APPENDIX A

Publication details	Case details	Relevant results	Critical appraisal comments
Author(s): Bechtel K, Stoessel K, Leventhal JM, *et al*[19]	Ascertainment: all children aged <2 years admitted to a single unit with head injuries, and who had CT. Prospective	82 met inclusion criteria, 15 abuse, 67 accident. No difference in mean age, gender, ethnicity. Accidental (niBI) – 65 witnessed falls, 47 were <4 ft. 2 MVA. Of abuse (iBI) – 12 no history of trauma, 1 perpetrator admission, 1 history of falling 3 inches, 1 "self inflicted". SDH more likely in iBI than niBI ($p<0.001$). No difference in SAH, skull fracture, EDH. All children had fundoscopy. RH commoner in iBI (9/15) vs niBI (7/67) ($p<0.001$). Good detail on RH given, unilateral RH in 6/7 niBI, single haemorrhage in 3/7. Seizures commoner in iBI (8/15) vs niBI (4/67) ($p<0.001$), same for abnormal mental status (defined) – iBI (8/15) vs niBI (7/67) ($p<0.001$). In contrast, scalp haematoma commoner in niBI (34/67) vs iBI (1/15) ($p<0.001$). "Abnormal mental status" defined as unresponsive/poorly responsive to painful stimuli/gaze palsies/flaccidity – iBI 53% vs niBI 9% ($p<0.001$). NB: given sample size, 85% power to detect differences of 41%, at error of 5%. iBI had more seizures requiring anticonvulsants, but NS	Raw data provided by authors
Title: Characteristics that distinguish accidental from abusive injury in hospitalized young children with head trauma	Ranking of abuse: 2 (criteria+social worker)		Good study, standardised ascertainment, all had ophthalmology, but small numbers, particularly in abuse group. Only includes TBI, but rank of abuse not dependent on type of intracranial injury
Year: 2004	Exclusion of abuse: explicit history of accidental trauma		Confirms predictive power of RH and seizure. No difference in skull fracture surprising, but scalp haematoma commoner in accidents. Unfortunate that data on bruising/apnoea not recorded
Country: USA	No. of examiners: N/A. Gender split: 47 boys, 35 girls		
Aim: to describe clinical features distinguishing accidental from abusive head trauma in hospitalized children aged <2 years	Ethnicity: 47 white, 7 African American, 18 Hispanic (no difference between iBI and niBI)		
Study design: prospective cross-sectional	Socio-economic group: N/A		
Time period: 1 August 2000–31 October 2002	Age: 0–2 years, no difference in mean age between iBI and niBI		
Author(s): Ettaro L, Berger RP, Songer T[20]	Ascertainment: all children admitted to a single unit with traumatic head injury, included intracranial haemorrhage and skull fracture, excluded concussion and cerebral lacerations or contusions. Retrospective	Unfortunate that presumptive and suspected cases combined, but raw data allow separation. 377 cases, 61 iBI, 316 niBI based on raw data, where suspected added to niBI. iBI cases were younger and of lower economic status than niBI. Good information on history given at presentation, 33/89 (37%) iBI no history of trauma vs 1/288 (0.3%) niBI. 97% iBI vs 54% niBI gave a history of no or minor trauma on presentation ($p<0.001$). 46 (52%) iBI vs 174 (61%) niBI had skull fractures, NS. Rib fractures and long bone fractures more common in iBI ($p<0.001$), long bone also more common ($p \leqslant 0.01$) than in niBI	Raw data provided by authors, and abuse confirmed by multidisciplinary assessment
Title: Abusive head trauma in young children: characteristics and medical charges in a hospitalized population	Ranking of abuse: 2. Duhaime "presumptive" abuse added "suspected" abuse to this for analysis but was separated in raw data	Mortality greater in iBI – 10.1% vs 2.1%, also more disability (NS) – 9% vs 3.7%	Good study, but weakened in published form by combining the "presumptive" and "suspected" for analysis
Year: 2004	Exclusion of abuse: MVA, fall, struck	A lot of detail on increased cost	Raw data very valuable, allowed us to separate "suspected" abuse
