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"The image depicts a caricature of a child with Down Syndrome: An important birth defect"

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SLMA NEWS+

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MBBS, MD(SL), FRCP
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President, Sri Lanka Medical Association

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Children in the COVID-19 scenario: The forgotten lot

Children are not the most affected group due to COVID-19 pandemic in terms of morbidity and mortality. However, recent reports indicate that the number of cases among children and adolescents is increasing. At present the World Health Organization does not recommend vaccination of children below 16 years of age, even if they belong to a high-risk group. Meanwhile companies producing COVID-19 vaccines have been testing their vaccines in children 12 years of age and older, and the results are expected soon. COVID-19 vaccine clinical trials involving children of six months to 12 years of age, are also underway.

Like in most others, our country's focus too is on curtailing the COVID-19 pandemic and stabilizing the economy. Hence children are not a priority at the moment. Even though the clinical impact is not intense, at least in the acute stage, children's lives have nonetheless been affected profoundly in many ways.

With the global economic recession, more households have tumbled into the abyss of poverty. According to The United Nations Children's Fund (UNICEF), due to the pandemic, additional 140 million children are affected by poverty and nearly two-thirds of these children live in Sub-Saharan Africa and South Asia. Impact of poverty is multifaceted, affecting access to education and healthcare, as well as housing, nutrition, sanitation, and safe water supplies. UNICEF declared that, as of March 2021, schools for more than 168 million children globally had been completely closed for over a year due to COVID-19 lockdowns. Only 62.40% children in South Asia have been able to benefit from remote learning. Meanwhile the impact on nutrition cannot be disregarded. Higher numbers of children are becoming malnourished due to diets of inferior quality and containment measures due to COVID-19. In some countries even the vaccination programmes too are hindered but luckily it is not so in Sri Lanka. Lockdown has resulted in heightened tensions in the household, with added stressors placed on parents and or caregivers, leading to violence at home. According to UNICEF, 66% of countries reported violence against children due to COVID-19. A much unseen issue is the impact on teenage pregnancies and subsequently on child marriages. United Nations organizations have estimated that around 10 million additional child marriages may occur before the end of the decade due to COVID-19.

We are yet to know the impact of COVID-19 on long term health. The exact timeline for the accessibility of a safe COVID-19 vaccine for children is not known. Even when it is available, like any other vaccine, it will not be 100% effective. Thus, the best approach would be to protect the children from contracting the infection. This responsibility lies mainly with the parents. But have the Sri Lankan parents behaved in a responsible manner, especially during April holidays? Will they do so during upcoming Vesak holidays? Have you, as a doctor, taken enough precautions to protect your own children? Have you undertaken your societal responsibility by educating the public regarding the risk that they perpetrate on their children directly by exposing them to infection and indirectly by risking parents' lives which will make them orphans? You, as a frontline healthcare worker, were lucky enough to get vaccinated, but do you follow the doctrine you preach? Are you still taking safety precautions to prevent carrying the virus home? How many adhere to social distancing in the cafetaria at the hospital during meals? Schools are re-starting after the holidays and those (doctor and lay) parents who worry about sending their kids to school due to the fear of COVID-19, had not had any second thoughts on taking their children all around the country during the April holidays, with no concerns for safety precautions.

First, all of us as responsbile and educated individuals, should protect ourselves and our chidlren and families by being responsible parents/adults. Secondly, as healthcare workers, we need to be sensible in our own behaviour at all the places we work in or visit. Thirdly, we should not forget our soceital responsibilty to be a role model or educate the public. In addtion, those who are in decision making positions could, and in fact should, respond appropriately, regarding the factors that affect the children in the long run, such as education, nutrition, vaccination, prevention of child abuse, teenage pregnancies etc. Since we have no way of predicting the longer-term impact of COVID-19 on children, including ways the virus may harm the long-term physical, emotional and mental health, it is better to take precautions now than regret later. Thus we need at least to make sure that children continue to maintain physical distance from others, clean their hands frequently, adhere to respiratory etiquettes and wear a mask until the pandemic is over or if and when it is safe to do so. Children are our greatest treasure and they are the future of the world. So let us protect them.

– 19th April 2021

Editor-in-Chief
Professor Hasini Banneheke,
Faculty of Medical Sciences,
University of Sri Jayewardenepura

President's Message

Dear Colleagues

I am pleased to release this message at a time that the SLMA, over the first quarter of 2021, was able to contribute in a positive manner for several issues that are of national relevance.

The initial opinion of the SLMA on burial of COVID-19 deaths was confirmed by the announcement of the decision of the Government of Sri Lanka, made in March 2021. The SLMA's priority list for vaccination against COVID-19 infection was accepted in toto by the Ministry of Health, though much later. However, the process of strict adherence to the priority list was somewhat arguable. In addition to the SLMA's contribution to many other COVID-19 related issues, SLMA was also able to thwart attempts to legalize cannabis and much later on promoting cinnamon cigarettes. The SLMA's position on edible fats and oils was communicated to His Excellency the Executive President of the Democratic Socialist Republic of Sri Lanka at the beginning of April 2021.

> "As medical professionals, it is very important to emphasize the need for adherence to public health preventive measures long-term, to combat the spread of the outbreak in Sri Lanka.

