

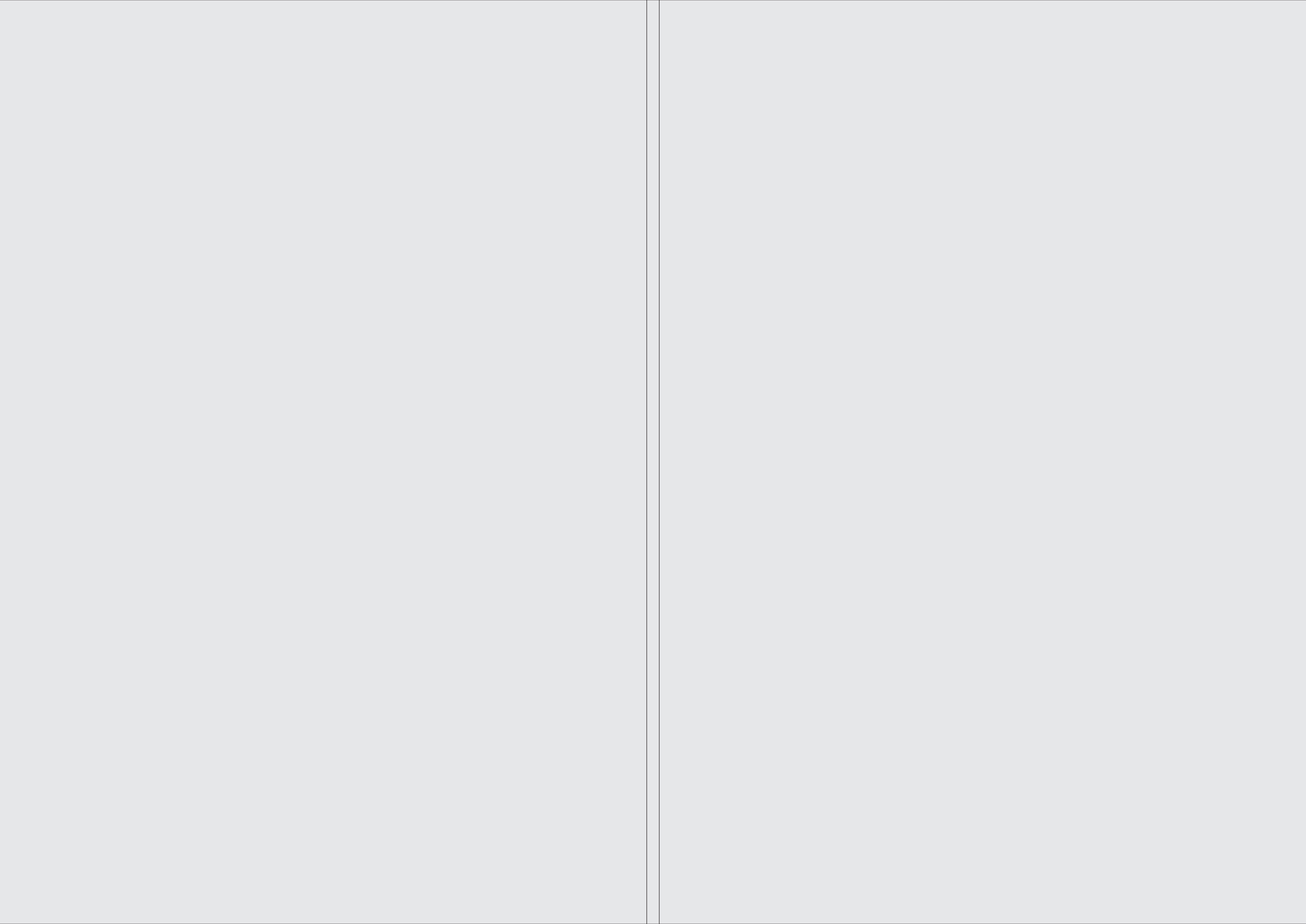


The Galle Medical Journal

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Editorial	i	Predatory or Fake Journals; a real threat to the credible publishers
	ii	Instructions to Authors
Research Papers	1	Domestic violence exposure of married women in a rural area in Sri Lanka Kaushalya KSS, Ponnampereuma TT
	9	Deliberate self-harm in adolescents in Southern Sri Lanka; a hospital based study Senadheera C, Marecek J
	15	Administration of paracetamol to children; do parents adhere to recommendations? Wanni Arachchi TI, Gamage MWK, Jayasinghe SS
Reviews	21	Right to Information Act; ultimatum for an accountable healthcare system Perera UCP
Case Reports	27	A patient with leptospirosis associated severe pulmonary haemorrhagic syndrome successfully managed with Extra Corporeal Membranous Oxygenation Palliyaguruge NU, Egodage UK, Gunasinghe G, Harischandra DVT, Weerakoon RR
	31	Reversible posterior leukoencephalopathy syndrome in a patient with systemic lupus erythematosus; a diagnostic dilemma Udugama JMM, Lekamwasam JDVC, Vijayabandara MSK, Chathurani MMI, Abeyratne WKDT
	34	Dangers in the beautiful ocean; a case report of anaphylaxis due to a jellyfish sting Ruben J, Sasanka PLL, Aloka WPP, Sirisena DC, De Silva MAH, Yahathugoda TC





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CONTENTS

-
- | | | |
|------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Editorial | I | Predatory or Fake Journals; a real threat to the credible publishers |
| | ii | Instructions to Authors |
| Research Papers | 1 | Domestic violence exposure of married women in a rural area in Sri Lanka
Kaushalya KSS, Ponnampereuma TT |
| | 9 | Deliberate self-harm in adolescents in Southern Sri Lanka; a hospital based study
Senadheera C, Marecek J |
| | 15 | Administration of paracetamol to children; do parents adhere to recommendations?
Wanni Arachchi TI, Gamage MWK, Jayasinghe SS |
| Reviews | 21 | Right to Information Act; ultimatum for an accountable healthcare system
Perera UCP |
| Case Reports | 27 | A patient with leptospirosis associated severe pulmonary haemorrhagic syndrome successfully managed with Extra Corporeal Membranous Oxygenation
Palliyaguruge NU, Egodage UK, Gunasinghe G, Harischandra DVT, Weerakoon RR |
| | 31 | Reversible posterior leukoencephalopathy syndrome in a patient with systemic lupus erythematosus; a diagnostic dilemma
Udugama JMM, Lekomwasam JDVC, Vijayabandara MSK, Chathurani MMI, Abeyratne WKDT |
| | 34 | Dangers in the beautiful ocean; a case report of anaphylaxis due to a jellyfish sting
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Editorial

Predatory or Fake Journals: a real threat to the credible publishers

Fake or predatory journals have mushroomed during the recent past and become a real treat to the credible journals and publishers. The “online open access” policy, when introduced a decade ago, was welcomed by the scientific community as a positive step in the dissemination of knowledge especially to regions with financial constraints. Fake journals are a byproduct of this policy and the industry is a lucrative business now.

This industry thrives on the “publish or perish” culture particularly seen among academia and novice and over enthusiastic academics are the victims of this immoral industry. Questionable journals share certain common characteristics helping somewhat easy recognition. These journals publish anything and everything for a fee and have a rapid review process. Mr. Jeffry Beall, a research librarian in the University of Colorado, maintains a registry of fake journals “Predatory open access journals” using some attributes they share.

Fake journals have no address or contact information other than the corresponding email address. They are not linked to a recognized institution or organization. Submission guidelines are nonspecific and review process is unclear. These features question the credibility of a journal.

The prime duty of a journal is to disseminate accurate and valid scientific information to the relevant audience. Some prestigious journals, however, have a limited circulation, primarily due to high subscription cost. Fake journals have recognized this weakness and entice potential authors with rapid review process and wider visibility of their work. Academics require maintaining a high degree of suspicion in order to avoid becoming victims of this immoral industry.

Sarath Lekamwasam

Eisha Waidyarathne

Editors / GMJ

GALLE MEDICAL JOURNAL; INSTRUCTIONS TO AUTHORS

The Galle Medical Journal is published by the Galle Medical Association. The *journal* is published biannually, March and September and the submissions are accepted throughout the year. The aims of the journal are to foster co-operation among the medical fraternity and to be a forum to make literary contributions, share experiences encountered in medical practice, update their knowledge and have debates on topics related to all aspects of medicine. Also, we attempt to cater to the educational needs especially of the postgraduate trainees. The *Journal* publishes original articles, reviews, leading articles and case reports. When an article is submitted for publication, we expect that the work it reports has not been published, submitted simultaneously to another journal or accepted for publication elsewhere. All manuscripts will be reviewed anonymously before acceptance.

Manuscripts must be submitted with the text type written in 12-point Times New Roman font double spaced. Text and all illustrative material should be submitted in two hard copies and the electronic version in Microsoft Word document format. In order to avoid delay we require authors to comply with the following requirements. **All manuscripts should accompany a covering letter indicating the number of words in the manuscript, institution where ethical clearance was granted, conflict of interests and contact details of the corresponding author.**

Types of contributions:

Review articles and Leading articles: We encourage submission of review or leading articles which are less than 3000 words in length and address topics of current interest. They should be supported by no more than 20 references. Submissions may be subjected to external review before acceptance.

Original articles: Should normally be in the format of introduction, methods, results and discussion. Each manuscript must have a structured abstract of 200 words. The text should be limited to 3000 words and maximum of 5 tables/figures taken together with no more than 15 references. Lengthy manuscripts are likely to be returned for shortening. The discussion in particular should be clear, concise and should be limited to matters arising directly from the results. Avoid discursive speculation.

Case Reports: These should not exceed 750 words and 5 references; no abstract is required. Case report should be informative and devoid of irrelevant details. Case report should have a clear message or learning point and this should be highlighted adequately. Rarity of the case does not mean it is suitable for publication. Written consent of the patient should be submitted together with the case report, especially when photographs are used.

References:

These should conform to the Vancouver style. The reference in the text should be numbered consecutively in Arabic numerals in parentheses in the same line of the text in the order in which they appear. The first five authors should be listed and if there are more than five, then the first three should be listed followed by et al. Examples are given below:

1. Kumar A, Patton DJ, Friedrich MG. The emerging clinical role of cardiovascular magnetic resonance imaging. *Canadian Journal of Cardiology* 2010; **26**(6): 313-22.
2. Calenoff L, Rogers L. Esophageal complication of surgery and lifesaving procedures. In: Meyers M, Ghahremani G, eds. *Iatrogenic Gastrointestinal Complications*. New York: Springer, 1981: 23-63.

Units / Abbreviations:

Authors should follow the SI system of units (except for blood pressure which is expressed in mmHg). Authors should use abbreviations sparingly and they should be used consistently throughout the text.

Manuscripts that do not conform to these requirements will be returned for necessary modifications.

Manuscripts should be addressed to Chief Editors, Galle Medical Association, Teaching Hospital, Karapitiya and all soft copies should be sent to gmathk@gmail.com

Right to Information Act; ultimatum for an accountable healthcare system

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The right of access to information held by public authorities is a guaranteed fundamental right of any Sri Lankan under the 19th amendment to the Constitution (1). To give effect to this right the parliament adopted the Right to Information Act No 12 of 2016 (RTI Act) which gives the legal framework for access to information held by public authorities. The RTI Act came into force on the 4th August 2016.

The Act received high levels of support from both civil society and government, and was enacted unanimously by the Parliament. The Act's successful passage was the culmination of a history of prior attempts to enact Right to Information (RTI) legislation since the mid-1990s, many of which failed to progress beyond draft stage.

The preamble to the RTI Act states that it aims to 'foster a culture of transparency and accountability in public authorities', thereby enabling citizens of Sri Lanka to 'fully participate in public life through combating corruption and promoting accountability and good governance' (2). It grants Sri Lankan citizens the right of access to information in the possession, custody or control over an estimated 4,500 public authorities (3). The provisions of the Act pertaining to the supply of information are due to come into effect within a period of six months after its certification, and no later than one year since the same (4).

In October 2016, the Ministry of Parliamentary Reforms and Mass Media directed ministries, provincial councils and other government departments to: (i) nominate Information Officers for all institutions falling under their purview, and (ii) archive and maintain information and records. Furthermore, the Ministry issued a gazette

notification stating that the RTI Act will come into operation on 3rd February 2017 (5). Accordingly, all public authorities falling under the scope of RTI are now expected to be able to receive and process RTI requests. Under its powers in terms of section 41(2) of the RTI Act, the Ministry passed a series of Regulations governing RTI implementation. These Regulations set out the procedure on matters including: (a) the initiation of information requests, (b) rejection of information requests, and (c) continuous proactive disclosure.

This is a brief attempt to analyse the content of RTI Act No. 12 of 2016 and to realize the impact of it to the healthcare sector.

Sri Lanka's RTI Act is regarded as the third strongest in the world, and the strongest in South Asia (6). Consultations with Civil Society Organizations (CSO) actors during all stages in the drafting process ensured that the Bill was compliant with international standards. For instance, CSOs played a role in ensuring that provisions relating to the narrow framing of denial clauses, and the proactive disclosure of information by Ministries were incorporated in the RTI Act. Moreover, the technical expertise of CSO actors involved in the Drafting Committee and the RTI Advisory Task force ensured that progressive elements of the Bill, such as the public interest override clause, were retained in the text during the drafting process.

Health Sector and RTI Act

The Act gives every citizen the right to access information that is in the possession, custody or control of a public authority. 'Information', under the Act includes a wide variety of material such as

records, documents, memos, emails, opinions, advices, press releases, memorandum, circulars, orders, log books, contracts, reports, papers, samples, models, correspondence, draft legislation, book, plan, map, drawing, diagram, pictorial or graphic work, photograph, film, microfilm, sound recording, video tape, machine readable record, computer records and other documentary material (7). Accordingly the multiple formats of documents and material currently used in the healthcare sector including ministry circulars, all types of patient registers, duty rosters, guidelines / protocols / flow charts, bed head tickets, theatre notes, ICU records, observation charts, patient investigation reports, radiographs, ultra sound, CT & MRI scans / reports, all types of retained human tissues, all types of medico-legal forms and reports, night reports, incident reports and disciplinary inquiry reports will directly come under the interpretation of 'Information' of the RTI Act. Further the documents and material pertaining to health related activities / policies / research maintained at all medical faculties and in organizations such as Sri Lanka Medical Council (SLMC) and Sri Lanka Nursing Council (SLNC) will also come under RTI Act. 'Public authorities' under the Act include ministries, public corporations, a company where the state owns in excess of twenty-five per cent of the shareholding, and higher educational institutions that are substantially funded by the state (7).

