Can we deny that minor head injuries can cause acute subdural hemorrhage in infants?

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Outcomes of brain injuries in infants caused by short-distance falls are well documented in the literature overseas. To date, however, few cases of acute subdural hemorrhage caused by short falls witnessed by impartial third parties have been reported. As a result, the current tendency is to suspect child abuse when brain injuries in infants are reported by family members as having been caused by accidental falls at home, even though few such falls are likely to be witnessed by people outside the family.

In Japan, by contrast, many cases of acute subdural hemorrhage in infants attributed to accidents at home were reported in the 1960s and 1970s. Such injuries were classified as “Nakamura type I”, after the researcher who first reported minor injuries as a possible etiology of acute subdural hemorrhage in infants. A paper published in Journal of Neurosurgery in 1984 discussed such Nakamura type I cases, but it attracted criticism for not having drawn on the expertise of professionals in multiple fields, and the consensus persisted that most subdural hemorrhages in infants are attributable to child abuse. Since then, the matter has received little international attention.

Since the 1980s, more and more attention has been paid to the importance of detecting child abuse, and improvements have been made in the legal, social, and clinical environments surrounding the crime. Cross-disciplinary case studies are now commonly carried out to diagnose child abuse, and children with head injuries suspected of being abused are carefully followed up. Japan’s Ministry of Health, Labour and Welfare even states in its guidelines that acute subdural hemorrhage cannot be caused by short falls, and that child abuse should be strongly suspected if family members say that injuries were caused by accidents at home. As a result of these guidelines, it is very common for clinicians today to report any case of head injury in an infant to the Child Guidance Center.

Although it is true that these changes have played an important role in protecting children from abuse, it is also important to recognize that head

trauma is not necessarily the result of abuse. While some people do not hesitate to conclude that an infant with acute subdural hemorrhage and retinal hemorrhage must have suffered abuse, not a few Japanese experts have seen infants with minor injuries in whom the mechanism of hemorrhage was unlikely to have been abuse. The characteristic features of such injuries (i.e., Nakamura type I) are as follows: (1) they generally occur in infants aged 6–10 months; (2) they are more frequent in boys; (3) they occur at home; (4) they normally result from occipital impact; (5) they cause disturbance of consciousness, convulsions, and vomiting; (6) mild retinal hemorrhage is involved; (7) no obvious brain parenchymal damage is seen on radiological examinations; and (8) they generally have good outcomes.

False accusations are a serious problem in modern Japanese society, and some lead to lawsuits. This must be kept in mind when it comes to acute subdural hemorrhage in infants. We recognize how important child protection is and accept that there must always be a certain suspicion of abuse in cases of injury. However, we must also recognize that head trauma may easily be the result of an accident and not of abuse.

The purpose of this statement is to point out that Nakamura type I injury can cause acute subdural hemorrhage in infants. To produce the statement, many pediatric neuro-surgeons, including us, have participated in thorough follow-ups of patients diagnosed with this type of injury. Needless to say, further study is needed to completely clarify the etiology of acute subdural hemorrhage in infants.