Country: USA	No. of examiners: N/A. Gender split: 53/89 (60%) iBI boys, 169/288 (59%) niBI boys	No detail on altered consciousness or seizures	Highlights age, SE difference. Interestingly, no difference in skull fractures, but some of the cases had only fractures, not given in paper, thereby making it difficult to compare with other studies
Aim: to examine differences in clinical features and hospital charges between iBI and niBI	Ethnicity: 69 iBI (80%) vs 234 (83%) niBI white		Cases from 1996/7 did not routinely have a skeletal survey or retinal examination

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APPENDIX A Continued

Publication details	Case details	Relevant results	Critical appraisal comments
Study design: comparative case series	Socio-economic group: 63 (74%) iBI were Medicaid or self-pay vs 139 (49%) niBI ($p<0.001$)		
Time period: 1995–1999	Age: 0–3 years 78 (87%) iBI vs 121 (42%) niBI <1 year ($p<0.001$)		
Author(s): Ewing-Cobbs L, Kramer L, Prasad M, *et al*[21]	Ascertainment: all TBI (iBI or niBI) in children admitted to 2 centres, moderate or severe TBI, no prior neurological or metabolic abnormalities, no prior TBI, gestation >32/40. 88% of iBI and 71% niBI enrolled	20 each in iBI and niBI groups	Useful prospective study, with clear detail on outcome, significantly worse outcome for iBI vs niBI ($p<0.05$). Clear difference in ICH pattern, weakness is that skull fractures determined on CT
Title: Neuroimaging, physical, and developmental findings after inflicted and noninflicted traumatic brain injury in young children	Ranking of abuse: 2	iBI cases were younger than niBI (see age for data). No differences in birth history, good detail on perpetrators. Type of ICH differed, 16/20 iBI vs 9/20 ($p<0.005$) SDH, no EDH ($p<0.005$), 4 SAH vs 7/20 niBI. 11/20 iBI vs 16/20 niBI had soft tissue swelling. 30% niBI vs 5% iBI had parenchymal involvement. Multiple, linear and depressed skull fractures same in each group (NB: only on CT). RH 13/20 iBI vs 0 niBI ($p<0.001$). Differences between rib, tibia/fibula, femoral fractures commoner in iBI vs facial commoner in niBI. Considerable detail on neurological outcome	Suggested that 40–45% of iBI had cerebral atrophy or ventriculomegaly but none of those with niBI
Year: 1998	Exclusion of abuse: history ± investigations	Seizures commoner in iBI 13 vs 3 ($p<0.001$), no detail given. 5/20 iBI history of being dropped by caregiver, 5/20 fall <4 ft and 10 no history vs 2/20 with fall <4 ft in niBI and none dropped or no history of trauma	
Country: USA	No. of examiners: N/A	GCS measured – NS, also no difference in levels of hemiparesis at admission (6/16 iBI vs 10/20 niBI) or cranial nerve abnormalities	
Aim: to describe clinical and radiological features of iBI and niBI to help determine aetiology	Gender split: 3/20 iBI boys, 10/20 niBI		
Study design: longitudinal	Ethnicity: NS difference, recorded all relevant groups		
Time period: N/A	Socio-economic group: NS difference		
	Age: 1 month to 6 years		
	iBI mean 11 vs 35 months niBI ($p<0.001$)		
Author(s): Fung ELW, Sung RYT, Nelson EAS, *et al*[16]	Ascertainment: identified all SDH by ICD-9 codes and neurosurgical database, in a single hospital. Excluded SDH due to infection/surgery	Retrospective review of all cases of SDH other than infectious or post surgical. Identified 9, of whom 5 were in last year of study, attribute this to raised awareness of abuse, but unsure why so high	Study questions the assumption that RH and SDH equals abuse. They show a very large increase in the number of SDH cases in 1 year, with no real explanation
Title: Unexplained subdural hematoma in young children: is it always child abuse?	Ranking of abuse: 2	Noted 4 confirmed abuse, but no perpetrator identified, no legal proceedings. Among iBI, 2/4 no history of trauma, 1 fall from sibling's arms, 1 three recent falls, no details. Among niBI, 3 no history of trauma, 1 fall from chair, 1 fall while standing (age 10 months). 2/4 iBI had RH, 3/5 niBI had RH, one of whom had extensive RH, no explanation for niBI other than (?) fall and parents shook to rouse (?). All had severe ICH, 1 NAI had co-existent SAH, 1 niBI also had EDH. All skeletal surveys and coagulation screens normal. 3/4 had severe disability as a consequence, 4/5 niBI also had. NB: 5-month-old baby with iBI had had facial petechiae 2 weeks prior to admission. 2/4 iBI had loss of consciousness/crying vs 3/5 niBI with loss of consciousness. Noted status epilepticus in one case, others "convulsions", "twitching of limbs"	
