Acute and non-acute markers of sexual offense. A comparison study
Mariana Isabel Figueiredo Formigo
Acute and non-acute markers of sexual offense. A comparison study

Mestrado Integrado em Medicina
Área: Medicina Legal
Trabalho efetuado sob a Orientação de:
Doutora Teresa Magalhães
E sob a Coorientação de:
Mestre Patrícia Jardim
Trabalho organizado de acordo com as normas da revista:
International Journal of Legal Medicine
-março, 2014
Eu, Mariana Isabel Figueiredo Formigo, abaixo assinado, nº mecanográfico 200801238, estudante do 6º ano do Ciclo de Estudos Integrado em Medicina, na Faculdade de Medicina da Universidade do Porto, declaro ter atuado com absoluta integridade na elaboração deste projeto de opção.

Neste sentido,确认 que NÃO incorri em plágio (ato pelo qual um indivíduo, mesmo por omissão, assume a autoria de um determinado trabalho intelectual, ou partes dele). Mas declaro que todas as frases que retirei de trabalhos anteriores pertencentes a outros autores, foram referenciadas, ou redigidas com novas palavras, tendo colocado, neste caso, a citação da fonte bibliográfica.

Faculdade de Medicina da Universidade do Porto, 20/03/2014

Assinatura conforme cartão de identificação:

Mariana Isabel Figueiredo Formigo
Projecto de Opção do 6º ano – DECLARAÇÃO DE REPRODUÇÃO

<table>
<thead>
<tr>
<th>NOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mariana Isabel Figueiredo Formigo</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CARTÃO DE CIDADÃO OU PASSAPORTE</th>
<th>E-MAIL</th>
<th>TELEFONE OU TELEMÓVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13771857</td>
<td><a href="mailto:mimed08160@med.up.pt">mimed08160@med.up.pt</a></td>
<td>918993250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NÚMERO DE ESTUDANTE</th>
<th>DATA DE CONCLUSÃO</th>
</tr>
</thead>
<tbody>
<tr>
<td>200801238</td>
<td>2014</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DESIGNAÇÃO DA ÁREA DO PROJECTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicina Legal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TÍTULO DISSERTAÇÃO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute and non-acute markers of sexual offense. A comparison study</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ORIENTADOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doutora Teresa Magalhães</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COORIENTADOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mestre Patrícia Jardim</td>
</tr>
</tbody>
</table>

É autorizada a reprodução integral desta Dissertação para efeitos de investigação e de divulgação pedagógica, em programas e projectos coordenados pela FMUP.

Faculdade de Medicina da Universidade do Porto, 20/03/2014

Assinatura conforme cartão de identificação: Mariana Isabel Figueiredo Formigo
ABSTRACT

Sexual aggression is a worldwide problem, affecting children of all ages, socioeconomic levels, and cultural backgrounds, with serious bio-psychosocial consequences. This study aims to contribute to an earlier detection and prevention of children sexual aggression (CSA), through the characterization of its recent and non-recent markers, from a forensic point-of-view.

For this purpose, a retrospective study was conducted, through the analysis of forensic medical reports of the alleged victims as well as the corresponding judicial outcomes, from 2004 to 2012 (n=372).

Results evidenced that recent CSA is more associated with single sexual contacts, perpetrated by strangers, characterized by more physical and sexual violence, suggestive or nonspecific injuries, the presence of heterologous male profile, with higher rates of diagnostic and suggestive forensic medical examination (FME) conclusions. Non-recent CSA is associated with more regular sexual contact, perpetrated by familial aggressors, characterized by less physical and more psychological violence, absent injuries, forensic psychological assessments, with higher rates of nonspecific FME conclusions.

In conclusion, health professionals must be aware of this problem to early detect and refer cases to forensic services, to improve better treatment and protection of the victims, as well as allow an effective prosecution in court.

KEYWORDS

Children sexual aggression; Forensic medical examination; Judicial outcome

INTRODUCTION

Children sexual aggression (CSA) is a worldwide problem of epidemic proportions, affecting children of all ages, socioeconomic levels, and cultural backgrounds, with a myriad of bio-psychosocial effects on victims/survivors, their families and on the wider community [1,2]. Indeed, survivors of CSA suffer the consequences of the aggression for a lifetime, with profound effects on physical and psychological health [1]. Globally, the CSA has been identified in percentages ranging from 7-36% in girls and 3-29% in boys, although females have a two or threefold risk, compared to males, to be sexually offended during childhood, and about one in ten women has been confronted with this experience [3,4].

About 90% of CSA are committed by men and in 70-90% of these, the perpetrator is known to the child. CSA affects approximately 12% of girls younger than 14 years old, and in 30-50% of these cases, the perpetrators are family members [2,4].

According to the World Health Organization, “child sexual abuse is the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared and cannot give consent, or that violates the laws or social taboos of society. Child sexual aggression is evidenced by this activity between a child and an adult or another child who by age or development is in a relationship of responsibility, trust or power, the activity being intended to gratify or satisfy the needs of the other person.” Sexual activity may include rubbing, fondling, oral-genital contact, genital or anal penetration, exhibitionism, voyeurism, and exposure to pornography, among others [5].

It is important to distinguish two groups of individuals: the recently sexually aggressed and the non-recently sexually aggressed. Recent sexual aggression is most frequently related to isolated episodes, perpetrated by strangers and mostly associated with physical violence and can be considered as acute if the victim presents him/herself to forensic medical examination (FME) in the first 72 hours after the last sexual contact. On the other hand, non-recent sexual aggression is primarily related to long lasting sexual contact, perpetrated by a family member, or a non-family member known to the victim, usually characterized by less physical and more psychological violence and frequently reported much later after the last sexual contact, being considered as chronic. [6].

Diagnosing CSA is a challenge because many children cannot or do not want to report it timely. As a result, injuries and physical or biological evidence are not usually found. In recent CSA cases, due to the victim’s age and type of sexual contact, most cases will show absence of injuries and evidence [4]. Usually, if sexual contact
is reported in the first 72 hours, it is more likely to find injuries and positive physical and biological evidence during FME, thus helping to prove sexual contact and sometimes providing the identification of the aggressor, allowing therefore an effective prosecution in court. This diagnosis is however affected by the child’s age, sex and stage of sexual development [7].