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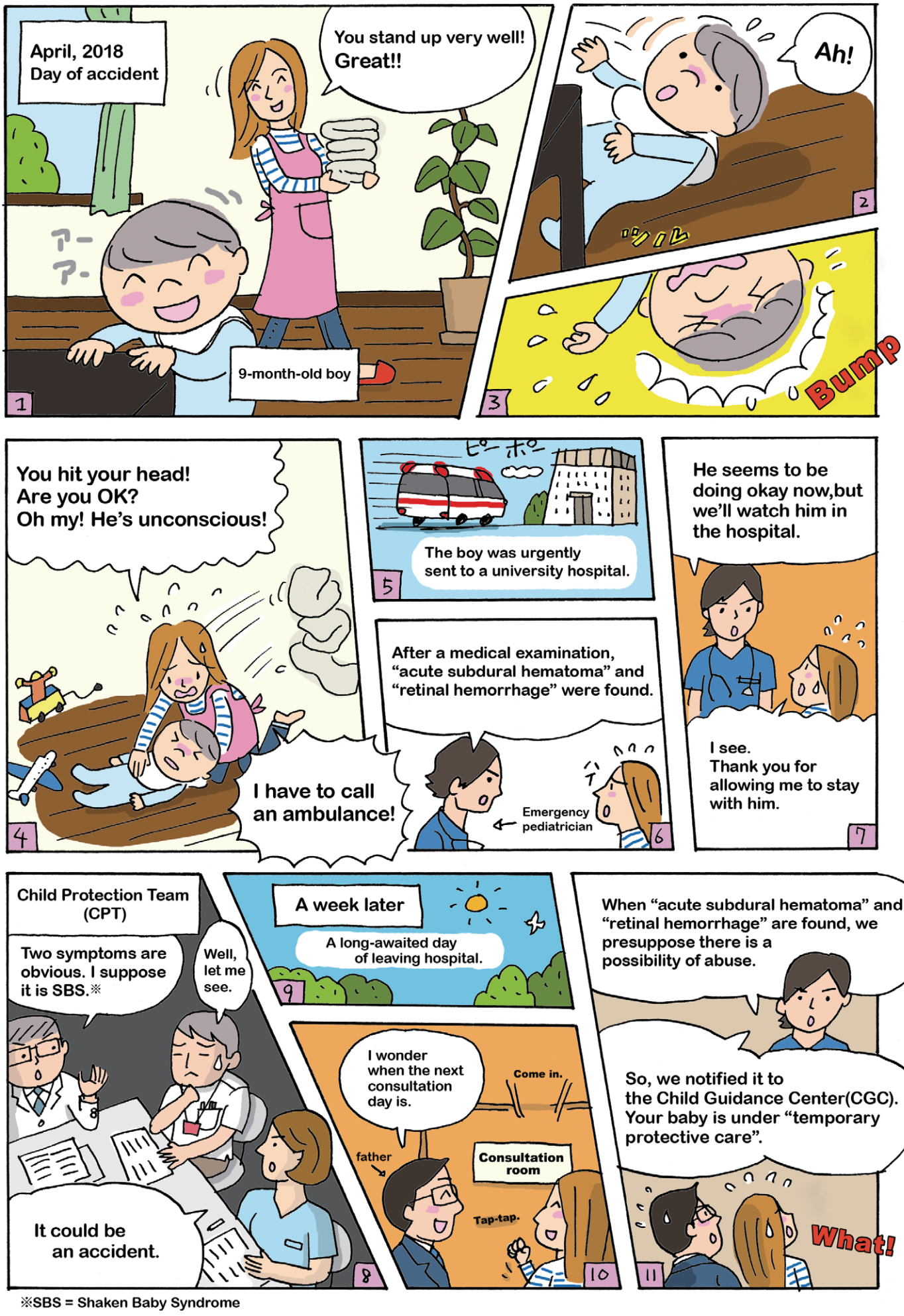
Your baby being abused?



※SBS = Shaken Baby Syndrome

While we were being given an explanation, our son was taken away from the sickroom.

a staff member of CGC

Mom!
Dad!

Rapidly

12

Next day | Interview at the CGC.

13

Your son is under the protection of an infant home.
We can't tell the place.
You can't visit him.

なぜ会えないの…？

会いたいなあ…

The parents were asked if there was abuse and how the accident happened.

On every week day mother called CGC and asked how her son was doing.

He has a fever?
Vomiting?
Is he OK?

It was the beginning of nightmarish days

(No telephone service on weekends)

14

May 2, 15:05

Mother telephoned as usual, and they said

"We are so busy right now that we'll let them call you later."

はいはい

15

I wonder if something happened.
So anxious.

16

At the infant home then, while the staff was not looking,

17

An ambulance has come!

the baby fell down and hit the back of his head really hard. He lost consciousness.

ピポ

He was carried to the university hospital.

18

He has recovered consciousness and his condition has eased.

19

They did not take CT, and after examination they sent him back to the infant home.

Same day, 17:31

Hello!
We've heard from the infant home that such-and-such things happened to your son today.

20

Oh my

What!

goodness!