Year: 2002	Exclusion of abuse: for 2 there was a case conference, 2 unclear		Raises valid concerns over how a diagnosis of iBI is reached, but offers little substantial evidence for their own suggestion that minor trauma may cause this
Country: Hong Kong	No. of examiners: N/A		
Aim: to evaluate clinical indicators for confirming NAHI in Hong Kong	Gender split: 8 boys, 1 girl (4 iBI boys)		

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APPENDIX A Continued

Publication details	Case details	Relevant results	Critical appraisal comments
Study design: case series	Ethnicity: N/A		
Time period: 1995–1998	Socio-economic group: N/A		
	Age: 1–24 months, mean iBI 6 months vs 10 months for niBI		
Author(s): Hettler J, Greene DS[22]	Ascertainment: all children presenting to a single children's hospital/trauma centre with TBI. Excluding coagulopathy, perinatal and structural intracranial abnormality, including previous surgery or ICH. Retrospective	Determined abuse without reference to history at presentation, but this was retrospective. 20/49 abuse cases had RH and fractures, 19 RH alone, 6 fractures alone, 3 skin (1 bite, 1 slap to face, 1 linear bruises to chest), 1 witnessed abuse. 1 non-abuse had RH. 92/114 (81%) niBI had social work assessment, 31/114 (27%) had skeletal surveys, 28 (25%) had ophthalmology, 11 (10%) child protection services notified. iBI more likely than niBI to present with apnoea 9 vs 3, seizure 17 vs 5 (not defined), vomiting 23 vs 23, lethargy 25 vs 23 (all $p<0.001$). More likely to have neurological abnormalities at discharge 26 vs 8	Raw data provided by author, allowing inclusion, as all also confirmed by social work team
Title: Can the initial history predict whether a child with a head injury has been abused?	Ranking of abuse: 2	34/49 (69%) iBI had no history of trauma vs 3 (3%) niBI, PPV of 92 for abuse. Only in those with persistent abnormal neurology, a history of no or low impact trauma PPV of 1.0 for abuse. Overall, 34/49 (69%) iBI no history of trauma vs 3/114 (3%) ($p<0.001$). 2 iBI witnessed high impact trauma. Among all cases history of no or low impact trauma NS between iBI and niBI	In order to separate history from diagnosis of abuse, the definition relied heavily on a single clinical feature (eg, RH or fracture). However, surety of abuse shown by the fact that only 1/49 abuse cases went home with original carer
Year: 2003	Exclusion of abuse: clinical and 81% social work assessment	Lethargy – 25/49 (51%) iBI vs 13/114 (20%) niBI ($p \leqslant 0.001$). Also "initial neurologic abnormality" 32/49 (65%) iBI vs 28/114 (25%) ($p \leqslant 0.001$)	Important paper to try and address historical features
Country: USA	No. of examiners: N/A. Gender split: 27/49 (55%) iBI boys, 65/114 (57%) niBI boys		
Aim: to determine the diagnostic value of presenting history in identifying abuse	Ethnicity: N/A		
Study design: cross-sectional	Socio-economic group: N/A		
Time period: 1993–2000	Age: 0–3 years		
	Mean 6 months for iBI vs 9.1 months for niBI, NS		
Author(s): Hobbs C, Childs A-M, Wynne J, *et al*[14]	Ascertainment: used BPSU reporting system to identify all cases of SDH/effusion of any cause in children aged <2 years, also checked Statistics Office for fatal cases. Retrospective	106/186 were iBI. Apnoea was reported/recorded. Annual incidence SDH 12.5/100 000, age 0–2 years, 24.1 age 0–1 year. For iBI 7.1/100 0000 for 2 years (95% CI 6.4 to 9.31), 14.2 for 0–1 year, 0.3 for 1–2 years. Minor injury history in 41/97 iBI and 2/16 undetermined. 99/106 abuse cases had child protection investigations, relied on raw data here	Raw data provided by author