To improve new approaches for early detection, diagnosis, treatment and prevention, it is extremely relevant to analyze the differences between recent and non-recent sexual aggression [8,9]. The main goals of FME are to maximize the ability to collect and preserve evidence for potential use in the judicial system, to identify injuries and minimize the physical and psychological trauma [4].

The diagnosis of CSA is essentially based on the history obtained from the child (which should be performed by forensic interviewers) along with physical examination (including evidence collection, photo documentation and other samples collection for screening) [7]. Guidelines from the American Academy of Pediatrics recommend considering forensic evidence collection for up to 72 hours after the alleged sexual contact (in cases of ejaculation in vaginal vault), as injuries may rapidly disappear and as DNA destruction or contamination can occur through several mechanisms and victim’s daily actions [10,11]. Collecting evidence beyond the 72 hour limit may yield positive results, and may be considered in specific cases, depending on the location or type of sample collected [11].

The aim of this study is to better characterize the recent and non-recent CSA, to improve their early detection and diagnosis, as well as identifying better methods for treatment and protection of the victim.

MATERIAL AND METHODS

A retrospective study was performed based on the analysis of FME reports and corresponding judicial outcomes, related to complaints of victims under 18 years old, who were suspected of being sexually aggressed. These victims were evaluated by the forensic medical north services of the National Institute of Legal Medicine and Forensic Sciences of Portugal (INMLCF), from 2004 to 2012. Only cases until 2012 were included in order to provide time for judicial outcomes, representing 372 forensic reports and 372 judicial decisions made available by the Public Prosecutor Office and Courts. A specifically customized data collection form was always used and applied by two physicians, who were previously trained, to guarantee data repeatability and reproducibility. Data aimed to characterize the victim, their family context, the alleged aggressor, the alleged aggression, the forensic medical conclusions, and the judicial outcome. For cases involving multiple abusive sexual practices, only the most physically intrusive sexual practice was considered. The classification of the evidence in diagnostic, suggestive and unspecific was made according to the Guidelines for Medical Care of Children Evaluated for Suspected Sexual Abuse [12]. Due to the retrospective nature of the study, it was not possible to collect all data regarding all different variables. The statistical study consisted in the comparison between recent CSA (≤ 72 hours between the last sexual contact and FME) and non-recent CSA (> 72 hours between the last sexual contact and FME).

The database was built using the EXCEL 2010 spreadsheet software, and the statistical analysis was carried out using PASW18 for Windows. Descriptive statistics were calculated. The chi-square ($\chi^2$) test was applied, when comparing categorical variables to verify the dependency and the existence of relations between the variables. For the numerical type variables, the Student’s t-test was used. A level of significance of 0.05 was considered.

RESULTS

This investigation considered 372 cases, corresponding to 17.9% of all suspected sexual aggressions against children reported to the forensic medical north services of the INMLCF of Portugal during the 9 studied years. With the available data in the forensic and judicial outcomes, the study revealed the following results:

1. Characterization of the alleged victim

The majority of the alleged victims were female (78.0%). The average age for both sexes at the time of FME was 10.1 years (min=0.4; max=18.0; SD=4.3). Concerning their occupational activity, 75.8% were students, 24.2% of the victims were either too young to be in school, or unemployed, or employed at the time of aggression. As far as the type of family is concerned, most victims lived in a nuclear family (36.0%). Institutionalization was described in 5.7% of the cases.
The comparison between recent and non-recent CSA was not statistically significant regarding the sex, age and occupational activity of the alleged victim (Table 1). Analyzing the type of family of the alleged victims, the difference between recent and non-recent CSA was statistically significant, showing a higher incidence of nuclear families in recent CSA cases and a higher incidence of recombined, extended or institutionalized/foster family in non-recent CSA cases (Table 1).

2. Characterization of the alleged aggressor

The majority of the alleged aggressors were males (90.3%). Most aggressors were between 18-30 years old (15.9%). In most cases, the aggression was perpetrated in an intra-familial setting (48.1%), while 43.6% of all suspected cases were extra-familial (aggressors known or unknown to the victim). The perpetrator was the father or stepfather in 30.7% of all cases.

The comparison between recent and non-recent CSA was not statistically significant regarding the sex, age and occupational activity of the alleged aggressor (Table 2). Concerning the relationship with the victim, the difference between recent and non-recent CSA was statistically significant, showing a higher incidence of strange aggressors in recent CSA cases and a higher incidence of familial aggressors in non-recent CSA cases (Table 2).

3. Characterization of the alleged aggression

Considering the frequency of aggression, 36.8% of the cases were reported as a single event; in 19.6% the victims were aggressed sporadically and in 8.6% the aggression occurred regularly. Sexual practices consisted mostly in vaginal, anal and/or oral penetration (36.6%); attempted penetration was described in (7.5%) of the cases, fondling and/or contact between genitals in (29.1%). Regarding the place of the aggression, 58.3% took place in the victim’s and/or aggressor’s home. The circumstances of the consisted in 10.8% of verbal offenses, 14.8% of physical violence and 19.9% of weapon threatening, allurement or consent.

The comparison between recent and non-recent CSA was not statistically significant regarding sexual practices and place of the alleged aggression (Table 3). In terms of frequency and circumstances of the alleged aggression, the difference between recent and non-recent CSA was statistically significant, showing a higher incidence of single events and mostly associated with physical violence and other circumstances (weapon threatening/grooming or consent) events in recent CSA cases and a higher incidence of sporadically and regular sexual contact, in the victim’s and/or aggressor’s home and mostly associated with verbal offenses in non-recent CSA cases (Table 3).

4. Characterization of the first suspicion of the alleged aggression

The first suspicion was mostly raised by relatives in 38.2%, usually parents. The most commonly described motive that lead to suspicion was the history revealed by the child (41.1%), physical or biological signs suggestive of aggression (14.5%) and eye witness (11.3%). The health units were the main place where cases were first assisted and identified (23.9%), followed by the police (14.0%) and child protection services (9.4%).