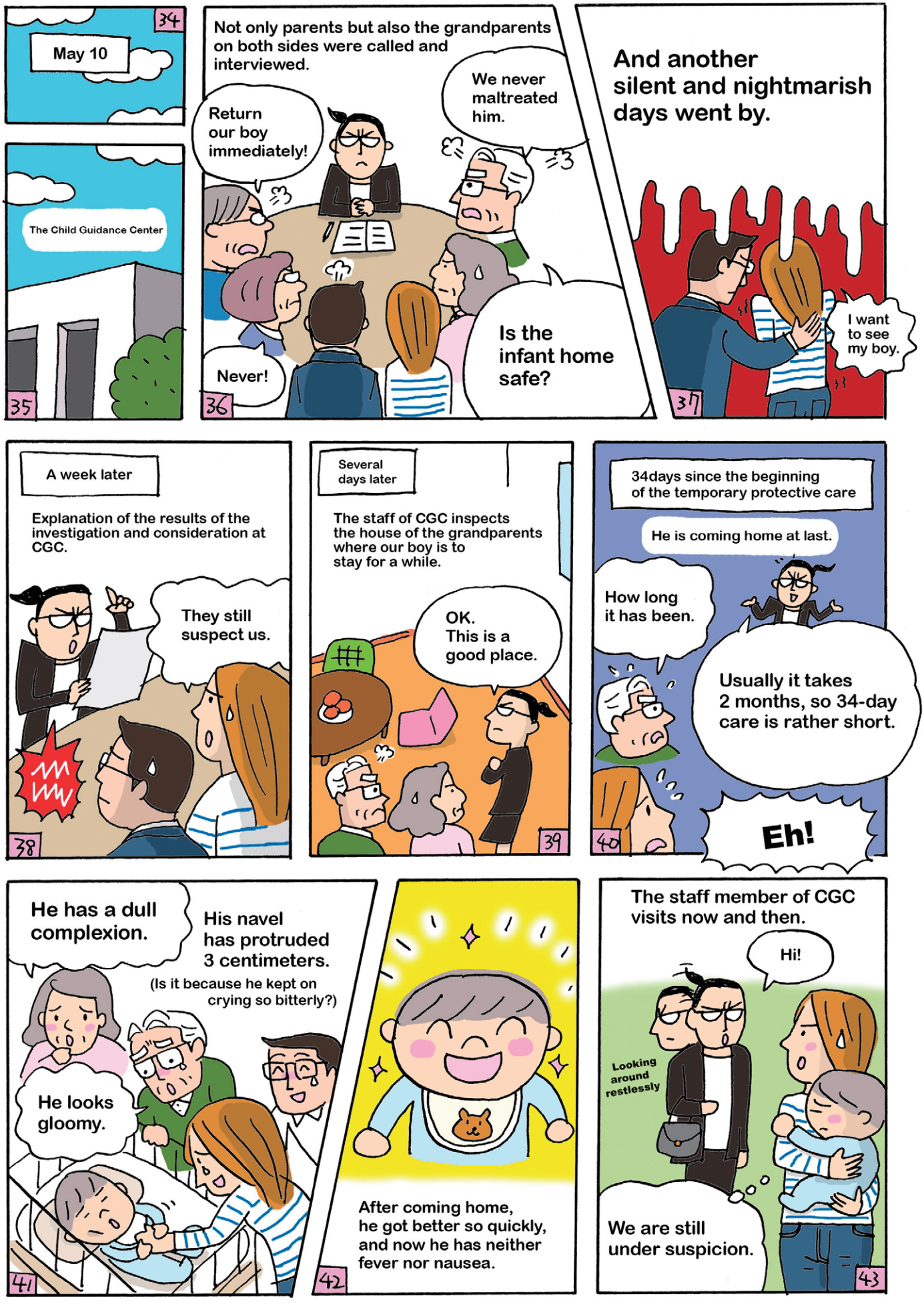
21

Golden Week holidays start tomorrow.
If his condition takes a sudden turn for the worse, we will let you know of it.
If we don't call you, make it out to be the case of no change.

黄金週間

22


The same day, 20:00
Dad
Their response is so harsh. I'll call CGC.
Oh, they've already switched to an answering machine.
23
Maternal grandfather
Then I'll protest to the city's consultation desk.
Hello!
The situation is so harsh!
Cheer up!
24
Maternal grandmather
May 3, 4, 5, 6
During holidays there were no reports from the child consultation center.
All the family gazed at the telephone, sitting in front of it.
25
Is he well fed?
Isn't he lonesome?
Isn't he scared?
Isn't he crying?
不安だ…
So anxious. More and more nightmarish days.
26
May 7, Mon. 9:20
Call from the staff of CGC.
Hello!
We'll let the president of the infant home apologize to you. Would you spare the time for that?
27
The same day, 15:00
28
the president of the infant home
I'm so sorry for the case.
We're worried about our son. Send him home!
He explained the circumstances of May 2, and apologized. The staff did not attend.
Why aren't we allowed to see him?!
29
At that time, we were finally given the name of the facility.
30
If something happens, how can you take the responsibility?
He's already been separated from us for 20 days!
I'm sorry.
We were not able to see our son on that day either.
The next day
Ding-dong!
31
On-the-spot inspection of falling down in the living room by the staff of CGC.
Hello!
Come in.
32
Looking around
Here.
Is it the very place where he was standing up holding onto something?
33