The impact of the RTI Act on the health sector is not yet being discussed in detail specially at ground levels. However a careful analysis of the content of the Act would definitely reveal many areas pertaining to health information management, which needs to be streamlined by the health authorities rapidly. Two such areas are:

- Preservation of medical records
- Release of confidential medical information

We wish to consider the issue of preservation of medical records and the requirement of RTI Act briefly as an eye opener. The S.7 of the RTI Act refers to the maintenance and preservation of records in public institutions, of which the healthcare institutions are an important stakeholder.

"S.7 Public authorities to maintain and preserve its records

(3) All records being maintained by every public authority, shall be preserved -

(a) in the case of those records already in existence on the date of coming into operation of this Act, for a period of not less than ten years from the date of coming into operation of this Act; and

(b) in the case of new records which are created after the date of coming into operation of this Act, for a period of not less than twelve years from the date on which such record is created."

These requirements are distinctly deviant from the current hospital practice. According to DGHS General Circular: No.01-10/2002 dated 30th April 2002 (8), 'Heads of Institutions should preserve the bed head tickets (BHTT) related to medico legal work in a separate section under a separate register in the Record Room of the hospital for a minimum period of 10 years'. It has no reference to other BHTT. As we are aware, all other BHTT in state hospitals are kept only for 5 years. The requirement of RTI Act is to preserve all previous BHTT (documented prior to its enactment) for a period not less than ten years.

However since the RTI Act is in force, it is required to streamline the time period of preservation of medical records in all hospitals according to the prescribed conditions. Therefore it is essential to issue a new circular by DGHS urgently describing essential instructions to follow when maintaining medical records (including BHTT) and clarifying all the above stated points of RTI Act as this issue would necessarily come up in court cases related to hospitalized patients / victims in the near future.

Furthermore, the health sector will be required to categorize health / medical information according to levels of accessibility and develop mechanisms of providing accessible health information to public on request in the future as per the provisions of RTI Act.

Compliance with other regulations / laws

The Section 4 of the RTI Act stipulates that the Act supersedes all other laws in Sri Lanka. Therefore, it will be necessary that current laws that are inconsistent with the Act be amended to the extent of their inconsistency. Such amendments will strengthen the implementation of and compliance

with the RTI Act, particularly in a context of a prevailing culture of secrecy around the supply of government information. The Official Secrets Act, No. 32 of 1955 (Official Secrets Act), Sri Lanka Press Council Law, No. 5 of 1973 (Press Council Law), National Archives Act No 48 of 1973 & Declaration of Assets and Liabilities Law No. 1 of 1975 (Assets and Liabilities Law) are some of the legislative enactments which should be amended accordingly.

Revision of the Establishments Code of Sri Lanka, 1971

The Establishments Code of Sri Lanka, 1971 (Establishments Code) regulates the conduct of public officers. Paragraph 6 of Chapter XLVII of the Code permits a Secretary to a Ministry to take disciplinary action against officers who disclose information that ‘may cause embarrassment to the government as a whole, or any government department, or officer’. These penalties are applicable even if the information disclosed was a statement of fact.

This provision directly contravenes the whistleblower protection available under section 40 of the RTI Act, thereby disincentivising public officers from disclosing instances of corruption and mismanagement in good faith. Under Section 40 of the RTI Act, an officer disclosing information that is permitted to be disclosed under the RTI Act is protected from disciplinary sanction, even if the disclosure may result in subsequent embarrassment caused to the government. The Section 40 is hence designed to protect officers who disclose instances of fraud or misappropriation within their ministries. In this context, it is imperative that the Establishment’s Code be amended to reflect the whistle-blower protection available under Section 40 of the RTI Act. This amendment will increase the assurance among public officers that they will not be sanctioned for disclosing information on wrongdoing.

Similarly, the Establishment Code prevents a government agency from issuing a copy of a letter it received from another government agency to any private person. It also prohibits the issuance of a certified copy of a letter received or reply sent by the government to anyone other than to the person who

wrote the letter, unless there is a judicial order to release it. The Establishment Code contravenes the time frame stipulated in the Section 7.3 of the RTI Act for information preservation and disposal. The amendments to the establishment code do not need legislative enactments and as such they can be made through directives from the Public Service Commission and the Ministry of Public Administration and Management.

It would be appropriate to include a new chapter to the Establishment Code introducing proactive disclosure as a performance obligation of the public authorities. The new chapter of the Establishment Code may include a minimum standard for proactive disclosure based on identified principles.

Obtaining information under the Act; Information Requests

Every public authority is mandated to appoint an Information Officer, who is tasked with receiving and processing information requests (9). Information Officers are required to decide on information requests within a fourteen-day period as per S. 25(1). If the Information Officer decides that the information requested could be disclosed, he or she is required to grant access to such information within a period of fourteen days according to S. 25(2). Under Section 25(5) of the RTI Act this fourteen-day period can be extended to a maximum of twenty one days, in the event the volume of documentation is high. Moreover, in the event the information request relates to the life or liberty of a person, this information is required to be supplied to the individual within a period of forty-eight hours under Section 25(3) of the RTI Act.

In the event the Information Officer decides to deny the individual’s information request, he or she must do so in terms of the specific grounds listed under the Section 5(1) of the Act. For example, information requests may be denied if the disclosure undermines the defence of the state, causes serious prejudice to the economy of Sri Lanka, or harms the competitive position of a third party. However, even if the information requested falls under one of the specified grounds for denial under the Act, the Information Officer is required to disclose the information if the public interest associated with the information outweighs the harm that is likely to

be caused by disclosure as per Section 5(4). Individuals who are dissatisfied by the decision of an Information Officer have the right to appeal first to a Designated Officer appointed by the Ministry, then to the independently appointed Information Commission, and finally to the Court of Appeal as per Sections 31, 32 & 34(1). The Ministry of Health has already notified its 'Information Officers' in the Ministry website and also provided access to various RTI forms through the RTI website (10). It is also apparent from the RTI Commission website that public has already requested / appealed for provision of copies of medico-legal reports from 'Information Officers' (11).

Regulations Promulgated by the Ministry of Parliamentary Reforms and Mass Media

In accordance with the RTI Act, the Ministry of Parliamentary Reforms and Mass Media recently promulgated regulations to implement the law, including Regulation No. 20 concerning Proactive Disclosure of Information (12). There are several important aspects to this regulation. The regulation:

- i. stipulates that public authorities should proactively disclose information 'routinely', rather than in an ad hoc manner, thereby increasing the frequency of disclosure;
- ii. requires that the information to be proactively disclosed is 'at a minimum', thereby establishing a base standard which public authorities should seek to exceed;
- iii. stipulates the described information should be disseminated by 'digital or electronic format', ensuring that that the information reaches the broadest possible audience, and results in greater transparency and accountability;
- iv. identifies sixteen categories of information that must be proactively disclosed, ranging from information about the organisation and function of a public authority to information on subsidies and public procurements;
- v. encourages public authorities to include in their biannual reports required under Section 8 'such information as may be of interest to the public', to limit the need to file RTI requests for such information;

- vi. provides that a recipient may challenge the accuracy or age of the proactively disclosed information before the head of the public authority or the RTI Commission.

The above Regulation issued in terms of the RTI Act expands the scope of proactive disclosure in the Act and gives the principle its full effect.

The government could consider reviewing the sixteen categories of information listed in Regulation 20 after a specified time period, to ensure an assessment of whether the list needs addition or revision. The RTI Commission could establish a joint government-civil society committee to contribute to that review and consider additional categories of information, and develop guidelines for public authorities for further proactive disclosure.

Offences and Protection

Any person who deliberately obstructs the provision of information under the RTI Act, tampers with information, or fails to give effect to a decision by the Information Commission commits an offence under the RTI Act (13). Meanwhile, whistle-blower protection is available under Section 40 of the Act. The provision prevents the punishment (disciplinary or otherwise) of a public officer that discloses information that is permitted to be disclosed under the Act.

Global Norms and Practice

Article 19 of the Universal Declaration of Human Rights holds that the right to freedom of expression includes the freedom 'to seek, receive and impart information' (14). The International Covenant on Civil and Political Rights (ICCPR), to which Sri Lanka is a party, contains the same provision and creates a legally-binding obligation on signatories. The UN Human Rights Committee, which monitors the implementation of the ICCPR, has subsequently adopted General Comments to provide practical guidance to states on meeting their obligations under Article 19. General Comment 10, adopted in 1983, reiterated that states must protect freedom of expression including the 'freedom' to 'seek' and

‘receive’ (information and ideas) ‘regardless of frontiers’ and in whatever medium. ‘However, it did not address proactive disclosure (15). In 2011, with scores of RTI laws in effect across the globe, the Human Rights Committee adopted a more comprehensive General Comment 34, replacing General Comment 10, that addresses states’ obligation concerning the ‘right of access to information’ and proactive disclosure, specifically:

To give effect to the right of access to information, States parties should proactively put in the public domain Government information of public interest. States parties should make every effort to ensure easy, prompt, effective and practical access to such information.

States parties should also enact the necessary procedures, whereby one may gain access to information, such as by means of freedom of information legislation (16).

Regional Norms and Practice

With its new RTI Act, Sri Lanka joins the community of one hundred and seventeen nations with right to information laws (17). It is the latest South Asian country to adopt a RTI law; only Bhutan remains without one. Many countries in the region, including India, Bangladesh, and Nepal, have comprehensive proactive disclosure provisions in their RTI legislation (18). In Bangladesh, the information commission actually issues the disclosure regulations (19). While not specifically addressing proactive disclosure, right to information commissioners and ombudsmen in Bangladesh and Pakistan have reported many challenges in ensuring public authorities’ compliance with their orders, while their Nepalese counterparts indicate substantial compliance (20). India’s RTI Act contains ‘Obligations of Public Authorities’, which require such authorities to first maintain their records, and also to publish at least sixteen different categories of general information about the organisation, function, powers, and rules of the authority, its advisory councils, budget, subsidies, and recipients of concessions (21).

Conclusions

RTI is a powerful tool that can deliver significant social benefits. It can provide a strong support to democracy and promote good governance, by empowering the citizen’s ability to participate effectively and hold government officials accountable. Rather than just providing information, RTI Act in most of the countries has served to be an effective watchdog ensuring all those coming in purview of the Act to work in accordance with rules and regulations, without any irregularities.

Thus, the RTI Act demands a paradigm shift in the relations between the citizens and the public institutions including healthcare institutions. At the same time the RTI Act empowers the public officials including healthcare workers at all levels to be more responsive and accountable. In fact, the proper implementation of the RTI Act would increase the government transparency and integrity of the public officials who wish to resist from being subject to undue interferences in discharging their duties.

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A patient with leptospirosis associated severe pulmonary haemorrhagic syndrome successfully managed with Extra Corporeal Membranous Oxygenation

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Introduction

Leptospirosis is a zoonosis caused by *Leptospira interrogans*. Severe pulmonary haemorrhagic syndrome (SPHS) is the major cause of mortality in leptospirosis (1). Incidence of pulmonary haemorrhages in leptospirosis varies from 20 – 70% of patients (2). Contemporary theory suggests the pathogenesis of SPHS is immune mediated (1). Membranous depositions of linear immunoglobulins (IgA, IgG, IgM) and complement on alveolar surface may trigger fatal pulmonary haemorrhage (1). Here we describe a case of SPHS successfully managed with Venovenous Extra Corporeal Membranous Oxygenation (V-V ECMO) at Teaching Hospital Karapitiya.

Case report

A previously well, 48 year-old mason was transferred from a local hospital for the management of fever of 5 day duration. In addition, he had arthralgia, myalgia and reduced urine output for 12 hours. He did not have haemoptysis, cough, or shortness of breath. He gave a history of exposure to mud prior to the onset of fever. Examination revealed generalized muscle tenderness, conjunctival injection, icterus, pulse rate of 122 bpm, blood pressure of 90/60 mmHg, and respiratory rate of 26 cycles per minute. SaO₂ on room air was 100%. There was vesicular breathing and occasional scattered fine crepitations over both lung fields. Investigation findings are summarized in table 1.

Table 1: Lab findings of the patient on admission

Investigation	Result
WBC	7750 / μ L
Neutrophil	86.2%
Platelets	21000 / μ L
CRP	299 mg/dL
Blood urea	87 mg/dL
Serum creatinine (SCr)	195 μ mol/L
Serum sodium	135 mmol/L
Serum potassium	2.2 mmol/L
Total bilirubin	157 μ mol/L
Direct bilirubin	127.5 μ mol/L
UFR	red cells 4 - 6/hpf

ABG: pH 7.48; PCO₂ 30 mmHg; PO₂ 72 mmHg. Chest radiograph was normal. Bedside ultrasound scan showed no free fluid or B lines but collapsible inferior vena cava. A presumptive diagnosis of leptospirosis complicated with acute kidney injury, septic shock and possible pulmonary haemorrhages was made. Intravenous (IV) benzylpenicillin 2 MU 6 hourly and oral doxycycline 100mg 12 hourly were started. IV noradrenaline infusion was started because blood pressure did not improve with adequate fluid resuscitation. IV methylprednisolone 1g daily, IV tranexamic acid 1g 8 hourly and tranexamic acid nebulizations 8 hourly were also started suspecting pulmonary haemorrhages. Platelets were transfused to maintain platelet count > 50,000/ μ L. Within next 12 hours patient became

more tachypnoeic and bilateral end inspiratory fine crepitations became more prominent. He needed O₂ via nasal prongs. Repeat chest radiograph showed bilateral diffuse alveolar infiltrates suggestive of pulmonary haemorrhages (Figure 1).