There are numerous factors influencing implementation of the national vaccination programme against COVID -19 infection, making it more complicated in Sri Lanka. Scarcity of vaccine availability in the international market, uncertainty on the availability of the second dose for the individuals who have received the first dose of vaccination, rare but serious haematological adverse effects caused by the AstraZeneca vaccine, exorbitant cost for some other vaccines, risk of spread of variants that may escape immunity from the AstraZeneca vaccine, are some areas that may influence the success of the vaccination programme in Sri Lanka. Hence, as medical professionals, it is very important to emphasize the need for adherence to public health preventive measures long-term, to combat the spread of the outbreak in Sri Lanka.

The SLMA celebrated the World Health Day on 7th April 2021, under the theme "Building a fairer, healthier world" which highlights the need to maintain equity when providing healthcare services. In this regard, while inequity in providing vaccination has been the hot topic, there are many other preventable inequities within the health services. Shortage of human resources for health (combined numbers of doctors, nurses and midwives per 1000 population) from low-income to high-income areas ranging between 1.38 – 5.37 per 1000 population warrants the attention of the service providers. A clear consequence of shortage of human resources for health is expressed by the figures for under 5 mortality rates in Sri Lanka. As per Annual Health Statistics (2017), under 5-year mortality rates in lowest income quintile is 17 / 1000 live births while for the highest income quintile is 9 /1000 LB and for the estate sector, it is 15 /1000 LB. The SLMA wishes to encourage all doctors to narrow preventable inequities to the very best of their abilities.

I welcome all new members who joined SLMA in 2021. I wish to extend an invitation to all other doctors who still have not obtained the membership. In addition to the concession for the registration fee for the Anniversary International Conference, the SLMA makes available a platform for continuous professional development of all doctors via a wide range of academic programmes.

I look forward to meeting all SLMA members during the Anniversary Medical Conference scheduled to be held from 27th – 30th July 2021 at the BMICH in Colombo.

Dr. Padma Gunaratne
MBBS, MD(SL), FRCP (Edin, Glasg, Lond), FCCP, Hon FRACP, FAAN, FWSO
President,
Sri Lanka Medical Association

Activities in March and April 2021 at a Glance

9th March


The SLMA Expert Committee in Non-Communicable Diseases, organized a seminar on 'Food & Cancers: Truth & Myth" to educate the doctors and the public on the topic.

Dr. Jayantha Balawardhana, Senior Consultant in Oncology & Radiotherapy spoke on Food and Cancers and Dr. Renuka Jayatissa, Visiting Consultant Medical Nutritionist, NHSL, Colombo on The Truth about Food & Cancers.

There were more than 150 partcipants including both medical and non-medical joining online and around 30 were present at the SLMA Auditorium.

10th March




A discussion on the National Electronic Health Records (NEHR) was facilitated by SLMA for the Health Information Unit of Ministry of Health (MoH). This was attended by more than 40 representatives of Colleges and Associations under the SLMA Inter Collegiate Committee (SMIC).

Dr. Anil Samaranayake – Director, Health Information Unit, MoH, Introduced the objective of formulating NEHR for Sri Lanka. This was followed by Introducing NEHR Architecture and Introducing Minimal Data Set by doctors from the HIU. A lively discussion followed the presentations.

The first meeting of the SMIC for the year 2021 was held just after the meeting. At the meeting. It was decided to appoint a convener according to the alphabetical order of the Colleges/ Association. Professor Thamasi Makuloluwa – President College of Anaesthesiologists and Intensivists was elected as convener for 2021.

Dr. Padma Gunaratne – President SLMA & SMIC asked for the opinion of the members as to what should be done for the year. It was decided to send a letter to the DGHS requesting to adhere to already agreed priority list for the second dose as well and to vaccinate all persons who have already had vaccines with the same vaccine that was given as the first dose. Further, the need to screen using PCR/ Ag detection test on all persons seeking care at OPDs with respiratory symptoms also was highlighted.

13th March







The SLMA Expert Committee in Prevention of Road Traffic Crashes organized a virtual workshop to develop a strategy for Road Safety in Sri Lanka for 2020 – 2030.

Dr. Padma Gunaratne – President SLMA welcomed the resource persons and the participants who were online. Dr. Clifford Perera, Consultant Judicial Medical Officer and Secretary SLMA Expert Committee in Prevention of Road Traffic Crashes introduced the objectives of the workshop.

Hon. Dilum Amunugama, State Minister of Vehicle Regulation, Bus Transport Services and Train Compartments and Motor Car Industry addressed the gathering as the Chief Guest.

Dr. Samitha Siritunga, National Program Manager – Injury Prevention, Directorate of NCD, Ministry of Health (MoH) spoke on 'initiatives for road traffic injury prevention in Sri Lanka – perspective of the MoH, Dr. Ajith Rohana, Deputy Inspector General of Police – Legal, Sri Lanka Police on 'initiatives for road safety in Sri Lanka for 2020 - 2030 – the perspective of Sri Lanka Police', Mr. Dilantha Malagamuwa, World Driving Champion and Brand Ambassador of the Expert Committee on Prevention of Road Traffic Crashes, SLMA on 'Global driving safety standards

– an overview and their implications for Sri Lanka', Eng. Keerthi Kodithuwakku, CEO, Effective Solutions (Pvt.) LTD. on 'Traffic violation reporting system – description and inclusion in the strategic plan for road safety in Sri Lanka for 2020-2030', Dr. Krishnan Srinivasan, Consultant, Transport and Digital Development, The World Bank, New Delhi, India on 'World Bank strategies for road safety for 2020-2030 in relation to Sri Lanka', Dr. Virginie Mallawaarachchi, National Professional Officer (NCD), WHO, Colombo on 'World Health Organization (WHO) strategies for road safety for 2020-2030 in relation to Sri Lanka' and Prof. Ranjith Dissanayake, Secretary to the State Ministry of Rural Roads and other infrastructure on 'Government strategies for road safety for 2020-2030 – the perspectives of MoH of road development and infrastructure'.