34
May 10
35
The Child Guidance Center
36
Not only parents but also the grandparents on both sides were called and interviewed.
Return our boy immediately!
We never maltreated him.
Never!
Is the infant home safe?
37
And another silent and nightmarish days went by.
I want to see my boy.
38
A week later
Explanation of the results of the investigation and consideration at CGC.
They still suspect us.
39
Several days later
The staff of CGC inspects the house of the grandparents where our boy is to stay for a while.
OK. This is a good place.
40
34days since the beginning of the temporary protective care
He is coming home at last.
How long it has been.
Usually it takes 2 months, so 34-day care is rather short.
Eh!
41
He has a dull complexion.
His navel has protruded 3 centimeters.
(Is it because he kept on crying so bitterly?)
He looks gloomy.
42
After coming home, he got better so quickly, and now he has neither fever nor nausea.
43
The staff member of CGC visits now and then.
Hi!
Looking around restlessly
We are still under suspicion.

False accusation of abusive head trauma in Japan

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Childhood physical abuse and associated trauma are a clinical and social agenda [1,2] and require accurate detection to protect children. We acknowledge the guidelines issued by pediatrics experts [1–3] and, in particular, the appraisal, "An investigation of possible abuse is a time of crisis for a family" [1]. Yet we have noticed little resource about this crisis and possible false accusation of child abuse in medical literature, while we recognise it in a law review [4], a book [5], a movie ('The Syndrome'), and other public media [6].

In Japan, there is a substantial issue and lack of standardisation of the procedure of suspecting and diagnosing child abuse; informing child protection service and caregivers, mostly parents, about abuse suspicion; and executing associated legal processes. Alongside, false accusation of child abuse without clear evidence has been recognised and reported as sporadically. The issue has been partly attributed to little effort to minimise false accusation, while we take the best effort to protect children, under the child protection law, separating a child from caregivers for protection from possible abuse or, at least, a hazardous environment. Whereas this operation works well for true abuse, the procedure rarely accounts for possible risks of false accusation and of psychological distress in a family. To highlight this, we report a recent case of false accusation, causing a year-long family separation, and discuss its implications. Informed consent for reporting was obtained from the case family.

A male child aged 10 months and 70.5 cm tall accidentally fell down while he stood up grabbing a table leg in 2016. He got injured at the back of his head hit on a floor with 15mm-thick carpet. This was witnessed by his mother and by the paternal grandparents who did not live together but visited the family just at that time. After the child showed a whole-body tremor, his mother called a local emergency department, its service transferred the child to a

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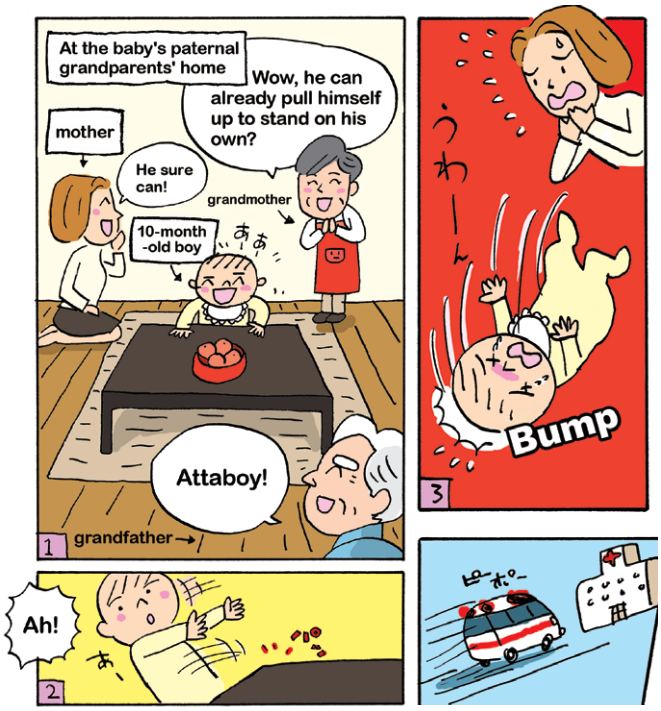