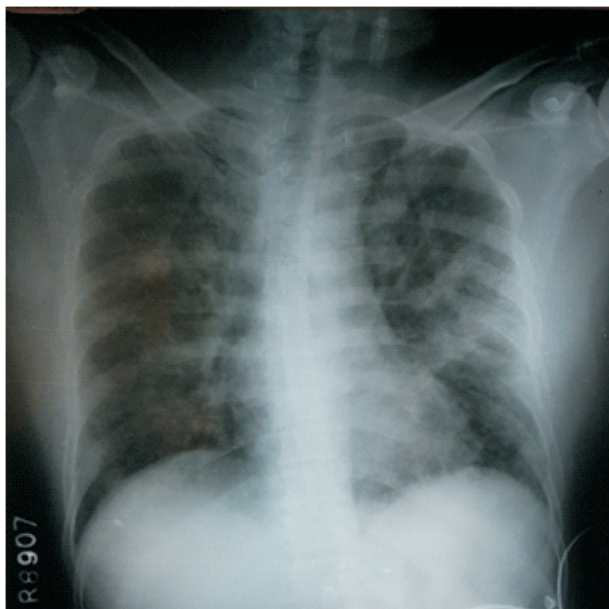


Figure 1: Chest radiograph; bilateral diffuse alveolar infiltrates suggestive of pulmonary haemorrhages.

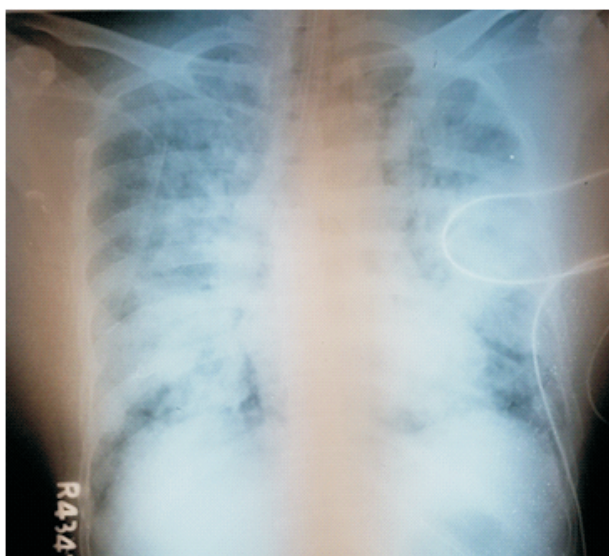


Figure 2: Chest radiograph; worsening pulmonary haemorrhages diffusely involving all zones of bilateral lung fields

Total plasma exchange (TPE) was started after a multidisciplinary team discussion among medical team, nephrologist and transfusion physician. The patient was transferred to medical ICU and CPAP was started. Bilateral alveolar infiltrates increased (Figure 2), haemoglobin dropped (10.4g/dL) and ABG deteriorated indicating worsening pulmonary haemorrhages.

Despite optimizing CPAP settings patient further deteriorated and we had to intubate him on the 3rd day of admission. Bronchoscopy showed blood clots in the bronchial tree. On the 4th day respiratory acidosis worsened (Figure 3) and Murray's acute lung injury score was 3. The patient was referred to cardiothoracic surgeon for ECMO. V-V ECMO was instituted via 20 Fr and 28 Fr percutaneous single lumen cannulae inserted into right internal jugular vein and right femoral vein respectively. ECMO settings are summarized in table 2. Activated partial thromboplastin time was maintained between 190 – 210 seconds with IV heparin infusion. During ECMO, mechanical ventilation was set at the lung rest settings. IV noradrenaline infusion titrated to maintain mean arterial pressure around 80 mmHg and gradually weaned off. IV ceftriaxone 1g 12 hourly was added. Fever and inflammatory markers improved with treatment and serum creatinin became normal on the 5th day. IV immunoglobulin 0.4 g/kg daily was given after each plasmapheresis. Methylprednisolone and immunoglobulin were omitted after completing 5 doses.

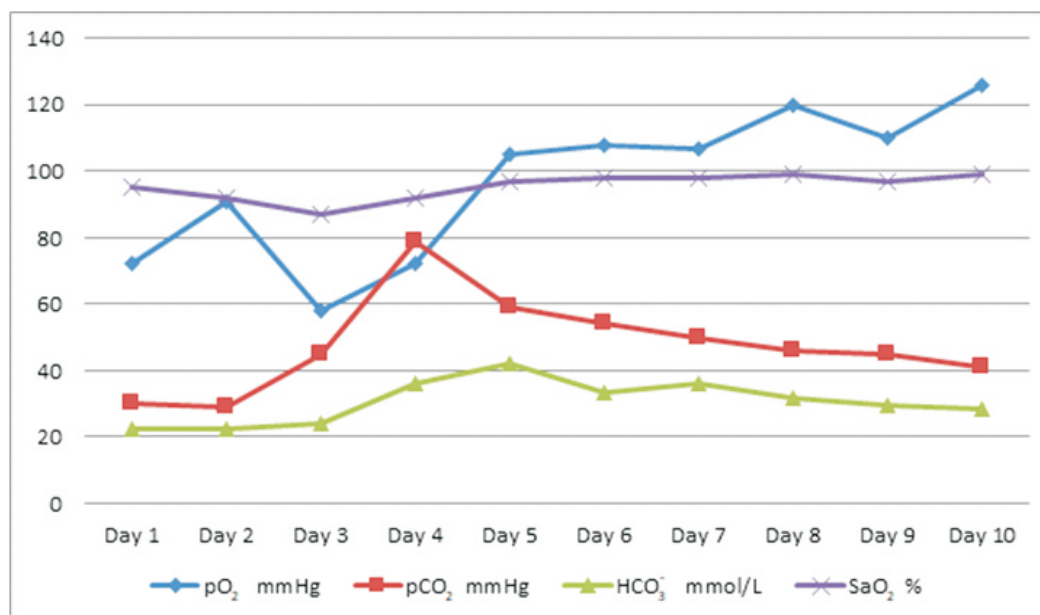
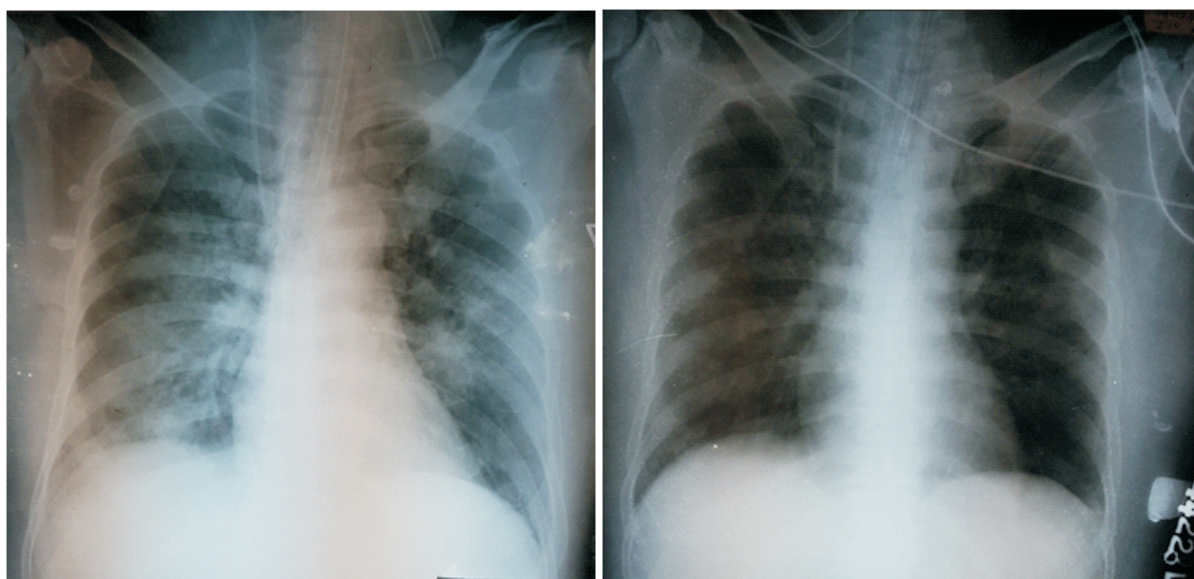
Alveolar infiltrates in chest radiograph started to improve on the 7th day of admission (Figures 4 & 5).

Tidal volume improved from 240 ml to 419 ml. Since chest radiograph, ABG and ventilator support gradually improved, trial off ECMO was performed. Oxygen flow through oxygenator was stopped at the 114th hour. Since the trial off was successful, decannulation of ECMO was done at the 143rd hour i.e.; 10th day after admission.

The patient was extubated on the 14th day and discharged from the hospital 8 days later. Pulmonary infiltrates were totally cleared from chest x-ray on discharge.

Table 2: ECMO settings

ECMO day	1	2	3	4	5	6
Flow (L/min)	4.8	5.0	4.65	4.93	3.8	3.2
Gas Flow (L/min)	5	10	11	12	4	2
Motor RPM	4000	4000	3800	3500	3400	3200

**Figure 3:** Graphic presentation of ABG values**Figure 3 & 4:** Chest radiographs disappearance of pulmonary infiltrates

The patient received a total of 7 packs of red cell concentrate and 34 packs of platelet concentrate. He never needed renal replacement therapy. ECG, troponin I and 2D Echocardiogram did not show features of myocarditis. MAT on days 10 and 24 after the onset of symptoms showed a fourfold or higher increase in antibody titres for *Leptospira interrogans* serovars Australis, Bangkinang, Bakeri, Cynopteri, and Patoc, confirming the diagnosis of leptospirosis. Lung function test performed 2 months after discharge was normal.

Discussion

Progressive lung injury increases the demand of pressure support which may in turn cause barotrauma and ventilator induced lung injury (7) leading to a vicious cycle. In addition high levels of PEEP may cause reduction in cardiac output and blood pressure (8). High-frequency oscillatory ventilation has been used to treat SPHS successfully when the response to maximal support with conventional mechanical ventilation (CMV) was poor. But the disadvantage was associated significant haemodynamic instability (3). ECMO is an alternative treatment which uses cardio-pulmonary bypass technology to temporarily provide gas exchange (9). There are several case reports where SPHS was successfully treated with V-V ECMO (4-6). In our case we initiated V-V ECMO on the 8th day of illness, continued for 6 days and were able to extubate 4 days after the decannulation.

In conclusion, we suggest that V-V ECMO can be used as a treatment option for patients with leptospira SPHS and poorly responding to CMV. Since SPHS leading to ARDS is the major cause of death in leptospirosis, ECMO should be considered early when it is difficult to maintain oxygenation with CMV.

Acknowledgements

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Reversible posterior leukoencephalopathy syndrome in a patient with systemic lupus erythematosus; a diagnostic dilemma

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Introduction

Reversible posterior leukoencephalopathy syndrome (RPLS) is a clinical radiographic syndrome of a multitude of etiologies. It is characterized by headache, visual disturbances, seizures, altered mental status, and radiological findings secondary to brain edema predominantly in areas supplied by posterior circulation. It is often, but by no means always, associated with an acute raise of blood pressure in patients with hypertension. RPLS should be promptly recognized as it is a reversible and treatable condition. Here we report a case of RPLS in a normotensive patient with systemic lupus erythematosus (SLE)/secondary anti phospholipid syndrome (APLS).

Case report

A 43 year- old female with SLE and secondary APLS complicated with deep vein thrombosis presented to the ward with epigastric pain and dyspeptic symptoms for 3 days. She had been on prednisolone and warfarin without a proper follow up and had been off prednisolone for 2 weeks prior to admission. Her symptoms subsided and she was awaiting discharge, when she complained of generalized headache and intermittent blurring of vision. A few hours later she developed generalized tonic clonic convulsions with frothing and urinary incontinence. Following convulsions she developed confusion and altered behavior. On physical examination, she was drowsy and confused, with no neck stiffness. There were no features of active SLE such as synovitis, dermatological manifestations or serositis. Blood pressure was 120/70 mmHg.

According to the above findings, the differential diagnoses of cerebral infection, neuropsychiatric

lupus, cerebral venous thrombosis and intracranial haemorrhage were considered. Subsequent investigations revealed a white cell count of $11.0 \times 10^3/\text{mL}$ (neutrophils 70%), platelets 191,000, CRP and ESR were 42 mg/dL and 56 mm, respectively. CSF full report revealed 3 polymorphs, 10 lymphocytes, increased protein (60 mg/dL), and normal sugar levels. CSF culture revealed no growth. Serum calcium levels and electrolytes were normal and her non-contrast CT brain did not reveal any abnormality. EEG showed generalized slow waves with delta activity throughout the recording with no epileptiform activity.

She was started on IV ceftriaxone 2 g, IV vancomycin 1 g and IV acyclovir with concurrent administration of IV methylprednisolone 1 g/day pulses. The patient made a remarkable recovery within 2 days of symptom onset. Since the CSF report was inconclusive MRI / MRV was carried out to arrive at a definite diagnosis (Figure 1 & 2). The MRI FLAIR revealed subcortical T2 hyperintensity without enhancement on both occipital lobes (Figure 1). With these findings antibiotics were omitted.

Discussion

RPLS has been reported in literature as a reversible yet underdiagnosed manifestation of neuropsychiatric lupus (6). The pathophysiology of SLE related RPLS is incompletely understood, but cerebral auto regulatory failure and endothelial dysfunction causing disruption of the blood brain barrier leading to fluid transudation into the brain have been postulated (6).