Road Safety Videos for the public developed by the Lions & Rotary were aired during the workshop.

Dr. Thushara Matiwalage, Convener, Expert Committee on Prevention of Road Traffic Crashes, SLMA thanked all the resource persons and the participants.

Could you mention publishing the book Reflections on 2020 – A compendium of editorials published in SLMA NEWS 2020 with reflective postscripts.

14th March

The President SLMA attended as the Chief Guest at the Inauguration of the Sri Lanka Emergency Medicine Congress 2021held at the BMICH.

16th March



The clinical meeting for the month of March was held with the collaboration of College of Anaesthesiologists & Intensivists of Sri Lanka on "Perioperative Care Pathways: Ensuring Patient Safety & Improved Outcomes".

An initial lecture on perioperative care & the role of anaesthetists was delivered by Dr. Vihara Dassanayake, Senior Lecturer in Anaesthesiology & Honorary Consultant Anaesthetist, Department of Anaesthesiology & Critical Care, Faculty of Medicine, Colombo. This was followed by a case based discussion on the same topic by Drs. Harini Jagoda, Consultant Anaesthetist, DGH Embilipitiya & Ravindi Gunaratne, Senior Registra in Anaesthesiology, NHSL, Colombo.

Around 30 doctors were present physically at the SLMA auditorium and around another 100 joined online.

18th March

The Expert Committee in Medical Rehabilitation organized a guest lecture on Rehabilitation of Traumatic Brain Injury for Consultants Trainees in Medical Rehabilitation, Rheumatology, Neurology, Therapists and Nurses.

The lecture was done by Dr. Uditha Jayatunga, Consultant Physician in Medical Rehabilitation, Royal Derby Hospital, UK.

There were around 80 attendees consisting of consultants, medical officers, nurses, physiotherapists, occupational therapists and speech therapists joining online for the programme. There were many queries from the audience that were well responded to by the speaker.

20th March

The third SLMA Saturday Talk on Management of Labour: A Case Based Discussion, for medical students, medical officers, GP & Registrars was conducted by Professor Hemantha Senanayake, Emeritus Professor of Obsterics & Gynaecology, Faculty of Medicine, University of Colombo. It was attended by more than 300 participants. It was also live streamed via facebook.

22nd March

SLMA Expert Committee of Prevention of Suicides conducted a Webinar in collaboration with the Sri Lanka Press Institute on "Sensitive Reporting and Mental Health" There were about 30 media personal in attendance. While the President of the SLMA made opening remarks, how suicides should be reported by media was discussed at length during this discussion.

23rd March

Media Statement Released by the SLMA with SLMA Intercollegiate committee objecting to the proposal to market Cinnamon Cigarette in Sri Lanka.

23rd March

The fourth media seminar on "Air Pollution: Who Should be Responsible for Health of the People? was held at the SLMA Auditorium organized by the SLMA


Media Committee.

Mr. Mahinda Amaraweera – Minister of Environment attended the media seminar as a special invitee.

The resource persons were Dr. Anil Jasinghe – Secretary Ministry of Environment, Dr. Sajith Edirisinghe – Lecturer & Clinical Geneticist, Faculty of Medicine, University of Sri Jayawardenapura and Dr. Jagath Gunawardena – Environmental Lawyer & Activist.

The session was chaired by Dr. Padma Gunaratne - President SLMA & Dr. Ruvaiz Hanoffa – Chairperson, Media Committee.

Media Personnel were present on site and some joined via zoom.

24th March

A seminar was organized collaboratively by SLMA and the National Programme for Tuberculosis and Chest Diseases (NPTCCD) to mark the World TB Day.

Dr. Padma Gunaratne – President SLMA and Dr. Hemantha Herath, Director NPTCCD welcomed the resource persons and the participants and made the introductory remarks. Dr. SM Arnold, Deputy Director General PHS 1, addressed the gathering and explained the importance of the Day.

This was followed by Presentations on "Epidemiology of TB and its implications on TB control in Sri Lanka" by Dr. Sumudu Hewage, Consultant Community Physician, NPTCCD and 'Obstacles in managing TB in COVID era' by Dr. Bodhika Samarasekara, Consultant Respiratory Physician, DGH Gampaha.

Dr. Eshanth Perera, Consultant Respirator Physician and Dr. Kaushalya Rajapaksha, District TB Control Officer, Gampaha officially handed over the final draft of the Latent TB infection guidelines of Sri Lanka to the dignitaries present.

The event was attended by around 50 doctors in person and around another 80 online.

24th March

SLMA Webinar Series 3 on "Quarantine Policy in Sri Lanka: Appraisal Following Vaccination" was held with the online participation of more than 90 participants.

The topics for discussion were;

- Current Quarantine Measures in Sri Lanka by Dr. Dilhani Samarasekara, Consultant Community Physician, Quarantine Unit, MoH, Health
- Economic Implications of reviewing the current quarantine policy by Dr. Anuji Gamage, Consultant Community Physician & Senior Lecturer Para Clinical Department, Faculty of Medicine, Sir John Kotelawala University
- Evidence for Plausible Amendments to Quarantine Policy by Proffesor Suranjith Seneviratne, Consultant in Clinical Immunology and Allergy, Institute of Immunology & Transplantation, Royal Free Hospital & University College London & Health Services Laboratories, London, UK.
- Dr Harsha Sathischandra, Consultant Physician was the moderator

A interactive session was followed by questions being asked from the panelists by the participants.