The comparison between recent and non-recent CSA was not statistically significant regarding the first suspicion of the alleged aggression (Table 4). As far as the motive that lead to suspicion and the first assistance of the alleged aggression, the difference between recent and non-recent CSA was statistically significant, showing a higher incidence of physical or biological signs suggestive of aggression, witnessed events and mostly associated with health units and police assistance in recent CSA cases (Table 4).

5. Characterization of the forensic medical examination

Regarding the time elapsed between the alleged sexual contact and the FME, the results were coded in 2 categories: less than 72 hours (22.6%) and more than 72 hours (54.8%). The cases in which there was no information concerning this aspect (22.6%) were, for statistical convenience, included in the latter group. In 65.1% of the cases there was no physical injury reported, 16.4% had nonspecific injuries and 18.6% had injuries suggestive of sexual contact. 2 cases resulted in pregnancy.

Biological evidence for DNA studies were positive and revealed a heterologous male profile in 3.2% and negative in 10.5%.
Toxicological studies were performed in 1.3% and microbiological studies in 6.2%, with negative results for all cases. Forensic psychological assessment was performed in 64.8% of the cases. The results of findings of CSA were unspecific in 79.8% of the cases, suggestive in 16.9% and diagnostic in 3.2%.

The statistical difference between recent and non-recent CSA was not tested regarding toxicological and microbiological studies, due to the reduced sample size of performed cases (Table 5). Concerning the injuries, genetic studies, forensic psychological assessment and findings in the FME, the difference between recent and non-recent CSA was statistically significant, showing a higher incidence of suggestive and nonspecific injuries, presence of an heterologous male genetic profile and diagnostic findings in recent CSA cases and a higher incidence of absent injuries, forensic psychological assessment and unspecific findings in non-recent CSA cases (Table 5).

6. Characterization of forensic medical examination conclusions

Taking into account the description of the alleged aggression and the results of the FME, conclusions were nonspecific for the diagnosis of CSA in 84.7% of the cases, suggestive in 12.1% and diagnostic in 3.2%.

The statistical difference between recent and non-recent CSA was statistically significant, showing a higher incidence of diagnostic and suggestive FME conclusions in recent CSA cases and a higher incidence of nonspecific FME conclusions in non-recent CSA cases (Table 6).

7. Characterization of judicial outcome

In 372 judicial outcomes provided by the Public Prosecutor Office, 69.1% were filed due to absent proof (26.9%) or insufficient proof (65.8%); 1.1% were temporary suspended, 1.9% dropped complaint. The remaining 28.0% cases faced prosecution in Criminal Court. The majority was convicted (80.8%) facing incarceration (40.5%), suspended sentence (53.6%) or security measures (6.0%), and 19.2% were acquitted. The average time between the time of FME and the time of the final judicial outcome was 15 months (Graph 1).

The statistical difference between recent and non recent CSA was not statistically significant regarding the judicial outcome of the alleged aggression (Table 7).

DISCUSSION

Establishing the differences between CSA reported in the first 72 hours and after 72 hours of the last sexual contact (recent and non-recent CSA) is extremely relevant for both forensic and legal terms as well as preventive and early detection interventions. CSA is very frequent and has serious consequences, but still being a taboo, the lack of information and data makes it difficult to deal with the issue, specifically in Portugal.

According to the literature [2-4], our study revealed that victims of CSA were mainly females, younger than 12 years old and that the majority of the alleged aggressors were males, usually family members. As in other studies [2], our study showed that most of the time, FME was performed after 72 hours post assault (77.4%) and revealed no physical injuries and unspecific findings, neither confirming nor discounting a child’s clear disclosure of sexual aggression.

Statistically significant differences between recent and non-recent CSA were found regarding to the type of family of the alleged victim, the relationship between the alleged aggressor and victim, the frequency of the alleged aggression, the circumstances of the alleged aggression, the motive that lead to suspicion of the alleged aggression, the first assistance place to the victim after the alleged aggression, the physical injuries at FME, the genetic study at FME, the forensic psychological assessment at FME, the findings of the alleged aggression and the FME conclusions of the alleged aggression, which is according to the characteristics of recent and non-recent CSA cases described in literature.

Recent CSA cases were related to: (a) nuclear family; (b) strange aggressors; (c) single events; (d) physical violence, weapon threatening, grooming and consent; (e) physical or biologic signs suggestive of aggression and witnessed events; (f) first health units and police assistance; (g) suggestive and nonspecific injuries; (h) presence of heterologous male profile; (i) diagnostic CSA findings; (j) diagnostic and suggestive FME conclusions.

Non recent CSA cases were related to: (a) recombined, extended or institutionalized/foster families; (b) familial aggressors; (c) sporadically and regular sexual contact; (d) verbal offenses; (e) absent injuries; (f) forensic psychological assessment; (g) unspecific CSA findings; (h) nonspecific FME conclusions.
Nuclear families are usually more cohesive, involving great care and support, allowing early reports of CSA and early FME. On the other hand, dysfunctional families tend to lack the attention and assistance needed in these cases to report them as soon as possible [13,14].

Literature reports that recent CSA cases are usually perpetrated by strangers to the victim, mostly in a single event, where the offender shows a very aggressive behavior towards the victim. The involvement is non-familial and the aggressor usually makes use of weapons, physical violence and grooming in order to control the victim and achieve his goals [9,14]. Moreover, studies report that in non-recent CSA cases, usually there is a higher level of emotional and coercive involvement between the aggressor and the victim, which creates a long lasting and secretive setting, contributing to regular sexual contact and later exposure of the case [2,4,9,13,15].

Recent CSA is usually involved in more intrusive and violent sexual practices, resulting in more injuries and physical or biological signs suggestive of aggression. This allows an early detection by the first suspicion (usually the parents) and first assistance in health units (usually hospital). In Portugal, it is by law, mandatory for any public sector employee to report every CSA suspicion to the Public Prosecutor (through the Police or the Legal Medicine Services) as it is considered a public crime. In opposition, non-recent CSA is usually associated with more verbal threats and less physical/sexual violence, allowing a lower visibility of the cases [9,13,15].