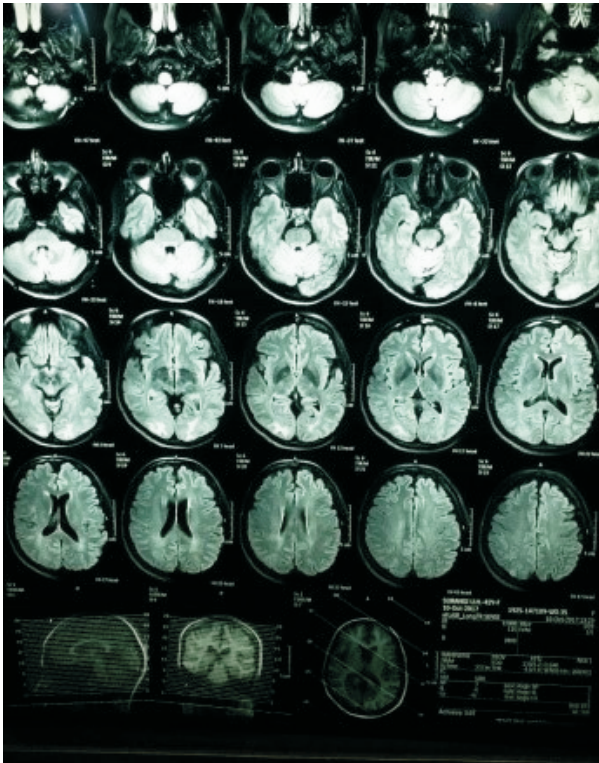


Figure 1: MRI flare image showing high signal intensity in both occipital lobes

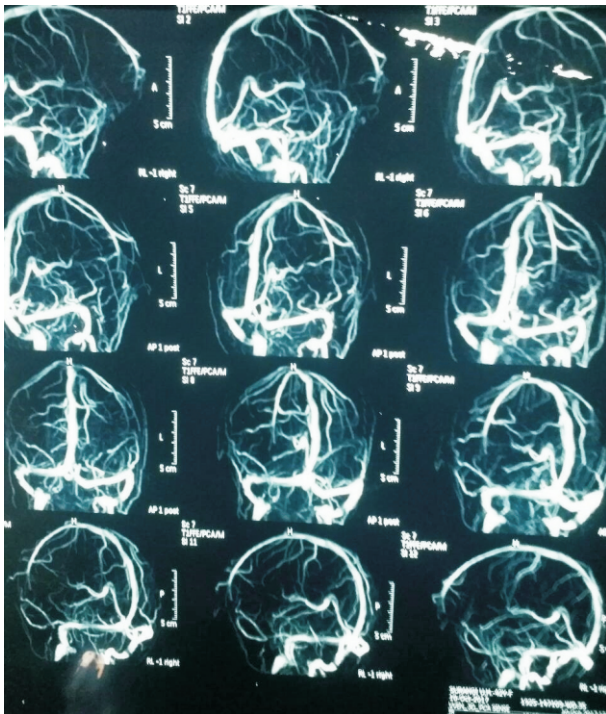


Figure 2: Normal MRV brain, done to exclude cerebral venous thrombosis

In many case series conducted on SLE related RPLS acute hypertension, high SLE disease activity, renal involvement and the use of immunosuppressive agents, particularly cyclosporine have been identified as risk factors (3). RPLS occurring in a normotensive SLE patient, in the absence of accompanying lupus nephritis, features of high disease activity and immunosuppressants has rarely been reported in literature.

In a patient with SLE, the diagnostic dilemma lies in the differentiation of RPLS from cerebral infections due to immunosuppressants and from thrombotic events due to APLS. In cases where cerebrospinal fluid sampling was carried out, elevated protein was the most common finding. Though CSF pleocytosis was uncommon, it had also been reported and its presence should not exclude the possibility of RPLS. (4). Cerebral imaging is the mainstay of diagnosis and in most cases CT can be normal though it is useful in ruling out arterial ischaemia or thrombosis.

In RPLS, MRI is the investigation with the most diagnostic value and typical MRI findings include bilateral white-matter abnormalities in vascular watershed areas in the posterior regions of both cerebral hemispheres, affecting mostly the occipital and parietal lobes. Atypical features including hemorrhage, asymmetrical changes, isolated involvement of the frontal lobes, and cortical lesions are also common (5).

The management of RPLS in SLE is dependent on aetiology. Since hypertension is a feature in the majority of patients, they often improve dramatically with rapid blood pressure lowering. Seizures are usually treated with phenytoin and in cases associated with cytotoxic drugs prompt removal or dosage reduction of the offending agent is recommended. In the rare instance, such as this case, where SLE per se acted as the trigger for RPLS, vigorous treatment with corticosteroids has been suggested. Nevertheless, it is still controversial whether immunosuppression should be initiated in RPLS in SLE and proper treatment strategies are yet to be instigated.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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Dangers in the beautiful ocean; a case report of anaphylaxis due to a jellyfish sting

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Background

Increasing number of jellyfish attacks have been reported in Sri Lankan media recently. Injuries due to jellyfish sting were reported island wide in June, 2015 and it created a panic among public. Many were hospitalized due to jellyfish attacks occurred in Galle Face, Mount Lavinia, and Ambalangoda beaches. Subsequently it extended to Polhena and Tangalle beaches resulting in more jellyfish envenomation and hospitalizations (1). A fisherman from Jaffna district has died after being stung by a Jellyfish in October, 2017, even before hospitalization. Leaders of the Jaffna fishermen's societies have declared that 5 to 10 people die annually in north of the island due to jellyfish envenomation (2).

Ongoing research in the Department of Parasitology has revealed several episodes of jellyfish attacks near Galle coast. Case presented here had being stung by a jellyfish near Galle Fort. There were six more injured on the same day at Galle Fort, but none were admitted to Teaching Hospital Karapitiya (THK) and were probably treated at OPD level in private hospitals.

Marine envenomation is not well reported in Sri Lanka due to various reasons. Two third of the costal margin of Sri Lanka was affected by the 30 years long civil war and information from these areas didn't reach us. Some cases were reported as drowning instead of marine envenomation. It is essential that the medical officers, especially those who are working in coastal hospitals, should possess adequate knowledge in clinical presentation, first-aid, management of stings and its complications and prevention of marine envenomation. Therefore, a case of complicated jellyfish sting is described here.

Case report

We present here a 10 year-old boy who developed an anaphylaxis due to a jellyfish sting. The injury occurred while he was bathing in the sea near Galle Fort around 4.00 p.m. on 18th July 2018. The boy experienced a sudden onset localized pain over the medial surface of the right forearm and felt like a bite from sharp teeth. Simultaneously he noticed a bluish coloured substance in the water close to the place where the pain arose. "In a flicker the substance moved away" the boy said. Immediately after, he experienced tightening of the chest and difficulty in breathing, abdominal cramps and pain in both arm pits. He was taken to a private hospital situated 10 minutes away from the incident. On examination around 4.30 p.m., medical officer recorded weak and rapid pulse (112 beats per minute), low blood pressure (80/60 mmHg), respiratory rate of 24 breaths per minute and rhonchi in both lungs. An intramuscular adrenaline (0.3 mg, 1 : 1000); parenteral chlorpheniramine and hydrocortisone were administered. Child's blood pressure increased to 120/90 mmHg following the treatment. However, the medical officer has observed that the patient's abdominal pain was persistent and the respiratory and heart rates were not improved. Therefore the patient was transferred to the Emergency and Trauma Care Centre (ETC) at the Teaching Hospital Karapitiya (THK) around 5.00 p.m.

On arrival at the ETC, child had mild dyspnoea and stridor. His pulse rate was 112 bpm, blood pressure was 118/70 mmHg, respiratory rate was 20 bpm, oxygen saturation recorded 100% in room air and GCS was 15/15. He had four blackish skin lesions

resembling burn marks over contact sites with mild swelling (Figure 1). Whole blood clotting time was less than 20 minutes. He was kept under observation in the ETC and transferred to a ward around 7.15 p.m. since all vital parameters were within normal range.



Figure 1: Burn like skin lesions over the contact sites

His C-reactive protein was less than 2 mg/L. Local inflammation was more marked with red tender swelling around the lesions. He was treated with IV hydrocortisone and oral cloxacillin, oral metronidazole (200 mg – 8 hourly) and oral chlorpheniramine. He was kept in the ward till third day due to marginally elevated blood pressure compared to his age and discharged on oral antihistamine, oral and topical antibiotics. The patient was followed-up for two weeks. Patient did not complain any significant event afterwards and the skin lesions turned into light patches at two weeks (Figure 2).



Figure 2: Healed skin lesions over the contact site

Discussion

The patient explained his pain similar to a bite with sharp teeth. However, there were no bite marks or bleeding but there were non-specific dark bluish skin spots resembling burn marks. Therefore, a bite of a sea creature is unlikely. Such burn marks can be caused by a box jellyfish. Unfortunately our 3 days search in the reef where incidence happened ended up by finding only Portuguese man-o'-war species. The species we found in the vicinity known to cause linear macula popular eruptions which is different to the current presentation (3, 4). According to the patient's description ("blue thing moving away in a flicker"), and the lesions resembling burn marks (not eruptions), the causative agent is more likely a box-jellyfish rather than Portuguese man-o'-war (4).

Chiropsalmus buitendijki (Box-jelly fish) comes under the subphylum **Medusozoa** belonging to phylum **Clindaria**. There are more than 10,000 aquatic species in phylum Clindaria, of which around 100 are known to cause injury to humans. Jellyfish stings are not much documented in health sector of Sri Lanka. However some venomous species like *Cyanea purpurea* (Blue jellyfish / Lion's mane jellyfish), *Chrysaora quinquecirra* (sea nettle, Compass jellyfish) and *Physalia* species (Portuguese man-o'-war / blue bottle) other than box-jellyfish are well identified and documented (4). There are three groups of jellyfish causing (i) fatal stings (ii) severe envenomation with systemic effects and (iii) nuisance stings (6). Extensive work carried out by Fernando, 2001 found that all identified in Sri Lankan western coast happened to be either (ii) or (iii) mentioned above (4).

Injuries are caused by the venom containing nematocysts located in tentacles (Figure 3). Envenomation could occur through just touching non-active nematocysts or active nematocysts (barbed thread has come out) or barbed threads passing through skin tissue (5; 7). The toxin delivered through barbed thread could affect muscle, nerve and other tissues (7).

Jellyfish can have neurotoxins, cardiotoxins, cytotoxins, haematotoxins and dermatonecrotic toxins (7). Therefore jellyfish can cause a range of clinical symptoms in case of envenomation. Jellyfish

envenomation is usually expressed as the immediate appearance of pain, burning sensation and a redness with a subsequent papulo-vesicular eruption or blackish darken skin lesions resembling burn marks of the involved skin. Symptoms are due to immediate allergic, acute toxic and persistent inflammatory responses (4, 8, 9). *Physalia* sp. can cause erythema in a form of beaded streaks, bearable pain and distress. These symptoms can resolve within 24 hours. *Cyanea* sp. can cause rapid development of painful erythema and weal and sometimes rows of erythematous papules. Mildly pruritic weal will take several days to subside whereas severe pain and erythema may disappear within few hours. Box-jellyfish sting can cause pain which develop slowly and less severe compared that of *Physalia* and *Cyanea* species. However, sudden appearance of erythematous weal is seen and stained lesions can last for several days with box-jellyfish sting. *Chrysaora* sp. can cause sudden onset most painful sting. Erythematous weal caused by *Chrysaora* sp. reaches its maximum size very quickly and disappears within 30 minutes (4).

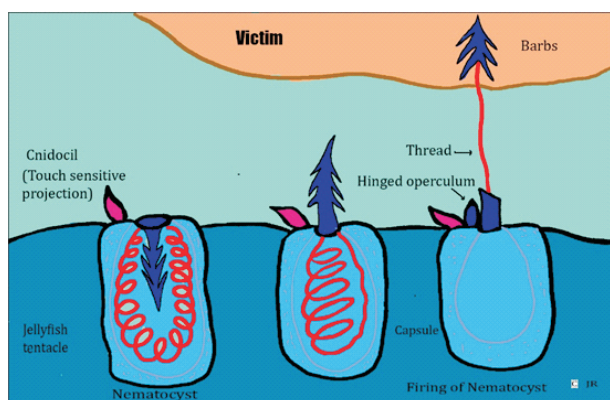


Figure 3: The mechanism of nematocyst firing

When the list of symptoms and the time taken to appear symptoms are considered, it seems that the injury of the present case was caused by a box-jellyfish. The principal author has located and identified box-jellyfish in the same vicinity in a different occasion during the south-east monsoon period (May to September). Children are more prone to get anaphylaxis following jellyfish sting due to many reasons. Scientists have noticed that the toxin's effect is much stronger in children than that of older victims. Thus a child could die because of severe toxicity (7).

Although in Sri Lanka envenomation following jellyfish stings is mostly self-limited and mild, serious allergic reactions including anaphylaxis and fatal stings have been reported worldwide (4, 5, 10,). Several fatal cases, however, have been reported by fishermen in Jaffna peninsula (2). Thus having basic knowledge of jellyfish sting management is important for medical officers working in coastal areas. Many solutions are used to wash the sting site as a first-aid step. Commonly used ones are hot water (60 °C), vinegar, acetic acid, coca cola and old wine. Urinating on tentacles, use papain, aluminum sulfate, ethanol, bleach, ammonia, kerosene or rubbing sand on the affected area also advocated. However some of these solutions like vinegar might precipitate nematocyst firing when the sting is from *Chrysaora* sp (11). Fresh water in ambient temperature should not be used for rinsing sting sites because it could increase the nematocyst toxin release (7). Therefore, in our settings it is better to advise the victims to use sea water or hot water to rinse the affected site to stop further venom release by nematocysts and rush to a closest medical care facility. Topical application of a local anesthetic gel, an antihistamine cream, or a corticosteroids cream may be helpful to relieve the local symptoms. Persistent severe pain may require strong painkillers like morphine. Muscle cramps may respond to muscle relaxants like diazepam.

All swimmers must be educated with preventive techniques such as wearing tight fitting long cloths covering entire body and use of diving shoes and helmets or swim in a stringer resistant net. Swimming in cleared areas with lifeguards while obeying warning signs is always recommended.

Conclusions and recommendations

A clinical history of painful stings sustained during sea bathing with dark skin marks resembling to burn marks are highly suggestive of a jellyfish sting. Such patients should not be ignored due to potential danger of life threatening anaphylactic reactions. Medical undergraduate and postgraduate prospectuses should be improved by adding marine envenomation and its managements under toxicology.

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A patient with leptospirosis associated severe pulmonary haemorrhagic syndrome successfully managed with Extra Corporeal Membranous Oxygenation (ECMO)

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Introduction

Leptospirosis is a zoonosis caused by *Leptospira interrogans*. Severe pulmonary hemorrhagic syndrome (SPHS) is the major cause of mortality in leptospirosis (1). Incidence of pulmonary haemorrhages in leptospirosis varies from 20 – 70% of patients (2). Contemporary theory suggests the pathogenesis of SPHS is immune mediated (1). Membranous depositions of linear immunoglobulins (IgA, IgG, IgM) and complement on alveolar surface may trigger fatal pulmonary haemorrhage (1). Here we describe a case of SPHS successfully managed with Venovenous Extra Corporeal Membranous Oxygenation (V-V ECMO) at Teaching Hospital Karapitiya.