28th March

The Professional's league cricket tournament took place and the SLMA Doctors team was the runners up. Engineers won the trophy while architects, town planners, pilots, lawyers, took part in the tournament

2nd April

The letter to Hon Pavithra devi Wanniarachchi, Minister of Health with the media release on the need for adherence to approval of NMRA for use of any vaccine in Sri Lanka was sent.

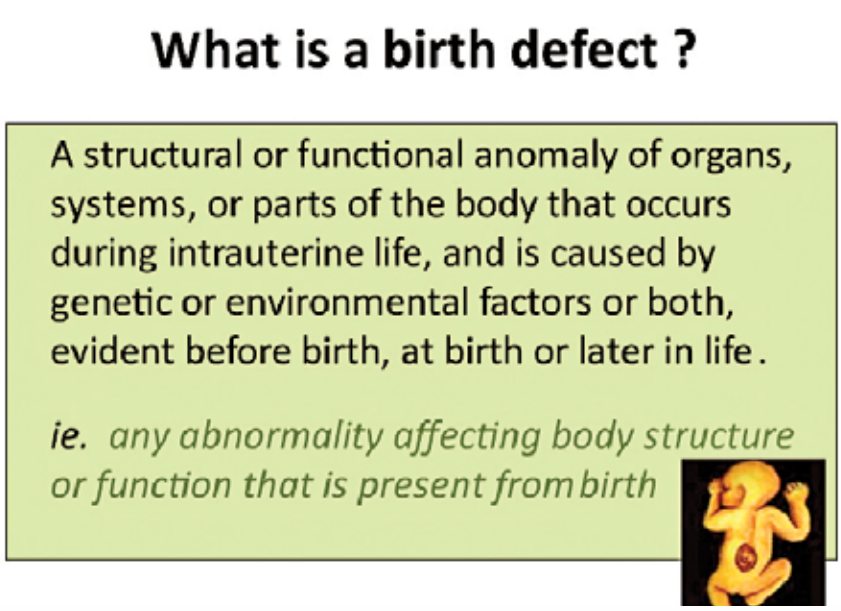
3rd April

The fourth SLMA Saturday Talk on Anaemia in Children: A Case Based Discussion, for medical students, medical officers, GP & Registrars was conducted by Professor Sachith Mettananda, Professor of Paedeatics, Faculty of Medicine, University of Kelaniya. It was attended by more than 300 participants.

Birth defects: The emerging challenge

Dr. Kapila Jayaratne
Co-Chairperson – SLMA Expert Committee on Birth Defects
Consultant Community Physician / National Programme Manager - Child Morbidity & Mortality, Family Health Bureau - Ministry of Health, Sri Lanka

Professor Vajira Dissanayake
Faculty of Medicine, University of Colombo



Godakumbura C.E. Guardstone, Colombo, Archeological Department, Ceylon. 1969

Annually 7.9 million babies are estimated to be born with a birth defect globally. Approximately 8% (495300) of the 6 million child deaths that occur globally are attributed to birth defects. 3.2 million people are estimated to suffer from birth defect-related disabilities annually. Birth defects assumed the 10th position in the top 50 causes of global years of life lost in the year 2013.

A birth defect is a structural or functional anomaly of organs, systems, or parts of the body that occurs during intrauterine life and is caused by genetic or environmental factors or both, evident before birth, at birth or later in life. ie. any abnormality affecting body structure or function that is present from birth.

Structural birth defects are malformation, deformation, disruption and dysplasia. Some of the structural changes have significant medical, social or cosmetic consequences for the affected individual, and typically require medical intervention. Most defects seen are minor structural changes that pose no significant health problem in the neonatal period and tend to have limited social or cosmetic consequences for the affected individual. Functional birth defects are developmental disabilities, metabolic diseases or haematologic diseases.

The earliest recordings of birth defects were made by the astrologers of ancient Babylon who wrote about the birth of monsters.

Subsequent historical evidence of birth defects is found from as far afield as Peru, Mexico, Italy, Greece, Egypt, Sri Lanka and Australia.

A statue of conjoined twins, the Goddess of Anatolia, dating back to 6500 BC, found in southern Turkey, suggests that such defects of creation may even have been considered with awe and reverence.

The first historical evidence of cleft lip was found in an Egyptian mummy 2400- 1300 BC. Diagnostic imaging of King Tut's mummy suggests that the pharaoh (feroh) may have had a slightly cleft palate.

Locally, it is hypothesised that the achondroplastic dwarfs carved into the guard stones seen among the ruins of ancient cities in Sri Lanka that

date back to the 4th century AD probably represent people with birth defects.

In our region, in the SEARO countries, three conditions; birth defects, preterm birth/intrauterine growth retardation (IUGR) and birth asphyxia, account for 25% to 55% of under-5 year mortality.

In Sri Lanka data on Birth Defects are available from many sources. Registrar General's Department registers all deaths in the country based on the place of occurrence.

It is assumed that the coverage of death registration in the country is nearly 99%. Analysis of Registrar General's Department mortality data 2010 shows 1150 birth defects-related deaths in all ages and nearly 1% out of all deaths (130337) registered. This is 13.3% in those under 20 years of age and 21% in children under 1 year.