Previous studies [9,13,15] reported that as recent CSA involves more intrusive and violent practices, it is associated with a higher incidence of suggestive injuries; unlike non recent CSA, that is much more related to absent injuries at FME. In non-recent CSA cases, the possibility of proving the offense is compromised not only by the delay in conducting the examination, but also by the fact that non recent CSA tends to be physically less intrusive and presents lack of injuries and physical signs [2,6,9]. Literature refers that a normal genital examination at FME does not exclude the possibility of an occurred aggression, as usually, the absence of acute injuries is due to the nature of the non-invasive physical contact (touching, fondling, oral-genital contact), the stretching nature of the tissues without being injured after penetration, and the delay between the last sexual contact and FME that allows the healing of injuries [6,9,15].

In our study, the genetic study was performed in recent CSA, as recommended in previous studies, due to the fact that these cases present more intrusive sexual practices and an early FME (<72 hours post assault) [10,11]. As most of the time the reports occurred > 72 hours post assault (77.4%), in our study, only 11.6% performed genetic study. In 12 cases, a different genetic profile from the victim’s one was found, mostly it was identified on the victim’s body, which has a higher predictive value than the victim’s clothes. However, it is important to emphasize that the absence of DNA evidence does not exclude the aggression, as it may be a result of delayed presentation to the FME, or a consequence of the type of sexual practice itself, usually related to non-recent CSA [9,15].

Forensic psychological assessment is extremely relevant in non-recent CSA cases, as the lack of evidence or genetic results does not exclude sexual aggression [16]. In these cases, the diagnosis of CSA should be based on the history told by the victim and on a forensic psychological and social examination of the caregivers, the aggressor and the family [7,10,16]. At least in non-recent CSA, there must be a systematic forensic psychological examination of the child to evaluate both the verbal and non-verbal information, as well as the validity of the testimony, which also counts as valuable evidence in court. However, the validation of the victim’s testimony is only reliable if the child’s information is spontaneous and uncontaminated [16].

Guidelines [12] were used to classify the CSA findings. Only pregnancy and identification of sperm in specimen taken directly from a child’s body were considered as diagnostic findings. In our study, there were 2 cases of pregnant children and 10 cases of identification of heterologous male profile on the victim’s body, totaling 12 diagnostic findings.

After physical examination, laboratory studies and psychological investigation, it is important to reach a conclusion that combines all the parts of the FME [7]. As recent CSA is associated with more physical/sexual violence, more physical or biological signs suggestive of aggression, suggestive injuries, presence of heterologous male profile, diagnostic CSA findings, it is usually expected to be related to diagnostic and suggestive conclusions, unlike non recent CSA that usually presents nonspecific conclusions, due to the lack of evidence, absent injuries and nonspecific CSA findings [9, 15].

Previous studies [6] showed that convictions in CSA happened most frequently when FME conclusions are diagnostic or suggestive of CSA. This requires that FME must be performed by forensic professionals, specialized in the area of forensic sexology. A FME performed by an inexperienced medical expert in forensic practice may undermine the entire judicial process [17].

Our study revealed that 69.09% of the 372 judicial outcomes provided by the Public Prosecutor Office were filed due to absent proof or insufficient proof in 92.61%. Literature is in accordance with these results, reporting that the majority of CSA cases are filed as a result of little evidence [15,18].

Although there were 10 positive results for heterologous male profile in genetic studies and 2 pregnant children, considered diagnostic findings by the guidelines [12], only 7 of them resulted in conviction. This may be explained by the fact that the aggressor is less than 16 years-old, which, by the Portuguese law, is not subject to
prosecution; the circumstances of the aggression (consent of the sexual offense of a victim capable of judgment); and the insufficiency of evidence considered by the court. Most cases that faced prosecution in Criminal Court (27.96%) were convicted, the majority facing suspended sentence, results according to published literature [6].

CONCLUSION

FME especially in the first 72 hours post assault may be an essential tool for the evaluation and diagnosis of CSA. It is highly important to understand the differences between recent and non-recent CSA, to know the reality of CSA and improve new interventions towards greater prevention and early diagnosis. In our study, results highlight some particular characteristics that contribute to the seriousness of these cases: The results of CSA cases characterized in this study are consistent with published national and foreign literature. Our study revealed statistically significant differences between recent and non-recent CSA, regarding to the type of family of the alleged victim, the relationship between the alleged aggressor and victim, the frequency of the alleged aggression, the circumstances of the alleged aggression, the motive that lead to suspicion of the alleged aggression, the first assistance place to the victim after the alleged aggression, the physical injuries at FME, the genetic study at FME, the forensic psychological assessment at FME, the CSA findings and the FME conclusions of the alleged aggression, which is according to the characteristics of recent and non-recent CSA cases described in literature.

Despite increasing recognition of CSA, there is still a community taboo to disclosure these cases. CSA is a very disturbing topic, with serious consequences for all the victims, aggressors and corresponding families, but poorly studied, specifically in Portugal. Protecting children from sexual offenses is a primary goal. It is important to underline that CSA reports in the first 72 hours, are most likely to present injuries and positive physical and biological findings during FME, proving sexual contact and allowing an effective prosecution in court. Further prospective studies are needed, to achieve new detection, diagnosing and preventing methods.

CONFLICT OF INTEREST

The authors declare no conflict of interests related to this study.

ETHICAL STANDARDS

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (5). Informed consent was obtained from all patients for being included in the study.

BIBLIOGRAPHY

### Table 1. Characterization of the alleged victim (n=372)

<table>
<thead>
<tr>
<th></th>
<th>≤72h (n=84)</th>
<th>&gt;72h (n=288)</th>
<th>( \rho )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>70 (83.3)</td>
<td>220 (76.4)</td>
<td>0.231</td>
</tr>
<tr>
<td>Male</td>
<td>14 (16.7)</td>
<td>68 (23.6)</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>9.6</td>
<td>10.3</td>
<td></td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min.</td>
<td>1.6</td>
<td>0.4</td>
<td>0.25</td>
</tr>
<tr>
<td>Max.</td>
<td>17.1</td>
<td>18.0</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>4.5</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td><strong>Occupational activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>17 (20.2)</td>
<td>49 (17.0)</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>61 (72.6)</td>
<td>221 (76.7)</td>
<td>0.74</td>
</tr>
<tr>
<td>Other/No information</td>
<td>6 (7.1)</td>
<td>18 (6.3)</td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>40 (47.6)</td>
<td>94 (32.6)</td>
<td></td>
</tr>
<tr>
<td>Monoparental</td>
<td>16 (19.1)</td>
<td>56 (19.4)</td>
<td></td>
</tr>
<tr>
<td>Recombined</td>
<td>4 (4.8)</td>
<td>34 (11.8)</td>
<td>0.008</td>
</tr>
<tr>
<td>Extended</td>
<td>4 (4.8)</td>
<td>41 (14.2)</td>
<td></td>
</tr>
<tr>
<td>Institutionalization/Foster family</td>
<td>2 (2.4)</td>
<td>19 (6.6)</td>
<td></td>
</tr>
<tr>
<td>No information</td>
<td>18 (21.4)</td>
<td>44 (15.3)</td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Characterization of the alleged aggressor (n=372)