Title: Subdural haematoma and effusion in infancy: an epidemiological study	Ranking of abuse: 2/3 (used raw data to analyse high rank cases)	NB: 55/106 (52%) iBI had RH, 2/7 accidental, 2/26 perinatal, 0/30 disease, 0/17 undetermined. 51/106 abuse cases had fractures (full details in raw data), other fractures only perinatal and accidental	Gives UK incidence figures for those aged <2 years, relied on local centre diagnosis of abuse and radiology interpretation. However, large scale study, with no excluded patients
Year: 2005	Exclusion of abuse: variable Ix	A history of minor trauma in 41/97 iBI but no data on niBI. Seizures not defined	Interesting prevalence of RH in other causes of SDH. Limited data on the intracranial injury itself
Country: UK	No. of examiners: N/A. Gender split: 120/186 (65%) all cases, 74/106 (70%) iBI		
Aim: to determine incidence, aetiology and clinical features of SDH/effusion in the British Isles	Ethnicity: N/A		
Study design: case series	Socio-economic group: Townsend		
Time period: 1998–1999	niBI 0.3 vs 2.1 for iBI ($p<0.007$), ie iBI commoner in lower socio-economic groups		
	Age: 0–2 years, mean age iBI was 16 weeks, others varied		
Author(s): Hoskote A, Richards P, Anslow P, *et al*[23]	Ascertainment: all children attending a single unit, from ICD-9, neurosurgery, radiology and social services databases with subdurals	36 children, 14 iBI, 22 other including 6 RTA, 1 assault, 4 iatrogenic, 1 medical, 2 accidental, 6 unexplained (5 neonates), 1 each head injury and assault	All SDH, age range to 16 years includes MVC etc, good detail on iBI and on 9 medical/unexplained causes. 39% of SDH were due to abuse. Probably lower than other studies because of the wide age range

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APPENDIX A Continued

Publication details	Case details	Relevant results	Critical appraisal comments
Title: Subdural haematoma and non-accidental head injury in children	Ranking of abuse: 2	All iBI had an inconsistent history, were aged 4–28 weeks (12 between 4 and 16 weeks), 12/14 had RH, 3 skull fracture, 5 multiple fractures (2 including skull). 4 bruising, 6 seizures, 11 bilateral SDH, 3 unilateral, 6 interhemispheric with loss grey/white diff. 2 died.	The authors derived a probability tool based on the presence of up to 5 features – age $<$12 weeks, inconsistent history, RH, fractures, unexplained bruising, and gave the presence of $\geqslant$3 PPV of 100%, $\geqslant$1 PPV of 82%, but based on a very small data set, without confidence intervals
Year: 2002	Exclusion of abuse: witnessed accident or obvious cause	niBI – age 1.5–13 months for "unexplained" and medical/accidental causes (9), none of whom had RH or fractures. 2 birth trauma, no details on motor vehicle collisions, 3 accidents/assault aged 9–14 years. 51/80 (64%) iBI had no history vs 0/72 niBI. No difference in number dropped (6/80, 7% iBI vs 8/72, 11% niBI) or fell (12/80, 15% vs 15/72, 21%)	Good radiological detail (added value of MRI, and proton density images) and possibility of missing or misinterpreting imaging
Country: UK	No. of examiners: N/A		
Aim: to study presentation, management and outcome of SDH in children and evaluate NAHI cases	Gender split: N/A		
Study design: case series	Ethnicity: N/A		
Time period: 1995–1998	Socio-economic group: N/A		
	Age: 0–16 years		
	Mean iBI 3.4 months vs 7.2 months for niBI		
Author(s): Keenan HT, Runyan DK, Marshall SW, *et al*[24]	Ascertainment: all children with serious/fatal TBI admitted to PICU/high dependency prospectively identified in all 9 hospitals within one state (including checking the 3 closest out-of-state hospitals which residents could have been admitted to). Also checked deaths register	152 cases, 80 inflicted 72 niBI. Median age iTBI 4 months, niTBI 7.5 ($p<0.001$). Good detail on presenting complaints of both groups, non-MVC niTBI, 44% (13/29) had swelling/redness face/head or asymptomatic after fall vs 8.3% (6) iTBI asymptomatic with bruise/limb deformity ($p<0.001$). iTBI more likely to have rib, long bone, metaphyseal fractures than niTBI. 1 niTBI with metaphyseal after MVC, which was an old fracture along with rib and long bone fractures. 