Ministry of Health receives data on all hospital deaths based on Indoor Morbidity & Mortality Register. In the year 2017, birth defects accounted for 9700 (1%) of hospital admissions.

In the same year birth defects was the second leading cause of infant deaths (108 deaths per 100,000 infants) and 1 - 4 years child deaths (2.6 deaths per 100,000 1 - 4 years children).

Hospital infant mortality profiles over the past few years demonstrate the emerging significance of birth defects as an important cause.

The Sri Lankan component of the WHO Multi-country survey on Maternal & Newborn Health conducted in 2011 gives a detailed analysis of birth defects-related data.

It reported an "at birth prevalence" of BD 1.8% (17.6 per 1000 live births).

Similar to the findings from the worldwide data, in our country too, the commonest category of birth defects found were cardiac malformations (27.7%) followed by limb abnormalities (23.6%) and cleft lip and palate (11.6%).

When the findings are extrapolated for 2019 reported live births (319,010), it is estimated that a total number of 5600 would have been born with a birth defect.

Of these 1550 would have heart defects, 1325 limb deformities and 650 cleft lip or palate.

Surveillance involves data for action. Availability of quality birth defects data, utilizing such data effectively at different levels and dissemination to all stakeholders, facilitate effective birth defects prevention and control.

Age at diagnosis is a critical component of case identification. Typically, the higher the cut-off age, the greater the reported frequency of conditions, especially for conditions involving internal organs that may not be evident at birth.

Nearly 60% of all major birth defects are diagnosed during the first week of life, around 70% by the first month, nearly 90% by the first year, and almost 100% by the sixth year.

> "Giving birth to a baby with a BD is devastating to parents. It may result in long-term disability and have major psycho-social impacts, not only on the individual but on all family members. The effects are felt even beyond the family. They pose a burden to the society and to the healthcare system"

Continuous alertness during the course of life is crucial in picking up birth defects.

There are many opportunities for capture of birth defects at different points in the life course within the health care structure in Sri Lanka.

Different service providers such as Public Health Midwife at doorstep, field Well-baby Clinics, Hospital Clinics, Out Patient Departments, General Practitioners, Paediatricians, Laboratory and post-mortem reporting systems also can provide important information in this respect.

Antenatal care coverage and institutional deliveries are very high in the country with reported 99.9% hospital deliveries, a majority being in specialized units.

Currently neonatal examinations (covering 100% of newborns) are carried out in all institutional births in the country based on a standardised format.

Deaths during the perinatal period are subjected to institutional audits with a coverage of 98%. All these provide opportunities to capture cases of birth defects.

Current technology allows detection of birth defects around 18 – 20 weeks of gestation.

A combination of scientific disciplines now yield some understanding of how these mishaps occur, means of detecting some of them prenatally, at

even earlier stages of development, and, ways to remedy or palliate some of those detected.

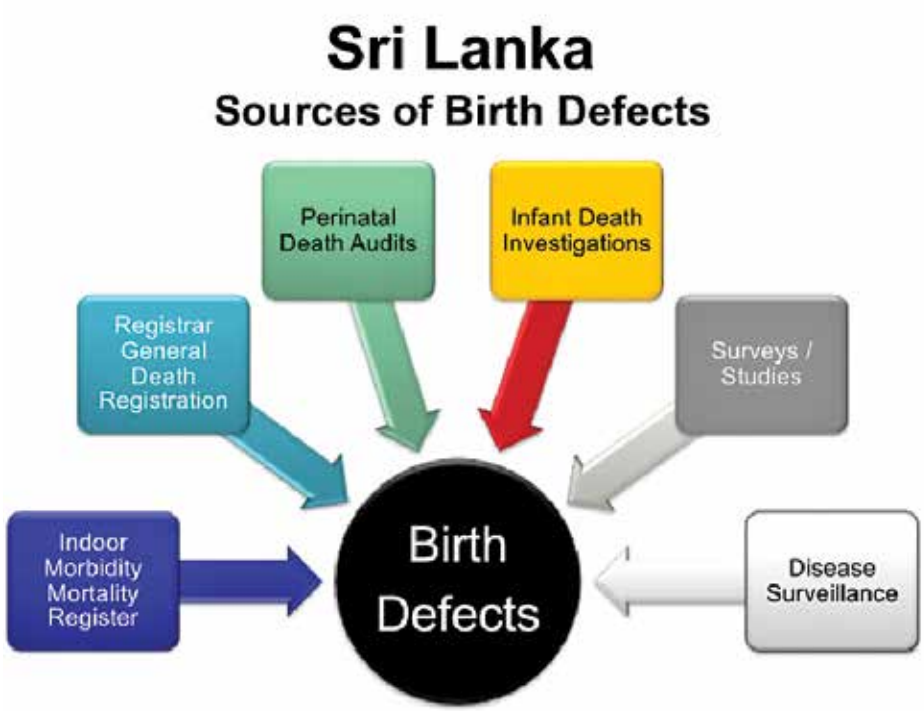
However, ethics of foetal anomaly scans in the absence of termination as an option has generated much discussion as well as controversies.

The detection of birth defects can be extended to the field scenarios. The post-partum care coverage is around 84% and infants are followed up in the field until they are 5 years old. Any infant death is investigated by the area field team and is reported through a quarterly return to the national level. In addition, there are disease-specific surveillance mechanisms such as the Thalassaemia Project and Congenital Rubella Surveillance System.

