children to 45 per 1,000 between 1985 - 1992. Childrens protective services (CPS) reported in 1992 about 2.9 million cases. Of the reported children, 85 % were younger than 5 yr of age and 45 % were younger than 1 year of age.⁽¹⁾

In Thailand, the reports of child abuse are underestimated. A report from 24 government and non-government organization indicated that abused child cases increased from 423 in 1995 to 617 in 1997.⁽²⁾

In 1992, the CPS reported 28 % of 797 reports were for physical abuse and the death rate was 6 %. The most common perpetrators were the father (21 %), mother (21 %), boyfriend of the mother (9 %), baby sitter (8 %) and step - father (5 %).⁽¹⁾

Principles in diagnosis of child abuse

- Cutaneous lesion : bruising
 local erythema or bullae
- Ocular findings : retinal hemorrhage conjunctival
 hemorrhage orbital swelling
- Hematuria
- Acute abdomen damage
- Osseous lesions : fractures (multiple or in various
 stages of healing)
 : metaphyseal or epiphyseal
 lesions
 : subperiosteal ossification

Nowadays, many Bangkok couples prefer using a babysitter to look after their baby at home while they both work. Without love and responsibility, the baby can be abused anytime.

We report a very young infant of 3 months with a history of acute monoplegia and demonstrated fracture sites of the long bone caused by child abuse.

Case report

A three month old male infant presented with right leg weakness for 2 days. He had done well since birth, was well nourish and had normal development. Immunizations were complete for his age. There was no history of fever or running nose before presentation. He was a first child of a young couple, father aged 28, mother aged 25, both working in their own company. The baby was looked after by a baby - sitter from a private company for one month. He was forced to sit at the potty on the day he developed the leg weakness.

Physical examination

- general examination :- normal, no bruises on skin

Neurological examination

- normal head contour
- no bulging anterior fontanele
- normal tone of muscles at upper extremities and left leg
- asymmetry of deep tendon reflexes at knee jerk :-
Rt = 0, Lt = 2+
- tenderness at right knee
- clonus negative
- plantar flexion on Babinski sign

Laboratory findings

Electrolytes

Na	140 mmol/L	(135 - 145)
K	4 mmol/L	(3.5 - 5.1)
Cl	100 mmol/L	(98 - 106)
CO ₂	24 mmol/L	(22 - 29)
Ca	10 mg/dl	(8.1 - 10.4)
PO ₄	4.5 mg/dl	(2.5 - 5)

X-ray

Discussion

It is difficult for a clinician to distinguish abuse from accidents, so the criteria used by the clinicians to distinguish abuse from accidents are:

Definite abuse

- Positive skeletal survey - multiple recent fractures
- Positive skeletal survey - fractures of various ages
- Eyewitnesses

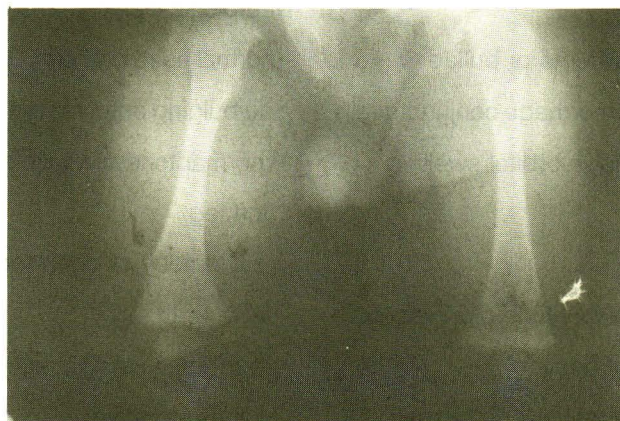


Figure 1. Rt. leg X - ray :- demonstrate fracture site at lower part of Rt. femur both corners.

- Multiple internal injuries
- Physical findings
- Bruises (caused by hand, electric cords, teeth)
- Suspicious or unexplained burns or scars
- Sibling abused at same time
- a definite intentional act causing physical harm to the child

- Suspicious injury with definite later abuse
the criteria used by the radiologists to distinguish abuse from accidents are:

- Serious trauma must have been involved, not reflected in history
- Serious trauma must have been involved, suspicious delay in reporting
- Multiple fractures found, not explained by history
- Healing fractures found, not explained by history

Fractures considered to have a high specificity for abuse:

- Metaphyseal fractures
- Rib fractures
- Scapular fractures
- Fractures of the outer end of the clavicle
- Vertebral fractures or subluxation
- Digital injuries in non – mobile children
- Bilateral fractures
- Complex skull fractures

Metaphyseal Fractures

- Also known as corner or bucket handle fractures, have been well described in the literature and are regarded as highly specific for abuse.⁽⁷⁾

- Their incidence has been variously reported as between 11 – 28 %

- More common in the lower limbs around the knees and ankles

Femur fractures

Femur fractures have been said to “always” be due to abuse unless proven otherwise. 50 – 75 % of femur fractures were from abused children younger than 2 years of age⁽³⁻⁶⁾ and all children with femur fractures were followed closely with carefully history taking.

Cause of femur fractures

(n = 25) by age group

Rating	Age in months		
	0 - 11	12 - 23	24 - 35
Abuse	6	3	0
Accidental	3	2	9
Unknown	1	0	1

(Susan A. Thomas MD, et al: Pediatrics, Vol 88, No.3 September 1991: 471-476)

In our case, the fracture site was at the corner of the lower part of the Rt femur which was a common site of fracture from child abuse.⁽⁷⁻⁸⁾ The baby was treated with an early spica casting because this method has been successful and is associated with few complications in children younger than 5 years.⁽⁹⁻¹⁶⁾

Thailand is one of the countries which signed the Convention on the Rights of the Child on 12th February 1992. The convention entered into force in Thailand on 26th April 1992.

In Thai society, parents have duties and moralities to raise their children according to their ability. The duties of parents to bring up the children are specified in section 1,564 of the civil laws stating that "Parents must raise and provide education for their children as deemed appropriate during his or her childhood years".

Violations of child rights in various forms have occurred in society and caused child suffering to the extent of death, illness or becoming crippled. Protection of child rights is, therefore, a must and it requires collaboration among those who are involved whether families, members of society and governmental and non-governmental organizations. Such collaboration is perceived to be necessary to prevent and protect children from being abused or exploited. It is also to ensure that children are properly raised and develop a healthy growth physically, mentally, emotionally and socially such that they become productive human resources in the future. ⁽¹⁷⁾

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