<table>
<thead>
<tr>
<th></th>
<th>≤72h (n=84)</th>
<th>&gt;72h (n=288)</th>
<th>ρ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>76 (90.5)</td>
<td>260 (90.3)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2 (2.4)</td>
<td>1 (0.4)</td>
<td>0.157</td>
</tr>
<tr>
<td>No information</td>
<td>6 (7.1)</td>
<td>27 (9.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-17</td>
<td>6 (7.1)</td>
<td>20 (6.9)</td>
<td></td>
</tr>
<tr>
<td>18-30</td>
<td>15 (17.9)</td>
<td>44 (15.3)</td>
<td></td>
</tr>
<tr>
<td>31-40</td>
<td>13 (15.5)</td>
<td>39 (13.5)</td>
<td>0.75</td>
</tr>
<tr>
<td>41-50</td>
<td>3 (3.6)</td>
<td>22 (7.6)</td>
<td></td>
</tr>
<tr>
<td>&gt;50</td>
<td>4 (4.8)</td>
<td>25 (8.7)</td>
<td></td>
</tr>
<tr>
<td>No information</td>
<td>43 (51.2)</td>
<td>138 (47.9)</td>
<td></td>
</tr>
<tr>
<td><strong>Occupational Activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job</td>
<td>16 (19.1)</td>
<td>52 (18.1)</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>7 (8.3)</td>
<td>11 (3.8)</td>
<td>0.25</td>
</tr>
<tr>
<td>Unemployed/Retired</td>
<td>6 (7.1)</td>
<td>27 (9.4)</td>
<td></td>
</tr>
<tr>
<td>No information</td>
<td>55 (65.5)</td>
<td>198 (68.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Relationship with the victim</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stranger</td>
<td>9 (10.7)</td>
<td>7 (2.4)</td>
<td></td>
</tr>
<tr>
<td>Known to the victim</td>
<td>37 (44.1)</td>
<td>109 (37.9)</td>
<td>0.004</td>
</tr>
<tr>
<td>Familial</td>
<td>32 (38.1)</td>
<td>147 (51.0)</td>
<td></td>
</tr>
<tr>
<td>No information</td>
<td>6 (7.1)</td>
<td>25 (8.7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≤72h (n=84)</td>
<td>&gt;72h (n=288)</td>
<td>ρ</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------</td>
<td>--------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Sexual practices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fondling/Contact</td>
<td>29 (34.5)</td>
<td>79 (27.4)</td>
<td></td>
</tr>
<tr>
<td>between genitals</td>
<td>8 (9.5)</td>
<td>20 (6.9)</td>
<td></td>
</tr>
<tr>
<td>Attempted penetration</td>
<td>2 (2.4)</td>
<td>5 (1.7)</td>
<td></td>
</tr>
<tr>
<td>Oral penetration</td>
<td>9 (10.7)</td>
<td>28 (9.7)</td>
<td>0.71</td>
</tr>
<tr>
<td>Anal penetration</td>
<td>13 (15.5)</td>
<td>57 (19.8)</td>
<td></td>
</tr>
<tr>
<td>Vaginal penetration</td>
<td>6 (7.1)</td>
<td>16 (5.6)</td>
<td></td>
</tr>
<tr>
<td>Vaginal and/or</td>
<td>17 (20.2)</td>
<td>83 (28.8)</td>
<td></td>
</tr>
<tr>
<td>anal and/or oral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>penetration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No information</td>
<td>55 (65.5)</td>
<td>162 (56.3)</td>
<td>0.127</td>
</tr>
<tr>
<td>Place</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victim’s and/or</td>
<td>25 (29.8)</td>
<td>80 (27.8)</td>
<td></td>
</tr>
<tr>
<td>aggressor’s home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8 (9.5)</td>
<td>65 (22.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No information</td>
<td>4 (4.8)</td>
<td>46 (16.0)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single event</td>
<td>50 (59.5)</td>
<td>87 (30.2)</td>
<td></td>
</tr>
<tr>
<td>Sporadically</td>
<td>8 (9.5)</td>
<td>65 (22.6)</td>
<td></td>
</tr>
<tr>
<td>Regularly</td>
<td>4 (4.8)</td>
<td>28 (9.7)</td>
<td></td>
</tr>
<tr>
<td>No information</td>
<td>22 (26.2)</td>
<td>108 (37.5)</td>
<td></td>
</tr>
<tr>
<td>Verbal offenses</td>
<td>3 (3.6)</td>
<td>37 (12.9)</td>
<td></td>
</tr>
<tr>
<td>Physical violence</td>
<td>18 (21.4)</td>
<td>37 (12.9)</td>
<td>0.035</td>
</tr>
<tr>
<td>Others</td>
<td>21 (25.0)</td>
<td>53 (18.4)</td>
<td></td>
</tr>
<tr>
<td>No information</td>
<td>42 (50.0)</td>
<td>161 (55.9)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Characterization of the first suspicion (n=372)