Fig.1 10 month-old boy with acute subdural hemorrhage by short fall

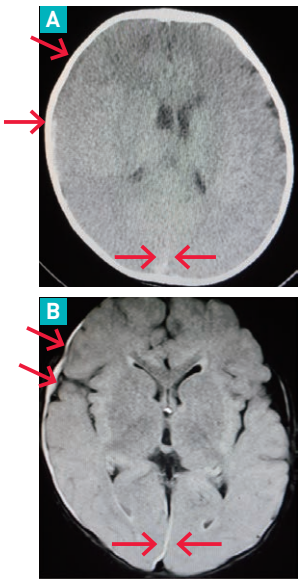

Fig.2 Brain images of injured boy
(A) On admission, non-contrast CT scan shows an acute subdural hemorrhage in right parieto-temporal region, with minimal mass effect.
(B) MRI three days later, failed to show abnormal findings in the brain parenchyma apart from residual subdural hemorrhage.

nearby hospital (Fig.1). There, a pediatrician identified subdural hematoma (SDH) and retinal haemorrhage (RH). On the same day (Day 1), the child showed recovery and no relapse of any symptoms onward(Fig.2). Without any evidence of bruising or other typical abusive symptoms [2], however, SDH and RH resulted in suspicion of abusive trauma (Day 4), diagnosis of abusive trauma, and the reference to child protection service in the local area (Day 5). On Day 6, the mother and the paternal grandfather were independently interviewed once by a pediatrician and asked only about the event. Despite no admission, evidence, or any question about any abuse or potentially abuse-related history, the family members were considered cooperatively fabricating the event as an accident and concealing the mother's abuse. Until Month 6, the child was kept away from the family members including his father. Supported by a private lawyer hired, the parents were permitted to care the child with the third person until Month 9. The family identified the author (Aoki) through the Internet and received his second opinion. The author reported the possible false diagnosis of abusive head trauma, accounting for multiple factors including the witness by the third person (the grandparent), no evidence of other abusive symptoms or history, immediate emergency call after the event, and regular use of social service (e.g. vaccination) for the child. In Month 12, the family obtained permission to live together while a social worker visited the home for monitoring purpose. In Month 13, the monitoring was terminated.

There were multiple implications in this crisis. First, this case involved the false assumption that SDH plus RH would be sufficient evidence for diagnosis of abusive head trauma. The assumption or 'myth' has been well recognised as invalid [4,6]; and, in Japan, known as invalid since 1970s [7] when accidental SDH without a cranial fracture in children was well characterised as Nakamura's Type 1 SDH and where abusive trauma is rarer than other countries [7,8]. Although a short-distance fall causing SDH plus RH is rare, the rarity does not justify the diagnosis of abusive head trauma [4]. Its positive predictive value is no more than 97% even when identifying SDH, RH, and other four typical abusive symptoms [2,9,10]. Our case indicates a lack of hospital's preparedness for the rare event in the process to the diagnosis of child abuse. Preparedness for an accidental head trauma and a diagnostic procedure, even if it is rare, should be promulgated, standardised and adherently operated in each society.

Second, standardisation is needed in the process of executing an action based on abuse suspicion. Because the decision must be carefully made [1,3], beside detailed clinical examination [2], for example, the process is suggested to receive an independent second opinion, make strategic non-judgemental communication, involve interviews to neighbours or any others of a case family about possible abuse, and assess interviews objectively via recording: these options were reported to be absent in our case. A survey, characterisation, and standardisation of the multidisciplinary procedure and related training [11] remain missing in Japan and crucial to operate widely to minimise possible regional inequity in medical judgement and minimise distress among caregivers, physicians, and social workers for child protection [1,3].

Third, our case raises serious concerns of psychological burdens among family members over the period. In our case, while the suspicion itself may have been unnecessary, the year-long period of separation could have been shortened. Physicians in a hospital, social workers, or both could have informed availability and importance of the second opinion, ensured the physical safety in the family's house, and helped arrange the condition where the child could live with the first- and second-degree relatives as early as possible. Such effort must be made because deprivation of a mother-child relationship induces acute adverse psychosocial effects on a family. Its long-

term adverse effect is also possible, increasing the risk of child's psychosocial problems [12].

Pediatrics and social service play key roles to protect children from abuse or injury as the primary and secondary prevention. At the same time, false accusation and its associated distress must be recognised and prevented. The preventive actions against false accusation are insufficient, without education, investigation, or intervention, and need to be directed by experts' community. In our local community, cases of false accusation have been shared with pediatricians. A wider community and academic society shall use those experiences and lessons strategically and effectively to conduct proper research, train experts, and minimise false accusation of child abuse as well as to protect children from any types of injuries.

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