Case report

A previously well, 48-year-old mason was transferred from a local hospital for the management of fever of 5-day duration. In addition, he had arthralgia, myalgia and reduced urine output for 12 hours. He did not have haemoptysis, cough, or shortness of breath. He gave a history of exposure to mud prior to the onset of fever. Examination revealed generalized muscle tenderness, conjunctival injection, icterus, pulse rate of 122bpm, blood pressure of 90/60mmHg, and respiratory rate of 26 cycles per minute. SaO₂ on room air was 100%. There was vesicular breathing and occasional scattered fine crepitations over both lung fields. Investigation findings are summarized in table 1.

Table 1: Lab findings of the patient on admission

Investigation	Result
WBC	7750/ μ L
Neutrophil	86.2%
Platelets	21 000/ μ L
CRP	299 μ g/dL
Blood urea	87 μ g/dL
Serum creatinine (SCr)	195 μ mol/L
Serum sodium	135 mmol/L
Serum potassium	2.2 mmol/L
Total bilirubin	157 μ mol/L
Direct bilirubin	127.5 μ mol/L
UFR	red cells 4 - 6/hpf

ABG: pH 7.48; pCO₂ 30 mmHg; pO₂ 72 mmHg. Chest radiograph was normal. Bedside ultrasound scan showed no free fluid or B lines but collapsible inferior vena cava. A presumptive diagnosis of leptospirosis complicated with acute kidney injury, septic shock and possible pulmonary haemorrhages was made. Intravenous (IV) benzylpenicillin 2 MU 6 hourly and oral doxycycline 100mg 12 hourly were started. IV noradrenaline infusion was started because blood pressure did not improve with adequate fluid resuscitation. IV methylprednisolone 1g daily, IV tranexamic acid 1g 8 hourly and tranexamic acid nebulizations 8 hourly were also started suspecting pulmonary haemorrhages. Platelets were transfused to maintain platelet count > 50,000/ μ L. Within next 12 hours patient became

more tachypnoeic and bilateral end inspiratory fine crepitations became more prominent. He needed O₂ via nasal prongs. Repeat chest radiograph showed bilateral diffuse alveolar infiltrates suggestive of pulmonary haemorrhages (Figure 1).

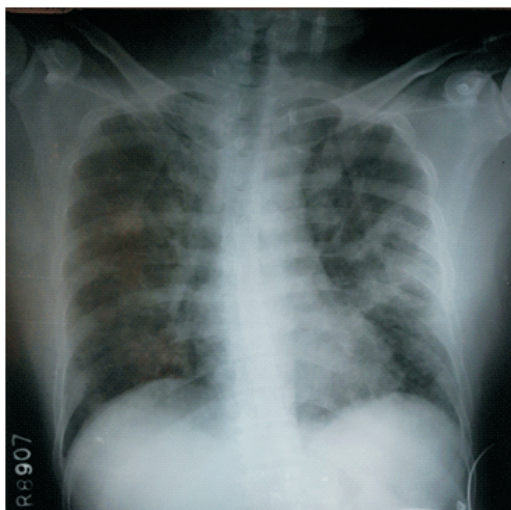


Figure 1: Chest radiograph; bilateral diffuse alveolar infiltrates suggestive of pulmonary haemorrhages.

Total plasma exchange (TPE) was started after a multidisciplinary team discussion among medical team, nephrologist and transfusion physician. The patient was transferred to medical ICU and CPAP was started. Bilateral alveolar infiltrates increased (Figure 2), Haemoglobin dropped (10.4g/dL) and ABG deteriorated indicating worsening pulmonary haemorrhages.

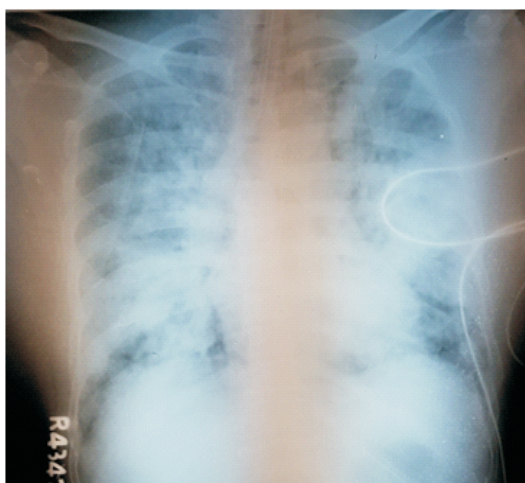


Figure 2: Chest radiograph; worsening pulmonary haemorrhages diffusely involving all zones of bilateral lung fields

Despite optimizing CPAP settings patient further deteriorated and we had to intubate him on the 3rd day of admission. Bronchoscopy showed blood clots in the bronchial tree. On the 4th day respiratory acidosis worsened (Figure 3) and Murray's acute lung injury score was 3. The patient was referred to cardiothoracic surgeon for ECMO. V-V ECMO was instituted via 20 Fr and 28 Fr percutaneous single lumen cannulae inserted into right internal jugular vein and right femoral vein respectively. ECMO settings are summarized in table 2. Activated partial thromboplastin time was maintained between 190 – 210 seconds with IV heparin infusion. During ECMO, mechanical ventilation was set at the lung rest settings. IV noradrenaline infusion titrated to maintain mean arterial pressure around 80 mmHg and gradually weaned off. IV ceftriaxone 1g 12 hourly was added. Fever and inflammatory markers improved with treatment and serum creatinin became normal on the 5th day. IV immunoglobulin 0.4 g/kg daily was given after each plasmapheresis. Methylprednisolone and immunoglobulin were omitted after completing 5 doses.

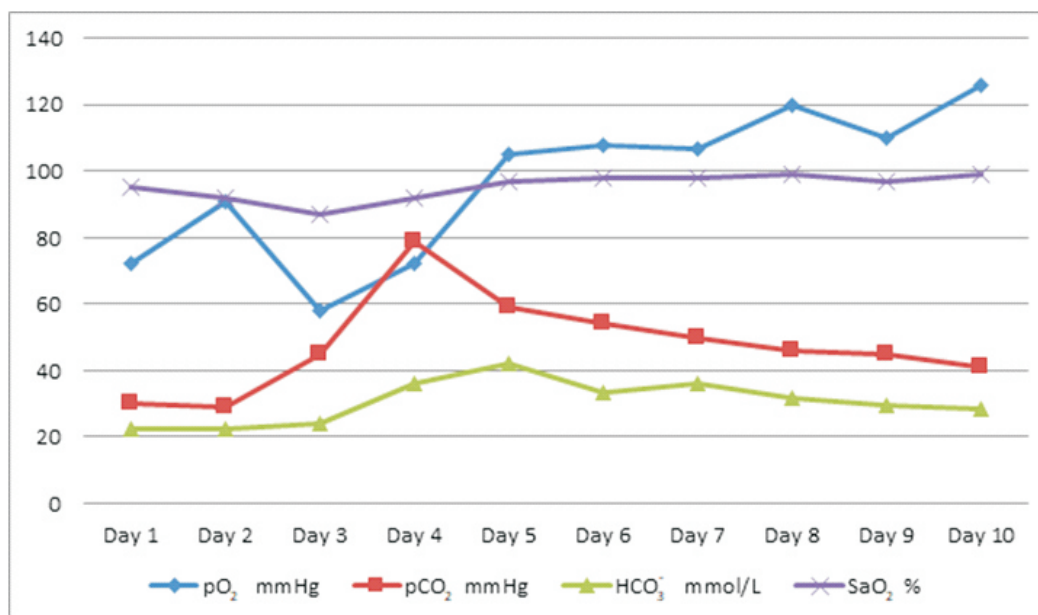
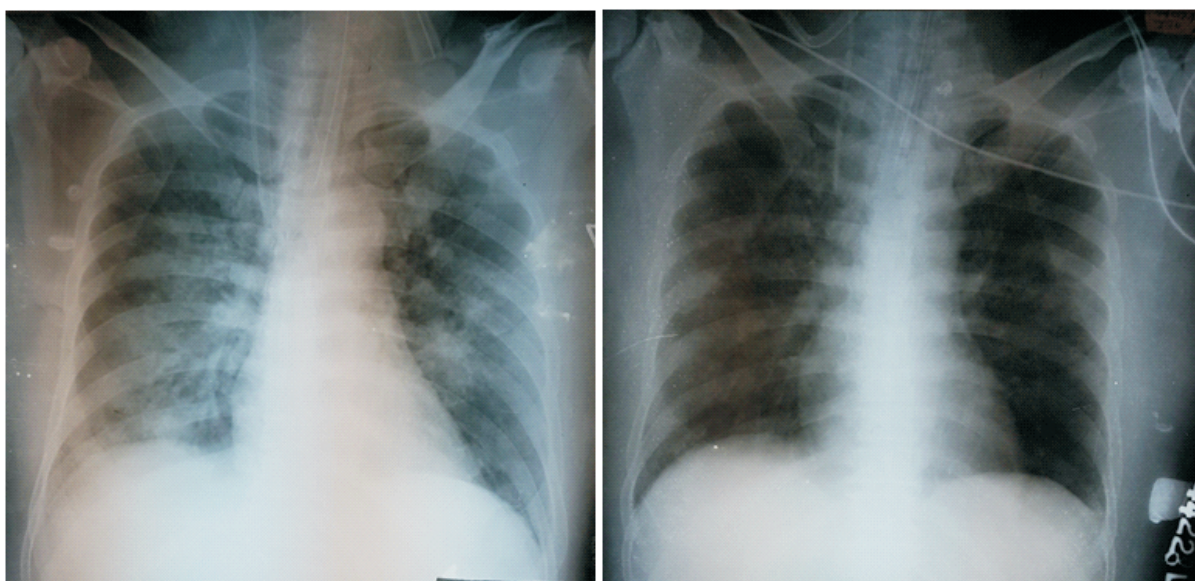
Alveolar infiltrates in chest radiograph started to improve on the 7th day of admission (Figures 4 & 5).

Tidal volume improved from 240 ml to 419 ml. Since chest radiograph, ABG and ventilator support gradually improved, trial off ECMO was performed. Oxygen flow through oxygenator was stopped at the 114th hour. Since the trial off was successful, decannulation of ECMO was done at the 143rd hour i.e.; 10th day after admission.

The patient was extubated on the 14th day and discharged from the hospital 8 days later. The patient received a total of 7 packs of red cell concentrate, 34 packs of platelet concentrate. He never needed renal replacement therapy. ECG, troponin I and 2D Echocardiogram did not show features of myocarditis. MAT on days 10 and 24 after the onset of symptoms showed a fourfold or higher increase in antibody titres for *Leptospira interrogans* serovars Australis, Bangkinang, Bakeri, Cynopteri, and Patoc, confirming the diagnosis of leptospirosis. Lung function test performed 2 months after discharge was normal.

Table 2: ECMO settings

ECMO day	1	2	3	4	5	6
Flow (L/min)	4.8	5.0	4.65	4.93	3.8	3.2
Gas Flow (L/min)	5	10	11	12	4	2
Motor RPM	4000	4000	3800	3500	3400	3200

**Figure 3:** Graphic presentation of ABG values**Figure 4 & 5:** Chest radiographs; disappearance of pulmonary infiltrates

Discussion

Progressive lung injury increases the demand of pressure support which may in turn cause barotrauma and ventilator induced lung injury (7) leading to a vicious cycle. In addition high levels of PEEP may cause reduction in cardiac output and blood pressure (8). High-frequency oscillatory ventilation has been used to treat SPHS successfully when the response to maximal support with conventional mechanical ventilation (CMV) was poor. But the disadvantage was associated significant haemodynamic instability (3). ECMO is an alternative treatment which uses cardio-pulmonary bypass technology to temporarily provide gas exchange (9). There are several case reports where SPHS was successfully treated with V-V ECMO (4-6). In our case we initiated V-V ECMO on the 8th day of illness, continued for 6 days and were able to extubate 4 days after the decannulation.

In conclusion, we suggest that V-V ECMO can be used as a treatment option for patients with leptospira SPHS and poorly responding to CMV. Since SPHS leading to ARDS is the major cause of death in leptospirosis, ECMO should be considered early when it is difficult to maintain oxygenation with CMV.

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Reversible posterior leukoencephalopathy syndrome in a patient systemic lupus erythematosus: A diagnostic dilemma

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Introduction

Reversible posterior leukoencephalopathy syndrome (RPLS) is a clinical radiographic syndrome of a multitude of etiologies. It is characterized by headache, visual disturbances, seizures, altered mental status, and radiological findings secondary to brain edema predominantly in areas supplied by posterior circulation. It is often, but by no means always, associated with an acute raise of blood pressure in patients with hypertension. RPLS should be promptly recognized as it is a reversible and treatable condition. Here we report a case of RPLS in a normotensive patient with systemic lupus erythematosus (SLE)/secondary anti phospholipid syndrome (APLS).

Case Report

A 43-year old female with SLE and secondary APLS complicated with deep vein thrombosis presented to the ward with epigastric pain and dyspeptic symptoms for 3 days. She had been on prednisolone and warfarin without a proper follow up and had been off prednisolone for 2 weeks prior to admission. Her symptoms subsided and she was awaiting discharge, when she complained of generalized headache and intermittent blurring of vision. A few hours later she developed generalized tonic clonic convulsions with frothing and urinary incontinence. Following convulsions she developed confusion and altered behavior. On physical examination, she was drowsy and confused, with no neck stiffness. There were no features of active SLE such as synovitis, dermatological manifestations or serositis. Blood pressure was 120/70 mmHg.

According to the above findings, the differential diagnoses of cerebral infection, neuropsychiatric lupus, cerebral venous thrombosis and intracranial haemorrhage were considered. Subsequent investigations revealed a white cell count of 11.0×10^3 /mL (neutrophils 70%), platelets 191,000, CRP and ESR were 42 mg/dL and 56 mm, respectively. CSF full report revealed 3 polymorphs, 10 lymphocytes, increased protein (60mg/dL), and normal sugar levels. CSF culture revealed no growth. Serum calcium levels and electrolytes were normal and her non-contrast CT brain did not reveal any abnormality. EEG showed generalized slow waves with delta activity throughout the recording with no epileptiform activity.

She was started on IV ceftriaxone 2g, IV vancomycin 1g and IV acyclovir with concurrent administration of IV methylprednisolone 1 g/day pulses. The patient made a remarkable recovery within 2 days of symptom onset. Since the CSF report was inconclusive MRI/MRV was carried out to arrive at a definite diagnosis. The MRI FLAIR revealed subcortical T2 hyperintensity without enhancement on both occipital lobes (Figure). With these findings antibiotics were omitted.