<table>
<thead>
<tr>
<th>First suspicion</th>
<th>≤72h (n=84)</th>
<th>&gt;72h (n=288)</th>
<th>ρ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatives</td>
<td>37 (44.1)</td>
<td>105 (36.5)</td>
<td>.</td>
</tr>
<tr>
<td>Other people</td>
<td>14 (16.7)</td>
<td>81 (28.1)</td>
<td>0.1</td>
</tr>
<tr>
<td>No information</td>
<td>33 (39.3)</td>
<td>102 (35.4)</td>
<td>.</td>
</tr>
<tr>
<td>Motive for suspicion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical or biological signs</td>
<td>16 (19.1)</td>
<td>38 (13.2)</td>
<td>.</td>
</tr>
<tr>
<td>History revealed by the child</td>
<td>34 (40.5)</td>
<td>119 (41.3)</td>
<td>0.008</td>
</tr>
<tr>
<td>Eye witness</td>
<td>16 (19.1)</td>
<td>26 (9.0)</td>
<td>.</td>
</tr>
<tr>
<td>No information</td>
<td>18 (21.4)</td>
<td>105 (36.5)</td>
<td>.</td>
</tr>
<tr>
<td>First assistance place</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health units</td>
<td>35 (41.7)</td>
<td>54 (18.8)</td>
<td>.</td>
</tr>
<tr>
<td>Police</td>
<td>15 (17.9)</td>
<td>37 (12.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Protection services</td>
<td>6 (7.1)</td>
<td>29 (10.1)</td>
<td>.</td>
</tr>
<tr>
<td>Others</td>
<td>2 (2.4)</td>
<td>6 (2.1)</td>
<td>.</td>
</tr>
<tr>
<td>No information</td>
<td>26 (31.0)</td>
<td>162 (56.3)</td>
<td>.</td>
</tr>
</tbody>
</table>
Table 5. Characterization of the forensic medical examination (n=372)

<table>
<thead>
<tr>
<th></th>
<th>≤72h (n=84) n (%)</th>
<th>&gt;72h (n=288) n (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Injuries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggestive</td>
<td>22 (26.19)*</td>
<td>47 (16.32)</td>
<td>0.002</td>
</tr>
<tr>
<td>Non-specific</td>
<td>21 (25.0)</td>
<td>40 (13.9)</td>
<td></td>
</tr>
<tr>
<td>No injuries</td>
<td>41 (48.8)</td>
<td>201 (69.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Genetic studies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>12 (14.3)</td>
<td>0 (0.0)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Negative</td>
<td>31 (36.9)</td>
<td>8 (2.8)</td>
<td></td>
</tr>
<tr>
<td>Not performed</td>
<td>41 (48.8)</td>
<td>280 (97.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Toxicological studies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requested</td>
<td>4 (4.8)</td>
<td>1 (0.4)</td>
<td></td>
</tr>
<tr>
<td>Not requested</td>
<td>80 (95.2)</td>
<td>287 (99.7)</td>
<td></td>
</tr>
<tr>
<td><strong>Microbiological studies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requested</td>
<td>7 (8.3)</td>
<td>16 (5.6)</td>
<td></td>
</tr>
<tr>
<td>Not requested</td>
<td>77 (91.7)</td>
<td>272 (94.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Forensic psychological Assessment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requested</td>
<td>43 (51.2)</td>
<td>198 (68.8)</td>
<td>0.003</td>
</tr>
<tr>
<td>Not requested</td>
<td>41 (48.8)</td>
<td>90 (31.3)</td>
<td></td>
</tr>
<tr>
<td><strong>Findings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnostic</td>
<td>10 (11.4)</td>
<td>2 (0.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Suggestive</td>
<td>18 (21.4)</td>
<td>45 (15.6)</td>
<td></td>
</tr>
<tr>
<td>Unspecific</td>
<td>56 (66.7)</td>
<td>241 (83.7)</td>
<td></td>
</tr>
</tbody>
</table>

Table 6. Characterization of forensic medical examination conclusions (n=372)

<table>
<thead>
<tr>
<th></th>
<th>≤72h (n=84) n (%)</th>
<th>&gt;72h (n=288) n (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic</td>
<td>9 (10.7)</td>
<td>3 (1.0)</td>
<td></td>
</tr>
<tr>
<td>Suggestive</td>
<td>12 (14.3)</td>
<td>33 (11.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Nonspecific</td>
<td>63 (75.0)</td>
<td>252 (87.5)</td>
<td></td>
</tr>
</tbody>
</table>
Table 7. Characterization of judicial outcome (n=372)

<table>
<thead>
<tr>
<th></th>
<th>≤72h (n=84)</th>
<th>&gt;72h (n=288)</th>
<th>ρ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conviction</td>
<td>20 (23.8%)</td>
<td>64 (22.2%)</td>
<td></td>
</tr>
<tr>
<td>Non conviction</td>
<td>64 (76.2%)</td>
<td>224 (77.8%)</td>
<td>0.76</td>
</tr>
</tbody>
</table>

Graph 1 - Characterization of judicial outcome (n=372)
AGRADECIMENTOS

À Professora Doutora Teresa Magalhães, pela orientação, a disponibilidade, as críticas e as sugestões que permitiram a conclusão deste trabalho.

À Mestre Patrícia Jardim, pela disponibilidade, o apoio, a dedicação, o incentivo e a amizade ao longo desta jornada.

À Mestre Fernanda Rodrigues, por ter autorizado a recolha dos dados no Serviço de Clínica Forense.

À Mestre Maria João Alves e ao Mestre Ricardo Escada, pela disponibilidade na resolução de questões administrativas.

À minha mãe, pelo incansável apoio moral, pelas palavras de confiança e pela capacidade de me ensinar a acreditar que os sonhos podem tornar-se realidade.

Ao meu pai, pelo acompanhamento, o incentivo, a orientação e por ter despertado em mim o gosto pela aprendizagem e pela vontade de querer saber sempre mais.

À minha irmã Sofia, pelo encorajamento e pelo orgulho que tem em mim.

A toda a minha família, pelo carinho e pelas palavras de estímulo.

Ao Pedro, que esteve sempre presente, pela confiança, pelo seu apoio incondicional e por acreditar em mim, incentivá-me e acompanhar-me na concretização dos meus sonhos.

À Eduarda, pelo apoio e o encorajamento, principalmente na fase final deste trabalho.

Aos meus amigos, que acreditaram sempre em mim.

Por último, um muito obrigado a todos aqueles que, mesmo não sendo mencionados aqui, me apoiaram e me deram força para que este trabalho seja uma realidade.

"O valor das coisas não está no tempo em que elas duram,
mas na intensidade com que acontecem.