Although many countries in the region have no systematic birth defects surveillance mechanism, Sri Lanka has taken several steps in initiating this. Birth defects surveillance was implemented country-wide in the year 2016.

At present, individual data are collected on to a birth defects case abstraction form and entered into a web-based database in a DHIS2 platform maintained by the Family Health Bureau.

Giving birth to a baby with a BD is devastating to parents. It may result in long-term disability and have major psycho-social impacts, not only on the individual but on all family members. The effects are felt even beyond the family. They pose a burden to the society and to the healthcare system.



A multitude of services focusing on prevention and control of BDs are available in Sri Lanka. Among them are a package of pre-conception care for newly married couples, Maternal Care Package that consists of peri-conceptional iron and folic acid supplementation for pregnant and lactating women and antenatal syphilis screening, Rubella vaccination, diagnostic and interventional cardiac catheterizations and paediatric cardiac surgery, reconstructive surgery for cleft lip / palate, care for the Thalassaemic children, salt and wheat flour fortification and availability of a spectrum of genetic services.

The quantity and quality of services needed to be provided for dealing with birth defects poses a major challenge to the health system of the country, considering the ever-increasing demand and diversity of care that is needed. In such a context, prevention of birth defects should become a priority.

Genetic testing and genetic counseling are essential to arrive at a diagnosis so that children with birth defects receives appropriate care and to prevent the recurrence of the condition in the Family through appropriate reproductive interventions.

The Human Genetics Unit of the Faculty of Medicine, University of Colombo has been the center providing genetic testing to the country since its establishment in 1983.

The Unit provides cytogenetic testing, molecular genetic testing, molecular cytogenetic testing and next generation sequencing based gene panel and exome testing.

To enable access to these services the Ministry of Health has authorised hospital directors to make payments for the tests conducted at the Unit. Clinicians can contact the Unit by calling 0112689545 and make arrangements for testing.

Reduce the Delay in diagnosing imported Malaria

If a malaria patient is left untreated

- Risk of complications & death of the individual increases
- Could lead to re-introduction of malaria in Sri Lanka

Malaria should be suspected in all fever patients with a travel history to a malaria endemic country …..!!

Common causes for delay in diagnosis:

- Forgotten disease
- Atypical presentations
- Mimic other common febrile diseases with thrombocytopenia

Anti Malaria Campaign Headquarters
Public Health Complex, 3rd Floor, 555/5,
Elvitigala Mawatha, Colombo 05, Sri Lanka.

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Myasthenia Gravis and Congenital Myasthenia

Dr. Archchana Niththiyaruban
Dr. Hamsapriya Vigneswararajah
Dr. Vindya Subasinghe
Dr.Y.G.T. Priyawansha
Dr. Clement Perera
Dr. Anuruddha Padeniya
Lady Ridgeway Hospital for Children, Colombo

Case vignette 1

9 years old previously healthy boy presented with right sided partial ptosis for 2 months duration which is more pronounced by evening. No concerns regarding visual acuity or double vision. No other neurological deficits like dysphasia, dyspnoea or difficulty in walking. He had no other features of connective tissue or autoimmune diseases. On examination, fatigability was demonstrated by doing ice pack test. Tensilon test was not performed as the patient was having sinus bradycardia. Electromyelogram (EMG) findings were normal.

With the presence of positive of autoantibodies against acetylcholine receptors, Juvenile autoimmune Myasthenia Gravis is confirmed.

Case vignette 2

4-year-old boy who was having isolated gross motor developmental delay from birth ,presented with bilateral ptosis for 1 year duration. Direct questioning revealed that the ptosis is more pronounced in the evening and feeding time was prolonged during the evening meal. Weight faltering is also evident during last 6 months. His father was having bilateral fluctuant ptosis, and the elder sister was also having gross motor delay and bilateral ptosis. Examination revealed , ophthalmoplegia, reduced proximal muscle power with waddling gait. Tensilon test was positive, EMG showed some decremental pattern at 3 Hz. With the suspicion of Congenital Mysathenia Gravis, his samples for sent for exome sequencing.