56% (17) non-MVC niTBI had skull fractures. Skull fractures commoner in niTBI (59% vs 17.5%; $p<0.001$). Only 24/72 niTBI had retinal examination, 6 (24%) had RH (4 were MVC). Old injury in 28 (35%) of iTBI vs 1 (1.4%) of niTBI. Good detail on type of ICH. SDH iTBI more than niTBI (94% vs 61%; $p<0.01$), EDH commoner in niTBI (18.2% vs 1.3%, $p<0.001$). Data on outcome also, overall worse for iTBI than niTBI	Very large study, with good ascertainment. Overall, 53% of TBI in children aged $<$2 years was inflicted, with a high rank of abuse (30% admitted by perpetrator). RH, fractures and SDH were main associations, but 10% of iTBI had no RH or fractures. 35% of iTBI had no overt clinical signs of trauma (eg, bruising, palpable fracture or limb deformity). In this group of severe/moderate TBI, all niTBI had a history of trauma, although almost self-fulfilling, in contrast to niTBI
Title: A population-based comparison of clinical and outcome characteristics of young children with serious inflicted and noninflicted traumatic brain injury	Ranking of abuse: 1 and 2	GCS of 9–12 commoner in iBI (15/80) than niBI (7/72), relative risk 1.7 (0.9 to 3.2), but measure "imprecise". Lethargy, irritability, unresponsive also recorded in each, NS	Although only a third of niTBI cases had ophthalmology, other investigations seem complete
Year: 2004	Exclusion of abuse: witnessed, determined on evaluation		
Country: USA	No. of examiners: 2 for data analysis		
Aim: to compare inflicted TBI and niTBI in terms of presenting complaints, clinical features and hospital outcomes	Gender split: 87/152 (57.2%) boys		
Study design: prospective cross-sectional	Ethnicity: N/A		
Time period: 2000–2001	Socio-economic group: N/A		
	Age: 0–2 years		
	Median for iBI 4 months vs 7.5 months for niBI ($p<0.001$)		
Author(s): Kemp AM, Stoodley N, Cobley C, *et al*[15]	Ascertainment: all children attending 2 regional hospitals with SDH, identified from the WPSU, inpatient data, neurology and neurosurgery databases. Retrospective	Apnoea was either reported or recorded. 4/14 had bleeding around and damage to cervical spinal cord/brain stem on post mortem. 23/65 iBI apnoea 1/25 controls. 31/65 iBI had fractures	Raw data provided by authors
Title: Apnoea and brain swelling in non-accidental head injury	Ranking of abuse: 1 and 2	Concluded that apnoea significantly associated with poor outcome ($p<0.005$)	Published study focussed on apnoea, high prevalence of cervical abnormality at post mortem, and co-existent injuries
Year: 2003	Exclusion of abuse: witnessed accident or medical causes		We have used raw data for meta-analysis, highlights the importance of apnoea

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APPENDIX A Continued

Publication details	Case details	Relevant results	Critical appraisal comments
Country: UK	No. of examiners: N/A. Gender split: 58 boys (40 iBI boys)		
Aim: to identify if infants with inflicted SDH have apnoea leading to HIE, relationship to prognosis, and degree of trauma to cause NAHI	Ethnicity: N/A		
Study design: case–control	Socio-economic group: N/A		
Time period: 1992–98			
	Age: 0–23 months		
	Mean age iBI 5.2 months vs 8/12 months for niBI		
Author(s): Pierre-Kahn V, Roche O, Dureau P, *et al*[25]	Ascertainment: all children consecutively admitted to a single unit with SDH. Excluded if CPR, coagulation abnormality, delayed eye exam or severe dehydration	Primarily ophthalmology study, refers to 7 accidental cases, but cannot extract any data other than RH (none) from them. 231 total, 153 rank 1 or 2, which we included	Of limited value for this review as there is only comparative information on RH, and only 7 children in this group
Title: Ophthalmologic findings in suspected child abuse victims with subdural hematomas	Ranking of abuse: 1 and 4	Did note seizures, SDH with associated SAH/intracerebral and EDH. Fractures and bruises noted, no breakdown by abuse/accidental. Coagulation studies normal on all	Excellent ophthalmology detail
Year: 2003	Exclusion of abuse: proven severe accidental trauma		