Por isso existem momentos inesquecíveis,
coisas inexplicáveis e pessoas incomparáveis".

Fernando Pessoa
REGRAS DE PUBLICAÇÃO

(Revista de Referência: International Journal of Legal Medicine)

1. Manuscript Submission

Submission of a manuscript implies: that the work described has not been published before; that it is not under consideration for publication anywhere else; that its publication has been approved by all co-authors, if any, as well as by the responsible authorities – tacitly or explicitly – at the institute where the work has been carried out. The publisher will not be held legally responsible should there be any claims for compensation.

Permissions

Authors wishing to include figures, tables, or text passages that have already been published elsewhere are required to obtain permission from the copyright owner(s) for both the print and online format and to include evidence that such permission has been granted when submitting their papers. Any material received without such evidence will be assumed to originate from the authors.

Online Submission

Authors should submit their manuscripts online. Electronic submission substantially reduces the editorial processing and reviewing times and shortens overall publication times. Please follow the hyperlink “Submit online” on the right and upload all of your manuscript files following the instructions given on the screen.

2. Title Page

The title page should include:

- The name(s) of the author(s)
- A concise and informative title
- The affiliation(s) and address(es) of the author(s)
- The e-mail address, telephone and fax numbers of the corresponding author

Abstract

Please provide an abstract of 150 to 250 words. The abstract should not contain any undefined abbreviations or unspecified references.

Keywords

Please provide 4 to 6 keywords which can be used for indexing purposes.
3. Text

Text Formatting

Manuscripts should be submitted in Word.

- Use a normal, plain font (e.g., 10-point Times Roman) for text.
- Use italics for emphasis.
- Use the automatic page numbering function to number the pages.
- Do not use field functions.
- Use tab stops or other commands for indents, not the space bar.
- Use the table function, not spreadsheets, to make tables.
- Use the equation editor or MathType for equations.
- Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Manuscripts with mathematical content can also be submitted in LaTeX.

- LaTeX macro package (zip, 182 kB)

Headings

Please use no more than three levels of displayed headings.

Abbreviations

Abbreviations should be defined at first mention and used consistently thereafter.

Footnotes

Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation, and they should never include the bibliographic details of a reference. They should also not contain any figures or tables.

Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data). Footnotes to the title or the authors of the article are not given reference symbols.

Always use footnotes instead of endnotes.

Acknowledgments

Acknowledgments of people, grants, funds, etc. should be placed in a separate section before the reference list. The names of funding organizations should be written in full.

4. References

Citation

Reference citations in the text should be identified by numbers in square brackets. Some examples:

1. Negotiation research spans many disciplines [3].
2. This result was later contradicted by Becker and Seligman [5].

3. This effect has been widely studied [1-3, 7].

Reference list

The list of references should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text. Do not use footnotes or endnotes as a substitute for a reference list.

The entries in the list should be numbered consecutively.

- Journal article
  

Ideally, the names of all authors should be provided, but the usage of “et al” in long author lists will also be accepted:


- Article by DOI
  

- Book
  

- Book chapter
  

- Online document
  

- Dissertation
  
Trent JW (1975) Experimental acute renal failure. Dissertation, University of California

Always use the standard abbreviation of a journal’s name according to the ISSN List of Title Word Abbreviations, see

- ISSN.org LTWA

For authors using EndNote, Springer provides an output style that supports the formatting of in-text citations and reference list.

- EndNote style (zip, 2 kB)

Authors preparing their manuscript in LaTeX can use the bibtex file spbasic.bst which is included in Springer’s LaTeX macro package.
5. Tables

- All tables are to be numbered using Arabic numerals.
- Tables should always be cited in text in consecutive numerical order.
- For each table, please supply a table caption (title) explaining the components of the table.
- Identify any previously published material by giving the original source in the form of a reference at the end of the table caption.
- Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

6. Artwork

For the best quality final product, it is highly recommended that you submit all of your artwork – photographs, line drawings, etc. – in an electronic format. Your art will then be produced to the highest standards with the greatest accuracy to detail. The published work will directly reflect the quality of the artwork provided.

Electronic Figure Submission

- Supply all figures electronically.
- Indicate what graphics program was used to create the artwork.
- For vector graphics, the preferred format is EPS; for halftones, please use TIFF format. MS Office files are also acceptable.
- Vector graphics containing fonts must have the fonts embedded in the files.
- Name your figure files with "Fig" and the figure number, e.g., Fig1.eps.

Line Art

- Definition: Black and white graphic with no shading.
- Do not use faint lines and/or lettering and check that all lines and lettering within the figures are legible at final size.
- All lines should be at least 0.1 mm (0.3 pt) wide.
- Scanned line drawings and line drawings in bitmap format should have a minimum resolution of 1200 dpi.
- Vector graphics containing fonts must have the fonts embedded in the files.

Halftone Art

Definition: Photographs, drawings, or paintings with fine shading, etc.

- If any magnification is used in the photographs, indicate this by using scale bars within the figures themselves.
- Halftones should have a minimum resolution of 300 dpi.
Combination Art

- Definition: a combination of halftone and line art, e.g., halftones containing line drawing, extensive lettering, color diagrams, etc.
- Combination artwork should have a minimum resolution of 600 dpi.

Color Art

- Color art is free of charge for online publication.
- If black and white will be shown in the print version, make sure that the main information will still be visible. Many colors are not distinguishable from one another when converted to black and white. A simple way to check this is to make a xerographic copy to see if the necessary distinctions between the different colors are still apparent.
- If the figures will be printed in black and white, do not refer to color in the captions.
- Color illustrations should be submitted as RGB (8 bits per channel).

Figure Lettering

- To add lettering, it is best to use Helvetica or Arial (sans serif fonts).
- Keep lettering consistently sized throughout your final-sized artwork, usually about 2–3 mm (8–12 pt).
- Variance of type size within an illustration should be minimal, e.g., do not use 8-pt type on an axis and 20-pt type for the axis label.
- Avoid effects such as shading, outline letters, etc.
- Do not include titles or captions within your illustrations.