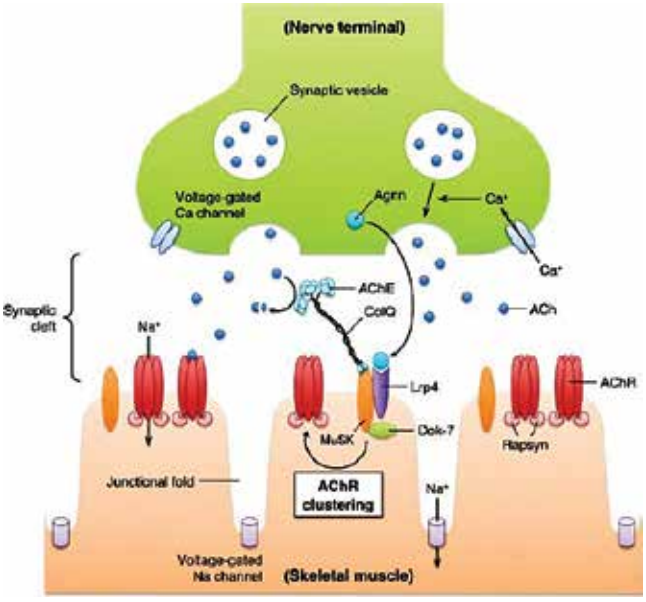
Review

Physiology and Pathophysiology

The term Mysathenia Gravis, meaning serious muscle illness, was first described in 17th century. The characteristic feature, the fatigability, implies that the pathology lies at the neuromuscular junction. When the action potential reaches the presynaptic nerve terminal, the voltage gated calcium channels in the presynaptic nerve terminal opens, causing the influx of Ca2+ ions. Once the Ca2+ ions bind to synaptic vesicles, it facilitates the release acetylcholine to the synaptic cleft. Acetylcholine rapidly diffuse through the synaptic cleft to bind to the acetylcholine receptors in the post synaptic membrane, resulting in opening of the voltage gated Na+ channels and influx of Na+ ions into the post synaptic muscle fiber. This leads to depolarization of the muscle fiber, creating an action potential, which propagate along the muscle fiber, once the threshold is reached.

The optimal function of the neuromuscular junction depends not only on the functioning of the acetylcholine receptors but also on several other proteins, like MuSK, LRP4, Agrin, DOK 7, which interact with each other to maintain the stabilization of the neuromuscular junction (Figure 1).

Figure 1 – detailed illustration of the neuromuscular junction



Pathophysiology of two conditions, in the discussion differ to each other. In autoimmune Myasthenia gravis, the primary pathology is not at the neuromuscular junction but in the immune system. There are autoantibodies against the acetylcholine receptors, MuSK protein, LRP4 protein or agrin protein. However, in congenital Myasthenia, the genetic defect result in dysfunction of one or more of the protein/s in neuromuscular junction, disrupting the process of action potential propagation from the presynaptic membrane to the post synaptic membrane. Only 50% of the cases with congenital Myasthenia have identified with

the genetic variant to date. The modes of inheritance are autosomal recessive (common) and autosomal dominant.

Investigations

To confirm the diagnosis, fatigability should be elicited from the history, demonstrated by maneuvers during the examination (Table 1), and decremental pattern can be seen in the EMG (Figure 2). It is important to appreciate the subtle difference in the decremental pattern in EMG in congenital Myasthenia Gravis, where only 10 % decrement is observed when the nerve is stimulated at 2-3 Hz, after which it becomes a plateau (Figure 3). EMG overall sensitivity in Myasthenia Gravis lies between 75 – 80%.

Figure 2 - Showing the decremental pattern in repetitive nerve stimulation during electro myelogram

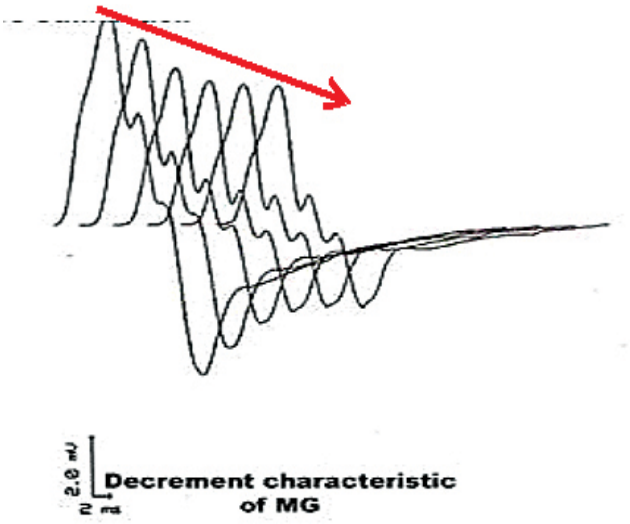
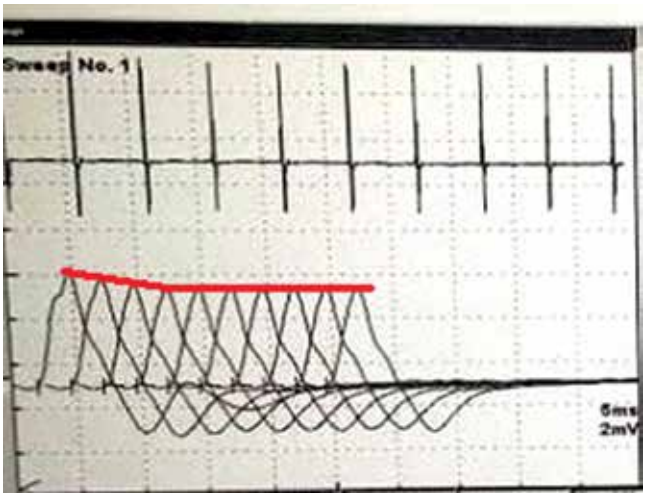


Table 1 – Maneuvers to elicit the fatigability

Procedure	Observation	Remarks
Sustained up gaze (60-180 sec)	Fatigable ptosis in one or both eyes	
Manual elevation of the more ptotic lid	Worsen of ptosis in the contralateral eye lid.	"Enhanced ptosis" (based on Herrings law)
Sustained tight closure of the eyelid	Fatigue of the orbicularis oculi	"Peek sign"
Sustained lateral gaze (60 sec)	Fatigable diplopia	
Sustained abduction of the arms (120 sec)	Patient can no longer hold the arms up	
Deep knee bend with back straight, with patient's palm is held in examiner's hand	Increasing the pressure against examiner's hand Forward lean by the patient	
Counting aloud to 1 -50	Enhances dysarthria, and dyspnea	
Ask the patient to make a high-pitched ('eee') sound	Hoarseness	
Single breath counting aloud (1-20)	Elicit Hoarseness and dyspnea	
Sustained elevation of leg while lying supine (90 sec)	Elicit the weakness	
Repeated arising from chair without use of arms (up to 20 repetitions)	Fatigue after several attempts (exaggerated lean- forward would be the early sign)	"buttock first" maneuver
Ice pack applied over upper eyelid for 2 – 5 min	Increment of the distance in the palpebral fissure by 2 mm is considered positive, which is best measured using pre- and post-procedure photographs	Ice pack test