Country: France	No. of examiners: N/A. Gender split: 165 boys in total group, 66 girls		
Aim: to determine the pattern and evolution of abusive intraocular haemorrhages and distinguishing features	Ethnicity: N/A		
Study design: prospective comparative case series	Socio-economic group: N/A		
Time period: 1996-2001	Age: 0–29 months		
	Median age for iBI 1.5 months, range 0.9–3.9. For "shaken only" or "unwitnessed or denied trauma" median 4.6 and 5.5 months, respectively		
Author(s): Ruppel RA, Kochanek PM, Adelson PD, *et al*[26]	Ascertainment: 16 children admitted to ITU with severe TBI (2 with DAI alone excluded)	16 included, 4 iBI remainder MVC, fall (1), pedestrian (3), bike (1)	Limited data for use in this review
Title: Excitatory amino acid concentrations in ventricular cerebrospinal fluid after severe traumatic brain injury in infants and children: the role of child abuse	Ranking of abuse: 2	Three of iBI had RH, none of the niBI. 1/4 iBI had skull fracture, 5/12 niBI	Given the severity of injury at presentation, ophthalmology and skeletal survey data low in niBI
Year: 2001	Exclusion of abuse:	One from each group had long bone fracture	
Country: USA	No. of examiners: N/A. Gender split: N/A	Main results relate to cerebral metabolic markers, showing peak CSF glutamate ($p<0.007$) and glycine ($p<0.002$), but not aspartate, are increased in severe iBI compared to controls. Higher in younger and abuse cases. Also appears to be linked to severity of injury	
Aim: to evaluate if CSF glutamate, aspartate and glycine are increased in TBI, and evaluate associated features	Ethnicity: N/A		
Study design: case–control	Socio-economic group: N/A		
Time period: N/A	Age: 0.2–16 years, mean age for group 5.5 years		
	Abuse cases 0.1–0.2 years		
Author(s): Shugerman RP, Paez A, Grossman DC, *et al*[27]	Ascertainment: all children admitted to two regional hospitals (one is the only level 1 trauma centre for the region) with SDH or EDH using trauma registry (1 unit) or case records (1 unit)	Study focussed on SDH or EDH probability of abuse. 93 children in total, 59 SDH, 34 EDH. No difference in skull fracture between two groups. 56/93 niBI, 30/93 iBI, 1 neglect (47-month-old fell from bonnet of car while parent drunk), 6 undetermined	Objective was to determine the relative probabilities of abuse for SDH or EDH, however no power calculation given, numbers of EDH much lower, and it is clear that full abuse work-up was more frequent in SDH, possibly reinforcing the finding that this is a less common finding in iBI
Title: Epidural hemorrhage: is it abuse?	Ranking of abuse: 2	Of EDH, 6/34 had associated injuries vs 29/59 SDH	
Year: 1996	Exclusion of abuse: clinical or social work assessment (no details)	All iBI cases had a history of minor trauma vs 35/56 niBI	

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APPENDIX A Continued

Publication details	Case details	Relevant results	Critical appraisal comments
Country: USA	No. of examiners: N/A. Gender split: N/A	6% of EDH were iBI vs 47% of SDH	
Aim: To determine the probability of abuse for EDH compared to SDH	Ethnicity: N/A	All 46 iBI had history of minor trauma vs 35/56 (62%) niBI	
Study design: cross-sectional	Socio-economic group: N/A		
Time period: 1985–1991	Age: 0–3 years, no breakdown by aetiology		
Author(s): Tzioumi D, Oates RK[28]	Ascertainment: all children attending a single children's hospital with SDH	21 (55%) iBI, 17 niBI (15 accidental, 2 illnesses). iBI group aged 4 weeks to 20 months, mean 5.3 months, 2 history of shaking, 3 "violent" injury. Age of accidental cases 2–23 months, mean 12.4 months, older than iBI ($p<0.02$). More boys than girls in each group, NS	This study was limited by small numbers and spanning a long time span, with use of CT scanning alone, and incomplete data on some children. However, high surety of diagnosis of iBI due to strict criteria used