Figure Numbering

- All figures are to be numbered using Arabic numerals.
- Figures should always be cited in text in consecutive numerical order.
- Figure parts should be denoted by lowercase letters (a, b, c, etc.).
- If an appendix appears in your article and it contains one or more figures, continue the consecutive numbering of the main text. Do not number the appendix figures, "A1, A2, A3, etc." Figures in online appendices (Electronic Supplementary Material) should, however, be numbered separately.

Figure Captions

- Each figure should have a concise caption describing accurately what the figure depicts. Include the captions in the text file of the manuscript, not in the figure file.
- Figure captions begin with the term Fig. in bold type, followed by the figure number, also in bold type.
- No punctuation is to be included after the number, nor is any punctuation to be placed at the end of the caption.
- Identify all elements found in the figure in the figure caption; and use boxes, circles, etc., as coordinate points in graphs.
- Identify previously published material by giving the original source in the form of a reference citation at the end of the figure caption.
Figure Placement Size

- When preparing your figures, size figures to fit in the column width.
- For most journals the figures should be 39 mm, 84 mm, 129 mm, or 174 mm wide and not higher than 234 mm.
- For books and book-sized journals, the figures should be 80 mm or 122 mm wide and not higher than 198 mm.

Permissions

If you include figures that have already been published elsewhere, you must obtain permission from the copyright owner(s) for both the print and online format. Please be aware that some publishers do not grant electronic rights for free and that Springer will not be able to refund any costs that may have occurred to receive these permissions. In such cases, material from other sources should be used.

Accessibility

In order to give people of all abilities and disabilities access to the content of your figures, please make sure that

- All figures have descriptive captions (blind users could then use a text-to-speech software or a text-to-Braille hardware)
- Patterns are used instead of or in addition to colors for conveying information (color-blind users would then be able to distinguish the visual elements)
- Any figure lettering has a contrast ratio of at least 4.5:1

7. Electronic Supplementary Material

Springer accepts electronic multimedia files (animations, movies, audio, etc.) and other supplementary files to be published online along with an article or a book chapter. This feature can add dimension to the author’s article, as certain information cannot be printed or is more convenient in electronic form.

Submission

- Supply all supplementary material in standard file formats.
- Please include in each file the following information: article title, journal name, author names; affiliation and e-mail address of the corresponding author.
- To accommodate user downloads, please keep in mind that larger-sized files may require very long download times and that some users may experience other problems during downloading.

Audio, Video and Animations

- Always use MPEG-1 (.mpg) format.

Text and Presentations

- Submit your material in PDF format; .doc or .ppt files are not suitable for long-term viability.
- A collection of figures may also be combined in a PDF file.
Spreadsheets

- Spreadsheets should be converted to PDF if no interaction with the data is intended.
- If the readers should be encouraged to make their own calculations, spreadsheets should be submitted as .xls files (MS Excel).

Specialized Formats

- Specialized format such as .pdb (chemical), .wrl (VRML), .nb (Mathematica notebook), and .tex can also be supplied.

Collecting Multiple Files

- It is possible to collect multiple files in a .zip or .gz file.

Numbering

- If supplying any supplementary material, the text must make specific mention of the material as a citation, similar to that of figures and tables.
- Refer to the supplementary files as “Online Resource”, e.g., "... as shown in the animation (Online Resource 3)", "... additional data are given in Online Resource 4".
- Name the files consecutively, e.g. “ESM_3.mpg”, “ESM_4.pdf”.

Captions

- For each supplementary material, please supply a concise caption describing the content of the file.

Processing of supplementary files

- Electronic supplementary material will be published as received from the author without any conversion, editing, or reformatting.

Accessibility

In order to give people of all abilities and disabilities access to the content of your supplementary files, please make sure that

- The manuscript contains a descriptive caption for each supplementary material
- Video files do not contain anything that flashes more than three times per second (so that users prone to seizures caused by such effects are not put at risk)

8. Integrity of research and reporting

Ethical standards

Manuscripts submitted for publication must contain a declaration that the experiments comply with the current laws of the country in which they were performed. Please include this note in a separate section before the reference list.
**Conflict of interest**

Authors must indicate whether or not they have a financial relationship with the organization that sponsored the research. This note should be added in a separate section before the reference list.

If no conflict exists, authors should state: The authors declare that they have no conflict of interest.

**Animal Welfare**

If applicable, the author attests that experiments conducted on animal subjects complied with all applicable laws, regulations, and standards in the country where the studies were performed.

In general, it is expected that animal experimentation published in the International Journal of Legal Medicine complies with prevailing standards in either the European Union or the United States.

- European Union standards
- United States standards

**9. After acceptance**

Upon acceptance of your article you will receive a link to the special Author Query Application at Springer’s web page where you can sign the Copyright Transfer Statement online and indicate whether you wish to order OpenChoice, offprints, or printing of figures in color.

Once the Author Query Application has been completed, your article will be processed and you will receive the proofs.

**Open Choice**

In addition to the normal publication process (whereby an article is submitted to the journal and access to that article is granted to customers who have purchased a subscription), Springer provides an alternative publishing option: Springer Open Choice. A Springer Open Choice article receives all the benefits of a regular subscription-based article, but in addition is made available publicly through Springer’s online platform SpringerLink.

- Springer Open Choice

**Copyright transfer**

Authors will be asked to transfer copyright of the article to the Publisher (or grant the Publisher exclusive publication and dissemination rights). This will ensure the widest possible protection and dissemination of information under copyright laws.

Open Choice articles do not require transfer of copyright as the copyright remains with the author. In opting for open access, the author(s) agree to publish the article under the Creative Commons Attribution License.

**Offprints**

Offprints can be ordered by the corresponding author.
Color illustrations

Online publication of color illustrations is free of charge. For color in the print version, authors will be expected to make a contribution towards the extra costs.

Proof reading

The purpose of the proof is to check for typesetting or conversion errors and the completeness and accuracy of the text, tables and figures. Substantial changes in content, e.g., new results, corrected values, title and authorship, are not allowed without the approval of the Editor.

After online publication, further changes can only be made in the form of an Erratum, which will be hyperlinked to the article.

Online First

The article will be published online after receipt of the corrected proofs. This is the official first publication citable with the DOI. After release of the printed version, the paper can also be cited by issue and page numbers.

10. Scientific style

- Please always use internationally accepted signs and symbols for units, SI units.
- Genus and species names should be in italics.