Discussion

RPLS has been reported in literature as a reversible yet underdiagnosed manifestation of neuropsychiatric lupus (6). The pathophysiology of SLE related RPLS is incompletely understood, but cerebral auto regulatory failure and endothelial dysfunction causing disruption of the blood brain barrier leading to fluid transudation into the brain have been postulated (6).

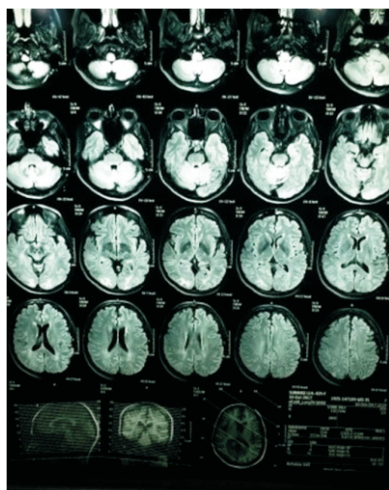


Figure 1: MRI flare image showing high signal intensity in both occipital lobes

In many case series conducted on SLE related RPLS acute hypertension, high SLE disease activity, renal involvement and the use of immunosuppressive agents, particularly cyclosporine have been identified as risk factors (3). RPLS occurring in a normotensive SLE patient, in the absence of accompanying lupus nephritis, features of high disease activity and immunosuppressants has rarely been reported in literature.

In a patient with SLE, the diagnostic dilemma lies in the differentiation of RPLS from cerebral infections due to immunosuppressants and from thrombotic events due to APLS. In cases where cerebrospinal fluid sampling was carried out, elevated protein was the most common finding. Though CSF pleocytosis was uncommon, it had also been reported and its presence should not exclude the possibility of RPLS. (4). Cerebral imaging is the mainstay of diagnosis and in most cases CT can be normal though it is useful in ruling out arterial ischaemia or thrombosis.

In RPLS, MRI is the investigation with the most diagnostic value and typical MRI findings include bilateral white-matter abnormalities in vascular watershed areas in the posterior regions of both cerebral hemispheres, affecting mostly the occipital and parietal lobes. Atypical features including hemorrhage, asymmetrical changes, isolated involvement of the frontal lobes, and cortical lesions are also common (5).

The management of RPLS in SLE is dependent on aetiology. Since hypertension is a feature in the majority of patients, they often improve dramatically

with rapid blood pressure lowering. Seizures are usually treated with phenytoin and in cases associated with cytotoxic drugs prompt removal or dosage reduction of the offending agent is recommended. In the rare instance, such as this case, where SLE per se acted as the trigger for RPLS, vigorous treatment with corticosteroids has been suggested. Nevertheless, it is still controversial whether immunosuppression should be initiated in RPLS in SLE and proper treatment strategies are yet to be instigated.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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Domestic violence exposure of married women in a rural area in Sri Lanka

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ABSTRACT

Introduction: Domestic violence (DV) is common but underreported in the world. In Sri Lanka, information with this regard is scarce. The present study investigated the domestic violence exposure of married women in a rural area in the country.

Methods: Community based cross-sectional study was conducted among 400 women in a conveniently selected Public Health Midwife area in Isurumuniya, in Anuradhapura. A self-reported questionnaire measured lifetime experiences of physical, emotional and sexual violence with individual, partners and family factors contributing to this problem.

Results: The overall DV exposure was 49% (n = 196), among them 53.4% emotional violence, 25.3% physical violence and 21.3% sexual violence exposures were reported. When comparing DV exposed and the non-exposed groups, significant differences were observed in women's education level, occupation, partners' substance abuse, number of children in the family and partner's parent living with the family. Age, partner's occupation, family income and women's parent living with the family showed no significant difference in exposure to DV. Among the exposed, only 58.2% had looked for help from others and 17% had obtained medical advices.

Conclusions: DV exposure is prevalent among married women. This issue needs attention from relevant authorities and necessary actions need to be taken to minimize this burden in the society.

Keywords: Domestic violence, women

Introduction

Sri-Lankan women enjoy a relatively better life compared to other South-Asian women with a 91.7% female literacy rate and 78 years of female life expectancy (Department of Census and Statistics 2011). Even though these figures seem satisfactory, it does not reflect that a woman's life is content. Domestic violence was identified as one of the main factors that impedes women's happiness and family harmony in the country.

United Nations defines domestic violence as all types of violent gender-based behaviour that result in women's physical, sexual, or mental suffering (World Health Organization 2001). Three main forms of violence was identified: a) physical violence involving beating, stabbing, strangling, choking, threatening with an object, traditional practices of female genital mutilation etc. b) sexual violence involving forcing unwanted sexual acts, forcing sex with others etc.) c) emotional violence

includes behaviors that intended to intimidate or persecute, abandonment, confinement to the home, threats to take away custody of the children, isolation, verbal aggression, etc. Disrespect for human rights, abuse of power and gender inequality were identified as root causes for this problems and alcoholism, poverty, violent society and many other factors were identified as contributory factors. Husbands and mothers in law were commonly reported perpetrators in this issue.

Domestic violence has been identified as one of the leading causes of mortality and morbidity in women and the major cause of disability (1). The physical consequences reported have ranged from homicide / suicide, unwanted pregnancies, abortions etc. Mental health consequences have ranged from major psychiatric diseases such as depression to minor psychological problems such as low self-esteem. Social impact reported were multiple partners, substance abuse and societal disharmony (2).

Scientifically credible estimates of the prevalence of DV are low. According to the statistics released by UNICEF in 2008, it is estimated that at least one in every three women in the world experiences violence. A handful of studies conducted in Sri Lanka have reported prevalence around 30% (3, 4). Catani *et al*, revealed a very high value (97%) of child exposure to family violence in the northern province Sri Lanka (5). Southern part of the country, also reported high (11-27%) level of child exposed to domestic violence (6, 7).

The world has recognized gender-based violence / domestic violence as a major barrier to societal development. WHO has therefore included promoting gender equality and empowerment of women as a part of the Sustainable Development Goals. The Ministry of Health Sri Lanka recently recognized the gravity of this problem and decided to address it as it is preventable and amendable for change. Limited data available with this regard has hindered obtaining a clear picture of the problem for management. The present study was therefore designed to examine the domestic violence exposure and factors contributing to this problem of women.

The study focused on three main goals, first, to explain the different exposures of DV experienced by women. Secondly, to identify the individual

factors, partner's factors and family factors contributing to this problem. Finally, to describe the help-seeking behaviour of women after exposure to DV.

Methods

A cross-sectional study was conducted in January 2017 in Isurumuniya Public Health Midwife area in Anuradhapura district. According to the data available, the Isurumuniya PHM area had 610 Eligible couples. We identified four roads randomly from the PHM area map and selected 100 ever-married women (from each road) aged between 18 - 60 years going along each roads. These women were given questionnaires to be filled at home, and they were collected on the following day giving time to complete the questionnaire without the knowledge of the spouse.

The study was approved by the Ethical Review Committee of the Faculty of Medicine, University of Ruhuna and permission was obtained by the Deputy Provincial Director Anuradhapura and Medical officer of Health Anuradhapura. Informed consent was obtained from all participants.

Measures

The questionnaire consisted of three main parts;

- a) demographic information and family characteristics,
- b) DV exposure and
- c) help seeking behaviour of women

Demographic information and family characteristics

This part of the questionnaire assessed woman's basic demographic data, partners information such as occupation and substance abuse and family factors such as family income, number of children in the family and extended family members living in the house. Social class was calculated according to the Barker and Hall (1991) classification; leading professions & businessmen, lesser professions & businessmen, skilled workers & non-manual workers, partly skilled workers and unskilled workers & unemployed.

DV exposure and help seeking behaviour DV exposure was measured by 22 questions; physical violence exposure (8 questions), emotional violence exposure (10 questions) and sexual violence exposure (4 questions). Women were asked to indicate whether they experienced violent act made against them by their partner in their entire life. Questionnaire rated how frequent they were exposed to violence on a 3-point scale; 0 = *none of the time*, 1 = *some times*, 2 = *most of the time* and 3 = *all most all the time*. The cumulative score of the above questions generated the DV exposure score which ranged from 0 to 57. DV exposure was categorized as exposed and non-exposed based on participants reporting most of the time to all the time in emotional violence or reporting 'sometimes' and more in physical or sexual violence (Cronbach's alpha = 0.90).

Post-violence help-seeking

This part of the questionnaire assessed problem disclosure to extended family, friends / neighbours or to children, and medical advice obtained from a general practitioner, or hospitalization

Statistical analysis

Data were analysed by using SPSS 20 version. Two-tailed p -values ≤ 0.05 considered significant. To address our first goal, we described different violence exposures of women. In our second goal, differences in socio-demographic factors, partner's factors, and family factors were compared between domestic violence exposed and non-exposed with Pearson's chi-square test.

Results

Sample characteristics

The sample consisted of 400 married women with a mean age 40.8 (SD 11.1, range 18-60 years). Most participants in the sample were Sinhalese (97.8 %) and others were Muslims (0.8%) and burgers (1.5%). A majority in the sample was currently married (89%) and the others were widows. Most women were married at the age between 21 - 25 years. The educational status of the sample was satisfactory

with 39.0% studied up to the Ordinary Level and another 39.5% studied up to the Advance Level. Most of the women (61.8 %) were unskilled workers or housewives. Family income of the participants was also satisfactory (mean = 57,178, SD = 46,168). Most of the partners of the women were skilled workers (30%). Among the Partners, 40.5% were alcoholics, 25.5% were smokers, and 4% used other substances. Women had an average number of two children in their families. Partner's mother lived in the house in 22.5% of the families, women's mother lived in the house in 20.8% of families.

Domestic violence exposure

Almost half of the sample 49% ($n = 196$) had experienced DV by their partners during their period of married life. Among the DV exposed, the mean exposure was 6.56 (SD = 6.01, range 1 - 42). The different types of violence exposures were; emotional violence 53.4%, physical violence 25.3% and sexual violence 21.3%. Table 1 illustrates DV exposures of participants. Age showed no correlation with DV exposure severity $r(400) = -0.05$, $p = 0.371$. DV exposure was common in the lower social class (51%).

Table 2 illustrates the comparison between DV exposed and non-exposed group in socio-demographic factors, partners' factors and family factors. We observed that there was no significant difference in DV exposure according to women's present age, family income and women's parent living with the family. DV exposure significantly differed with women's education, women's occupation, partner's occupation, partner's alcoholism, smoking, number of children in the family and partner's parents living with the family.

Post-violence help seeking behaviour

Among the women who were exposed to DV, 58.2% have disclosed their problem to others; extended family members (54.4%), friends or to neighbours (19.3%) or to an older child in the family (9.6%). Further 9.7% have obtained medical advice from a general practitioner and 6.6% were hospitalized.

Table 1: Frequency and severity of domestic violence exposure, reported lifetime exposure of participants' married life

Domestic Violence exposure domain	Exposure reported		Severity score	
	Number	Percentage	Mean	(SD)
Emotional violence exposure (total)	140	35.00	0.35	0.48
Need to take permission to leave house	92	23.02	0.23	0.42
Blamed for his faults	65	16.30	0.16	0.37
Used bad words	44	11.01	0.11	0.31
Humiliated in-front of others	28	7.34	0.07	0.26
Shout at and insulted	27	6.81	0.07	0.25
Not cared about feelings	26	6.50	0.07	0.25
Insulted the loved ones	20	5.04	0.05	0.22
Neglected during illnesses	17	4.31	0.04	0.20
Suspected for sexual promiscuity	15	3.80	0.04	0.19
Physical violence exposure (total)	101	25.32	0.25	0.44
Punched/ hit	84	21.03	0.21	0.41
Pushed/ threw things	62	15.51	0.16	0.36
Slapped/ twisted the arm	48	12.02	0.12	0.32
Threatened with a weapon	18	4.54	0.05	0.21
Attempted to strangle	14	3.52	0.04	0.18
Attacked with a weapon	10	2.57	0.02	0.156
Burned on purpose	5	1.32	0.01	0.11
Sexual violence exposure (total)	85	21.3	0.21	0.410
Physically forced to have sex	78	19.50	0.20	0.39
Forced to perform odd sexual acts	36	9.01	0.09	0.29
Forced to have sex in-front of children	19	4.81	0.05	0.21

Table 2: Comparison between domestic violence exposed and non-exposed groups in individual, partner, and family characteristics

	Domestic violence				Total		Significance
	Exposed		Non- exposed		n	%	
	n	%	n	%			
Women's present age							
< 25	19	9.7	11	5.4	30	7.5	$\chi^2 = 3.239$
26 - 35	59	30.1	59	28.9	118	29.5	$df = 3$
36 - 45	53	48.6	56	27.5	109	27.2	$p = 0.356, NS$
46 <	65	27.0	78	38.2	143	35.7	
Total	196	100.0	204	100.0	400	100.0	
Women's education level							
Up to 8	26	13.2	13	6.4	39	9.8	$\chi^2 = 9.391$
Up to O/L	81	41.3	75	36.8	156	39.0	$df = 3$
Up to A/L	65	33.1	93	45.6	158	39.5	$p = 0.025, S$
> A/L	24	12.2	23	11.3	47	11.8	
Total	196	100.0	204	100.0	400	100.0	
Women's occupation							
Leading professions & businessman	8	4.1	6	3.0	14	3.5	$\chi^2 = 11.635$
Lesser professions & businessmen	43	22.4	46	22.8	89	22.6	$df = 5$
Skilled workers & non-manual workers,	11	5.7	23	11.4	34	8.6	$p = 0.040, S$
Partly skilled workers	9	4.7	1	0.5	10	2.5	
Unskilled workers & unemployed	121	63.0	126	62.3	247	63.0	
Total	192	100.0	202	100.0	394	100.0	
Partner's occupation							
Leading professions & businessman	50	28.5	43	22.9	93	23.3	$\chi^2 = 10.802$
Lesser professions & businessmen	38	21.7	38	20.2	76	19.0	$df = 5$
Skilled workers & non-manual workers,	46	26.3	75	40.0	121	30.3	$p = 0.055, NS$
Partly skilled workers	18	10.3	19	10.1	37	9.3	
Unskilled workers & unemployed	23	13.1	13	6.9	36	9.0	
Total	175	100.0	188	100.0	363	100.0	
Partner's alcoholism							
Frequent user	101	60.1	61	34.7	162	47.1	$df = 1$
Rarely or not a user	67	39.9	115	65.3	182	52.9	$\chi^2 = 22.362$
Total	168	100.0	176	100.0	344	100.0	$p < 0.001, S$
Partner being a smoker							
Yes	67	51.5	39	30.0	106	40.8	$\chi^2 = 16.395$
No	63	48.5	91	70.0	154	59.2	$df = 1$
Total	130	100.0	130	100.0	260	100.0	$p < 0.001, S$

Table 2: Comparison between domestic violence exposed and non-exposed groups in individual, partner, and family characteristics contd.....