Title: Subdural hematomas in children under 2 years. Accidental or inflicted? A 10-year experience	Ranking of abuse: 1 and 2	5 had inadequate histories, concede may have been abuse. Also 1 of medical cases, subdural effusions, no detail on RH at presentation, from 1987, may have been iBI. Of niBI, 5 MVC, 5 falls >8 ft	Confirms that the commonest cause of SDH is iBI, but not as high a percentage as in other studies (54%), and also confirms significance of RH (limited by only 1/3 of niBI having eyes examined) and rib/long bone fractures (NB: not stated if all niBI had skeletal survey)
Year: 1998	Exclusion of abuse: mixed, some MVC, long falls, some unclear, organic disease	Bilateral SDH in 58% iBI vs 27% niBI, NS. 19/21 iBI had ophthalmology (5/15 niBI), RH in 84% iBI none of niBI ($p<0.002$). 4/21 iBI rib fractures (0 niBI), 8/21 long bone fracture (0 niBI), $p<0.002$ for one or both of these fractures. Skull fracture 4 (iBI) vs 3 niBI. 11/21 iBI presented with seizures (vs 3/15 niBI), 6/15 iBI vomiting vs 6/17 niBI, 5/15 iBI with loss of consciousness vs 4/17 niBI. None of these significant. 2 iBI admitted shaking infants, and 3 admitted to "violent injury" out of 21. 5/15 niBI were MVC, 5 falls >8 ft, others no clear history. Irritability/drowsiness/loss of consciousness/vomiting – NS difference between iBI and niBI	Two cases of admissions of shaking (one unilateral SDH) and 3 of "violent injury", unfortunately precise details of these cases not given
Country: Australia	No. of examiners: N/A. Gender split: 30 boys, 8 girls		
Aim: to determine the causes and distinguishing characteristics of SDH in children	Ethnicity: N/A		
Study design: cross-sectional	Socio-economic group: N/A		
Time period: 1987–1996	Age: 0–2 years		
	Mean iBI 5.3 months vs accidental mean 12.4 months		
Author(s): Vinchon M, Defoort-Dhellemes S, Desurmont M, *et al*[29]	Ascertainment: all children (recruited prospectively) admitted to a single unit (the only neurosurgical facility in the region) with TBI diagnosed on CT	150 cases, for which we have the raw data. 60/103 SDH were boys vs 47 girls. 57 abuse cases	Raw data from authors, with full explanations
Title: Accidental and nonaccidental head injuries in infants: a prospective study	Ranking of abuse: 2	niBI were household accidents, birth injury, MVC or haemophilia. 4 idiopathic macrocranium. 73 SDH, 46 (64%) were abuse	Very valuable prospectively collected data, with all participating teams trained at the outset. Strong ppv for RH, significantly worse outcome
Year: 2005	Exclusion of abuse: witnessed or reported trauma, also a few cases with pre-existing macrocranium with possible minor trauma	Full clinical data on raw data spreadsheet	
Country: France	No. of examiners: N/A. Gender split: 103 boys, 47 girls	RH in 42/56 iBI, 5/73 niBI. Abuse cases 38% of total, but 90% of severe morbidity and 71% of mortality	
Aim: to examine the epidemiology of head injury in infants, the value of RH in abuse, and factors predisposing to SDH	Ethnicity: N/A	Impaired consciousness significantly associated with iBI vs niBI ($p<0.001$)	
Study design: cross-sectional	Socio-economic group: N/A		
Time period: 2001–2004	Age: 0–2 years, mean 5.3 months difference between iBI and niBI, NS		

BPSU, British Paediatric Surveillance Unit; CPR, cardiopulmonary resuscitation; CSF, cerebrospinal fluid; CT, cat scan; DAI, diffuse axonal injury; EDH, extradural haemorrhage; GCS, Glasgow coma score; HI, head injury; HIE, hypoxic-ischaemic encephalopathy; iBI, inflicted brain injury; ICD-9, International Classification of Diseases, 9th edn; ICH, intracerebral haemorrhage; iTBI, inflicted traumatic brain injury; ITU, intensive care unit; MRI, magnetic resonance imaging; MVA, motor vehicle accident; MVC, motor vehicle collision; N/A, not available; NAI, non-accidental injury; niBI, non inflicted brain injury; niTBI, non-inflicted traumatic brain injury; NS, not significant; PICU, paediatric intensive care unit; PM, post mortem; PPV, positive predictive value; RH, retinal haemorrhage; RTA, road traffic accident; SAH, subarachnoid haemorrhage; SDH, subdural haemorrhage; SE, socio-economic group; TBI, traumatic brain injury; WPSU, Welsh Paediatric Surveillance Unit.