	Domestic violence				Total		Significance
	Exposed		Non- exposed		n	%	
	n	%	n	%			
Family income							
< 10,000	13	7.3	11	5.7	24	6.5	$\chi^2 = 2.098$
11,000 - 50,000	96	53.9	115	60.5	211	57.3	$df = 3$
51,000 - 100,000	46	25.8	46	24.2	92	25	$p = 0.552, NS$
> 100,000	23	12.9	18	9.4	41	11.1	
Total	178		190		368	100.0	
Number of children in the family							
No children	20	10.4	13	6.5	33	8.4	$\chi^2 = 12.390$
One child	99	51.3	138	68.7	237	60.1	$df = 2$
Two or more children	74	38.3	50	24.9	124	31.5	$p = 0.002, S$
Total	193	100.0	201	100.0	394	100.0	
Women parents living with the family							
Yes	44	22.5	42	20.6	86	20.6	$\chi^2 = 0.205$
No	152	77.0	162	79.4	314	21.5	$df = 1$
Total	196	100.0	204	100.0	400	100.0	$p = 0.651, NS$
Partner's family living with the family							
Yes	62	31.6	36	19.4	98	25.8	$\chi^2 = 11.779$
No	133	68.2	150	80.6	283	74.3	$df = 1$
Total	195	100.0	186	100.0	381	100.0	$p < 0.001, S$

Discussion

This study meant to assess the different types of DV exposure of women and to evaluate whether DV exposure differs with women's factors, partner's factors, and family factors. In this rural part of the north-central province of Sri Lanka, we found that there is a higher number women suffering from DV.

Our first goal was to describe different types of DV experienced by women. The commonest type of violence reported was emotional violence (53%). In terms of types of emotional violence exposures, a condoling behaviour of expecting to obtain permission before leaving the house was the commonest. Apart from that, different types of verbal abuses such as blaming the women for partners faults and calling bad words were reported.

Physical violence was also common (25%) in this sample. Among the exposed, punching or hitting, pushing or throwing things and slapping or twisting were the common types of DV. It is important to note that a considerable number of women reported an attempt to strangle (4%), attack with a weapon (3%) and burned on purpose (1%). The prevalence of sexual violence exposure was also high (21%) in the sample. Comparability of these rates with previous rates are restricted because limited studies were published with this regard in Sri Lankan population. Jayasooriya *et al* (2011) reported physical violence exposure as the commonest type of domestic violence exposure of women with a prevalence of 34%. There, the emotional violence exposure

was 17% and sexual violence exposure was 3%. Subramaniam and Sivayogan (2001) reported a prevalence of 30% in “wife battering”, 11% current physical violence and 3% sexual violence in North-Central and Central provinces (3). Psychological violence exposure of our study was close to the previous values reported in Sri Lanka but the discrepancy is great with sexual violence exposure. Our community survey reporting higher values in sexual violence exposure may have revealed the true picture of the situation because both the above studies have interviewed women in this sensitive issue, which may have caused under reporting. When comparing our finding with the other South-Asian countries, Bangladesh reported around 42% physical violence and 50% sexual violence in a rural area of the country (8). In India, prevalence of physical violence was 41% (9) and sexual violence was 30% (10). Although the comparability of these values is restricted due to methodological discrepancies between studies, Sri Lankan values are much lower than those South-Asian countries indicating that Sri Lankan women are having a much peaceful domestic life.

Does domestic violence exposure differs with individual factors, partner’s factors, and family characteristics?

Our second goal was to compare DV exposed group with the non-exposed group in women’s, partner’s and family factors. Even though the age of the women has no significant difference with domestic violence exposure, the negative correlation indicated that increase in age reduces exposure to DV. Age at marriage of women in this study was 21-25 year, which is compatible with Sri Lanka’s population census values of 25 years at age at marriage. Increasing in age at marriage thus will be protective for women from DV (3). Women’s increase in education level and employment have shown a protective effect in DV exposure.

DV experience has not differed with partners’ occupation in this sample. As expected, violence exposed women’s partners had used alcohol and smoking more than the women who have never experienced domestic violence. This is in line with most of the studies revealing partners alcoholism is a risk factor for women’s DV exposure (3., 11).

Men using alcohol and smoking than women is more acceptable in South Asian communities. Specifically, among Sri Lankan Buddhist, which is more than 70% of the population, women rarely use alcohol or smoking. In a male-dominated society accepting substance usage for men, allows them to demonstrate more power against women in this situations. Family income has not shown any significant difference in DV exposure in women. According to results, women with no children and women with two or more children have experienced DV than women with one child in the family. DV exposure was irrespective of women’s parents living in the same house. However, when the partners’ family was living in the house, DV exposure of women was high.

This survey revealed that close to half of the DV exposed women have not shared their problem and searched for help from any person in the family or community. Few had taken treatment from general practitioners and some were admitted to hospitals, probably for physical injuries.

In closing we emphasize that there is a high prevalence of DV exposure in the community and thus we need a proper supportive service to identify these women for help. Further, it gives the message to the curative health system not to neglect this problem. This is because it may be the only contact of these women with the available health system, where we can direct them for help.

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Deliberate self-harm in adolescents in Southern Sri Lanka; a hospital based study

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ABSTRACT

Introduction: Little is known about adolescents who engage in deliberate self-harm (DSH). Therefore, using data from medical and police records of the Teaching Hospital Karapitiya, we examined patterns of DSH among young people.

Methods: We examined records of episodes of DSH for 2001 and for the 5 year period from 2006 through 2010. Data on 1720 individuals between 10 and 18 years old were gathered.

Results: There was a striking increase from 2001 to 2010 in admissions of young people with DSH. In 2001, there were 137 cases; in 2010, the number had nearly tripled (N=391). Case fatality rates were low; in 2001, it was 8%; in 2010, it was 0.25%. Comparing 2001 to 2010, cases involving poisons decreased from 58% to 46%; cases involving medicinal overdoses increased from 41% to 54%. Adolescents rarely used other methods. In 2001 and in each year from 2006 to 2010, adolescents aged 15-18 years accounted for at least 85% of the sample, and there were three times more girls than boys.

Conclusion: Decreases in suicides have been substantial; nonetheless, rates of non-fatal DSH have climbed. We call for research on antecedents and correlates of DSH in groups at high risk, such as older adolescent girls.

Keywords: *Adolescents, case fatality rate, deliberate self-harm, gender differences, paracetamol*

Introduction

Suicide has been a matter of concern in Sri Lanka since an upward spiral of deaths was reported in the early 1970s (1). By 1995, the number of deaths peaked at 47/100,000, one of the highest rates of suicide in the world (2). From the late 1990s, the suicide rate declined; the latest figures report an annual incidence of 17/100,000 (3). Adolescents and young adults - particularly females - account for a disproportionate number of suicide deaths. In every year from 1976 to 2011, women between the ages of 17 and 25 had higher rates of self-inflicted death than women in any other age group (4).

The decrease in suicides since late 1990s has been attributed largely to restrictions on agricultural pesticides (2, 5). This decline in deaths is certainly welcome. However, evidence of hospital admissions, as well as household survey data, reveals that the incidence of nonfatal deliberate self-harm is very high and has been consistently increasing. Recently, a large-scale household survey in the North Central province conducted between 2010 and 2013 recorded a rate of nonfatal self-harm of roughly 560/100,000 among individuals aged 14 years and older (6). A broad consensus has emerged in the research in Sri Lanka that suicide and nonfatal

deliberate self-harm typically occur in a context of acute interpersonal conflict (7-11). Suicidal acts can be prompted by a variety of motives other than a wish to die. The high rates of hospital admissions for nonfatal deliberate self-harm, regardless of whether or not such acts reflect a wish to die, place a strain on medical resources, as well as on communities and families.

In the present study, we focus particularly on adolescents who have engaged in deliberate self-harm, drawing on information available in their medical records.

Methods

We conducted a retrospective survey of medical records at Teaching Hospital, Karapitiya (THK). The THK is the only tertiary-care government hospital in the South of the country, and it serves as the referral centre for the entire Southern province. Most cases of self-inflicted harm (especially self-poisoning) are treated in government hospitals. Therefore, we assumed that admissions to the THK constituted a reasonably representative group of DSH patients.

In accord with the World Health Organization guidelines (12), we considered individuals between 10 and 19 years of age to be adolescents, and so we selected the hospital records of all patients admitted for DSH who were between 10 and 18 years old.

In addition to accessing hospital records, we consulted the registry of the hospital's Police Post. This enabled us to gather data on individuals who died en route to the hospital, and to corroborate deaths that had occurred in hospital.

Four medical pre-interns were trained to extract data from Bed Head Tickets (BHTs). BHTs were gathered for 2001 and for every year between 2006 and 2010. Overall, data pertaining to 1720 individuals were recorded. There were no instances of repeated DSH. Cases of accidental self-harm were excluded. In a few cases, it was unclear whether the self-harm was deliberate or accidental; in these cases, the full BHT was reviewed by the investigator and the research team. If a consensus did not emerge, the case was excluded.

We extracted the following information from the records: demographic data, detailed information

about the method(s) of harm the individual used; the date of admission and the length of hospitalization; whether the self-harm was fatal or not; and other relevant details or comments noted in the record. If information was missing from the BHT, we consulted other sources (such as record room registers) in an effort to complete the data.

Approval for the study was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Ruhuna.

Results

Over the 10-year period between 2001 to 2010, the number of adolescents admitted to hospital for DSH nearly tripled. As table 1 shows, the number of admissions increased by 286%.

The gender and age composition of the 2001 and 2010 cohorts was examined. In both 2001 and 2010, older adolescents (those aged 15-18 years) accounted for at least 87% of the admissions. Moreover, in 2001 and in 2010 three times more girls than boys were admitted to hospital (table 1).

Yearly data from 2006 to 2010 provide a more fine-grained picture of adolescents' self-harm. Overall, there were consistent increases over this 5 year period in the number of adolescents admitted to hospital for DSH, with a 53% increase overall. As table 2 shows, girls accounted for roughly three-quarter of the admissions in every year. The proportion of older adolescents (those aged 15 - 18 years) varied between 86% - 93% of the admissions over the 5 year period.

The records also provided information about the method(s) the adolescents used for self-harm. Nearly all (99%) had ingested one or more harmful substances. These substances included household chemicals (e.g. bleach, kerosene oil, and mosquito coils); poisonous plants (niyangala; yellow oleander seeds); agrochemicals (pesticides and weedicides); and overdoses of various medications. A comparison of 2001 and 2010 shows that, generally speaking, there seemed to be little change in adolescents' reliance on ingesting harmful substances, rather than using such methods as self-immolation or hanging. In 2001, 95% of the adolescents (n =130) had ingested harmful substances; in 2010, 99% had done so (n = 388).

There were two notable differences between 2001 and 2010. First, there was a considerable increase in medicinal overdoses; mainly due to the increase in paracetamol overdoses. The use of paracetamol had doubled. In 2001, 21% of adolescents (n=29) had ingested paracetamol overdoses; in 2010, 42% (n=167) had. The use of other medicines decreased. None of the paracetamol overdoses was fatal (table 3). The second notable change from 2001 to 2010 was the decline in adolescents' use of agrochemicals, including the highly toxic weedicide Paraquat. In 2001, 21% of the adolescents had ingested an agrochemical. In 2010, only 8% had.

Now we turn to the 5-year period from 2006 to 2010. As table 4 shows, throughout this period, medicinal

overdoses were the most common method of DSH. Admissions for agrochemical poisons declined by half over the 5 year period; however, admissions for other types of poisons (such as house-hold substances and poisonous plants) increased substantially.

By 2010, paracetamol had become the most common method that adolescents used for DSH. The number of tablets they reported having swallowed ranged from 5 to 120, though these reports likely are not wholly accurate. For the period of 2006-2010, paracetamol overdoses constituted 48% (n=754) of total admissions. Thirty nine percent (n=146) of boys and 50% (n=608) of girls had taken paracetamol overdoses.

Table 1: Cases of DSH among adolescents: 2001 and 2010

Year	2001	2010
Boys	37 (27%)	101 (26%)
10 - 14 years	4	13
15 - 18 years	33	88
Girls	100 (73%)	290 (74%)
10 - 14 years	13	35
15 - 18 years	87	255
Total	137	391

Table 2: Cases of DSH among adolescents: 2006 - 2010

Year	Young boys (age 10-14)	Young girls (age 10-14)	Older boys (age 15-18)	Older girls (age 15-18)	Total
2006	7 (3%)	28 (11%)	51 (20%)	169 (66%)	255
2007	4 (2%)	18 (7%)	57 (22%)	183 (70%)	262
2008	15 (5%)	27 (9%)	49 (15%)	229 (71%)	320
2009	13 (4%)	22 (6%)	79 (22%)	241 (68%)	355
2010	13 (3%)	35 (8%)	88 (21%)	255 (68%)	391

Table 3: Methods used by adolescents for self-harm, 2001& 2010

Method	2001	2010
Medicine overdoses	39% (55)	54% (211)
<i>[Paracetamol]</i>	<i>21% (29)</i>	<i>42% (167)]</i>
Poisons (incl. plants)	35% (50)	38% (150)
Agrochemicals	21% (29)	8% (30)
<i>[Paraquat]</i>	<i>4% (6)</i>	<i>1% (5)]</i>
Other methods	5% (7)	1% (3)

(Percentages add up to slightly more than 100 because some participants used more than one method).

Table 4: Methods used by adolescents for self-harm, 2006 to 2010

Year	Overdoses	Poisons	Agrochemicals	Other
2006	65% (164)	19%(49)	16% (42)	2
2007	63% (166)	25%(66)	14%(36)	1
2008	65% (205)	24%(76)	12% (37)	2
2009	63% (222)	28% (99)	9% (31)	3
2010	54%(211)	38% (150)	8% (30)	3

(Percentages add up to slightly more than 100 because some participants used more than one method).

Overall, very few adolescents succumbed to death; the rate of fatalities was roughly 2% (n = 33). Moreover, the absolute number of fatalities, as well as case fatality rates (CFR, that is, the proportion of cases that ended in death) declined considerably over time. In 2001, there were 137 admissions and 11 deaths. Older adolescents accounted for all but one of the deaths. In 2010, there were 391 cases and only one death. The CFR decreased dramatically over the 10-year period, from 8% to 0.025%. During the 5 year period from 2006 to 2010, the CFR overall was only 1.4%. Older adolescents accounted for most (86%) of these deaths.

The sharp decline in the death rate over time merits scrutiny. One likely cause of this decline is the shift to less lethal means. In 2001, 36% of the deaths among adolescents resulted from paraquat ingestion.

In 2010, there were no deaths due to paraquat. In 2001, 4% of the adolescents took paraquat, in 2010, only 1% took paraquat. In the intervening years, restrictions had been placed on the import and sale of paraquat (2).

Discussion

Because this study relied on medical records, the data may not be wholly accurate. Medical staff may make errors in recording; patients may sometimes be less than truthful about what they ingested. Nonetheless, it is unlikely that the dramatic patterns of change that we observed are in error. One such pattern is that over the 10 year period of the study, adolescents' hospital admissions for DSH nearly tripled. The increase was similar for younger and

older adolescents and for boys and girls. A second notable finding is the consistent preponderance of girls among adolescent DSH cases.

The data also revealed a sharp shift over time toward admissions for paracetamol overdoses, a shift that has been noted by other researchers as well (13). Although paracetamol overdoses are rarely fatal, this shift has practical import. Such overdoses may require costly medical intervention (14).

Limiting the availability of paraquat had a dramatic salutary effect on rates of self-inflicted death. However, the strategy of limiting availability has only a limited utility. Many of the substances that adolescents ingested are in everyday use in many households-bleach, toilet cleaner, mosquito coils, kerosene oil, and prescription medicines. Paracetamol-mainly in the form of Panadol tablets is freely available, inexpensive, and consumed routinely by many people. Many households and school classrooms keep a substantial supply on hand. Furthermore, youngsters can easily purchase packets of tablets at local shops without being questioned. Our view is that efforts to prevent suicide/DSH must also address the circumstances and motives that give rise to self-harm (9, 11, 15).

The findings point to substantial differences between adolescents' and adults' self-inflicted harm. For example, adolescents have a much lower CFR than adults. When considering adolescents, public health personnel, researchers, and prevention practitioners need to refrain from drawing inferences about nonfatal DSH on the basis of fatalities. Among adolescents, the latter represent only a minuscule subset of cases of self-inflicted harm, and that subset may be highly unrepresentative.

The findings also point to a radical difference between adolescents and adults in the gender distribution of both suicide and nonfatal DSH. This difference ought to alert researchers to the necessity of narrowing their investigations to specific age groups and gender groups. Generalizations made on the basis of aggregate data likely will cover over important information about the social ecology, environmental stressors, and social aftermath of DSH.

Compared to deaths, nonfatal DSH has far less often been a focus of attention. Given its rising incidence, however, it seems unwise to ignore it.

Medically speaking, nonfatal DSH may not be trivial; in some cases, it can lead to long-term physical injury, such as liver damage and esophageal scarring. In addition, the medical resources - both human and material-required for some cases can strain the under-resourced health care system.

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Administration of paracetamol to children; do parents adhere to recommendations?

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ABSTRACT

Introduction: Fever is a common health problem in childhood. Parents often administer paracetamol to children without consulting a doctor since it is a widely available over the counter drug. The aim of this study was to find out knowledge and practices of administration of paracetamol for children below the age of five years.

Methods: Community based descriptive cross-sectional study was carried out using a pre-tested interviewer administered questioner in Bope-Poddla Medical Officer of Health area.

Results: One hundred and six parents participated (89.6% female). Mean age (SD) of participants was 32 (5.9) years. All parents were aware of the availability of tablets and syrup. Only 55.7% was aware of suppositories. Majority (95.3%) of the participants did not know the recommended dose. More than half of the parents (62.3%) administered paracetamol without a medical advice. The association between use of package label instruction with correct dosing was statistically significant ($p = 0.04$). The commonly used measuring device was a measuring cup (83%). Among the seven teaspoon users, two knew its capacity correctly. Fifty-nine percent of the parents gave weight appropriate dose; 15.1% had given subtherapeutic dose and 25.5% given suprathereapeutic dose. Level of education was not associated with correct dosing ($p = 0.1$). There were statistically significant associations between the age group of the participants with correct dosing ($p = 0.04$). The recommended dosing frequency was exceeded by 50.9%.

Conclusions: Administration of suprathereapeutic and subtherapeutic doses of paracetamol to children under five years old is not uncommon. Further, parents are not adhering to the recommended frequency of administration.

Keywords: Children, fever, knowledge, paracetamol, practice

Introduction

Fever is a common response in various childhood diseases, most commonly infections (1). Parents consider fever as a disease rather than a symptom of a disease. Hence, they often seek medical attention whenever child gets fever (2).

Parents are anxious when dealing with fever. Therefore, they immediately consult a doctor or administer an antipyretic.

Paracetamol (Acetaminophen) is a commonly used antipyretic, which is widely available as an over the counter medication (3). Most of the time, parents administer an incorrect dose of paracetamol or more frequently than recommended (4). Recent studies showed that the paracetamol toxicity in children occur following repeated suprathereapeutic doses which can lead to liver impairment and death (5).

Paracetamol is a common pharmaceutical agent involved in overdose especially among the children below six years (6). Food and Drug Administration Regulations implemented restrictions in printing dosing instructions on the package label for children less than two years, aiming to encourage parents to consult a doctor before administering. Previous studies showed that both underdose and overdose of paracetamol were administered to children due to parental errors and poor instructions by the healthcare workers (7). Further, it was identified that lack of awareness on different concentrations in various dosage forms and inability to calculate weight appropriate dose of paracetamol led to incorrect dosing of paracetamol (8).

The recommended dose of paracetamol is 10 - 15 mg/kg body weight, can go up to 75 mg/kg body weight/day, but should not exceed 100 mg/kg body weight/day as it is likely to cause hepatotoxicity. There should be at least four to six hours gap between each paracetamol dose to prevent overdosing (9).

In Sri Lanka there were few studies done to explore the dosing accuracy of caregivers. Therefore, the aim of the study was to find out knowledge and practices of administration of paracetamol to children in a selected MOH area in Galle.

Methods

A community based cross-sectional study was carried out using a pre-tested interviewer administered questionnaire after obtaining ethical clearance from the Ethics Review Committee, Faculty of Medicine, University of Ruhuna. The pretest was done in 10 randomly selected parents from Galle Municipality area. From the total 17 Public Health Midwife (PHM) areas of Bope-Poddala, MOH division, eight PHM areas were selected by convenient sampling method considering the feasibility to approach. Convenient sampling method was again used to select the parents from each PHM area. One hundred and six parents were recruited for the study. Single parent was interviewed from each family who had at least one child less than five years old. Informed written consent was obtained from the participants.

The questionnaire was developed based on published literature (9). It consisted of four sections to cover

demographic characteristics, knowledge of parents on calculation and measuring the dose, frequency of administration, available forms etc. (16 questions), parental motives (3 questions) and practical aspect on administration (13 questions).

The association of dosing accuracy with demographic data was analyzed with Chi-square test and correlations were analyzed with Person correlation with Statistical Package of Social Science (SPSS).

Results

The majority of the participants were mothers (89.6%). Nearly one third (36.8%) of participants were below the age of 30 years. All participants received at least primary education (Table 1).

Knowledge on paracetamol preparations and dosing

All the participants were aware with the availability of tablets and syrup but, 75.5% knew about infant drops and only 55.7% knew about suppositories. More than half of the participants (58.5%) knew the correct (four times per day) dosing frequency while 38.7% stated three times per day and 2.8% stated twice per day as the correct frequency.

Majority of parents (95.3%) did not know the amount of paracetamol to be administered for one kilogram of body weight per dose and maximum dose per kilogram per day. Among the participants, 4.7% stated that the minimum dose as 5 mg/kg while 3.8% of the participants said that the maximum dose as 15 mg/kg and one parent said it was 20 mg/kg.

Half of the parents incorrectly believed that the paracetamol syrup for children is more concentrated than infant drops. Among the participants, 84% of them identified poisoning can occur not only by administering a single high dose but also by giving more frequently than recommended and giving a dose more than recommended per day.

Practices of use of paracetamol

In case of fever; 13.2% of parents said that they took the child to a doctor before giving any drug including paracetamol. The sources of awareness

of paracetamol were; from a doctor (38.6%), media (23.6%), pharmacist (8.5%), friends or relatives (12.3%) and Public Health Midwife (17%). Fifty eight percent of parents decided the dose by using package label instructions, 36.3% with the advice of a doctor. A few parents decided the dose with directions of pharmacist or by advice of a friend who have a child with the same age.

The measuring devices used were the standard measuring cup (83%), teaspoon (6.6%), syringe (4.7%) and the dropper (5.8%). Among the respondents, only half knew the correct capacity of the teaspoon. Among the teaspoon users (n = 7), only two knew its capacity correctly.

In case of high fever, less than half (45.3%) of the parents maintained correct (six hour) time gap between two doses and 3.8% said they maintained eight hours gap. The rest (50.9%) administered paracetamol without waiting for six hours from the last dose. Among them, 27.4% maintained four hours gap and 20.8% maintained five hours gap and one of the participants said that he maintained three hours gap.

Dose of paracetamol administered by 59.4% of the respondents was weight appropriate (10 mg/kg/dose-15mg/kg/dose) while 15.1% had given subtherapeutic dose (<10 mg/kg/dose) and 25.5% had given suprathereapeutic dose (>15 mg/kg/dose). The maximum dose administered was 35.21 mg/kg.

Association of use of paracetamol with demographic data

There were statistically significant associations between the use of package label instruction and correct dosing (p = 0.04), parents age (above 30 years) and correct dosing (p = 0.04) (Table 2). There was no association between dosing accuracy with level of education or knowledge of side effects.

There were statistically significant associations between the level of education and the dosage decided on doctor’s advice (p = 0.02) and between level of education and dose decision according to package label (p = 0.02) (Table 2). There were no correlations between correct dosing and age of the parent or the number of children in the family.

Table 1: Baseline characteristics

Characteristics		%
Age (years)	< 30	36.8
	> 30	63.2
Gender	Female	89.6
	Male	10.4
Marital status	Married	98.1
	Separated	0.9
Educational status	Primary education	12
	O / L	35
	A / L	43
	Degree / Diploma	10
Number of children	One	38.7
	Two	44.3
	More than two	17

Table 2: Associated factors with dosing accuracy

Variable	Number of participants (%)		P value
	Correct dose	Incorrect dose	
Age			
< 30 years	28 (44.4)	11 (25.6)	0.04
> 30years	35 (55.6)	32 (74.4)	
Educational level			
Primary education	5 (7.6)	8 (18.6)	0.06
Up to O/L	18 (28.6)	19 (44.2)	
Up to A/L	32 (50.8)	13 (30.2)	
Degree/Diploma	8 (12.7)	3 (7)	
Gender			
Female	59 (93.7)	36 (83.7)	0.1
Male	4 (6.3)	7 (16.3)	
Dose deciding on doctor's advice			
Yes	25 (39.7)	22 (51.2)	0.2
No	38 (60.3)	21 (48.8)	
Dose deciding on package label instructions			
Yes	47 (74.6)	24 (55.8)	0.04
No	16 (25.4)	19 (44.2)	
Dose deciding on pharmacist advice			
Yes	1 (1.6)	4 (9.3)	0.07
No	62 (98.4)	39 (90.7)	

Discussion

Paracetamol is an over the counter drug which is commonly used to relieve pain and fever. As it is a drug common to cause toxicity, it is important to emphasize the value of taking the correct dose, especially when administering to children as overdose can damage liver and kidney.

The current study explored the knowledge and practices of administration of paracetamol to children. Confirming with the available literature, most of the parents incorrectly believed that children's paracetamol syrup is more concentrated than infant drops (3, 9) which can lead to either overdose or underdose. Further, the situation is complicated with the availability of number of brands with varying concentrations.

This study highlights inadequate knowledge on the calculation of dose of paracetamol as only 5% knew the weight appropriate dose. The finding is parallel with the results of Ramanayake R P *et al.* (2012), in which only one participant could calculate the dose correctly (9). They found that 11% of caregivers had given subtherapeutic dose (<10 mg/kg/dose) while 43% had given a supra therapeutic dose (>15 mg/kg/dose) for children. Surprisingly, 6% of caregivers altered the dose based on the severity of fever. Further, 16% administered more frequently than recommended (9).

Bilenco N, *et al.* (2006) showed that administration of suprathematic dose of antipyretics is common which was 34.8% according to their results (10).

In Sri Lanka it was shown that administration of suprathereapeutic dose was 43% in 2012 (9). The current study showed the lowest figure that is 25.5%. This clear reduction of administration of suprathereapeutic dose may be due to proper instructions by doctors, pharmacists and health care workers, clear instructions on paracetamol package label / leaflet or education through mass media regarding the toxicity.

According to Ramanayake R P, *et al.* (2012) 80% of the parents maintained six hours gap between two doses (9). In the current study around 70% of the parents maintained 4 - 6 hours gap between two doses. However Bilenco N, *at el* (2006) showed one fifth of the parents repeated the dose at intervals less or equal to three hours.

In spite of advice from doctors and package label instructions on dose of paracetamol, parents administer suprathereapeutic or subtherapeutic dose of paracetamol and also more frequently than recommended. According to Obu HA, *at el* (2012) most care givers relied on past experience (71.2%) rather than on enclosed information leaflet to decide the appropriate dose (11). It is obvious that accurate dosing and frequency is a must to get desired outcome while avoiding the toxicity. Thus, health care workers should guide and emphasize parents on administration of correct dose of paracetamol to children without assuming that they know the facts. Further, printing of dose instruction on the package label in a large font, displaying calculation of weight appropriate dose in pharmacies, well baby clinics and pediatric clinics might help to improve safe and effective administration of paracetamol.

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