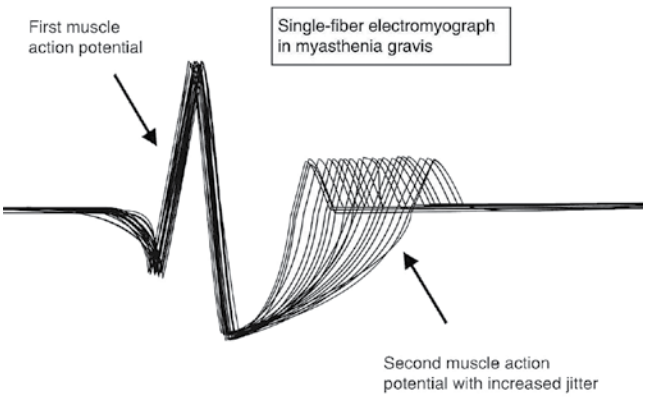
The bed side edrophonium test, comparing the improvement in ptosis by pre- and post-test photographs will support the diagnosis.

Figure 3 – characteristic decremental pattern of EMG in congenital Myasthenia Gravis



However, the gold standard neurophysiological technique in congenital Myasthenia Gravis is Single Fiber Electro myelogram (SFEMG) (Figure 4), which carries a sensitivity between 60 – 100 %, but not widely available and operator dependent.

Figure 4 – Single Fiber Electro Myelogram (SFEMG)

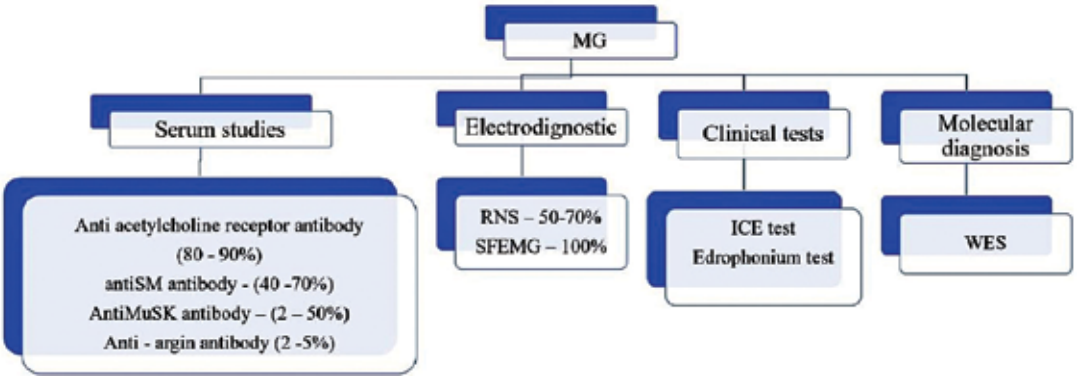


The aetiology survey needs to be done by performing antibodies against acetylcholine receptors, and proteins like MuSk, LRP4, Agrin protein, etc, and mediastinal imaging if autoimmune Myasthenia Gravis is suspected.

Genetic testing is warranted when congenital Mysathenia is suspected, which is gene panels or whole exome sequencing.

Cost of genetic assay is a limiting factor, despite its therapeutic implications (Figure 5).

Figure 5 – Summary of the investigations in Myasthenia Gravis



Management

The autoimmune Myasthenia Gravis is managed with symptomatic agents like pyridostigmine or neostigmine. Majority of those patients need chronic immunosuppressive agents like steroids, mycophenolate mofetil, cyclosporine and sometimes with biologics. Rapid immunosuppression with either IV Immunoglobulin or plasmapheresis in case of a myasthenic crisis. Thymectomy is the option when there is thymoma or medically refractory patients with positive antibodies against Acetylcholine receptors. The mainstay of management in congenital Myasthenias is symptomatic managemnt, however commonly used pyridostigmine cannot be used in certain genotypes like DOK7, COLQ, SCS, etc. The first line agents in such circumstances would be salbutamol, ephedrine, or fluoxetine (Table 2).

Rest of the genotypes can be managed with pyridostigmine as the first line agent, 3,4 – diaminopyridine as the second line. General management additionally include rehabilitation, counselling stressing the need for continuous treatment, contingency plans, family screening, as necessary.

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Table 2 – Pharmacotherapy in Congenital Myasthenia Syndrome

Syndrome	Therapy	Caveats
ChAT deficiency	Pyridostigmine; parenteral neostigmine methyl sulfate for acute apneic episodes.	
AChE deficiency	Albuterol or ephedrine	Avoid pyridostigmine and 3,4-DAP
Laminin-β2 deficiency	Ephedrine	Avoid pyridostigmine
Simple AChR deficiency	Pyridostigmine; 3,4-DAP also helps. Albuterol may help if refractory to above	
Slow-channel CMS	Quinine, quinidine, or fluoxetine	Avoid pyridostigmine and 3,4-DAP
Fast-channel CMS	Pyridostigmine and 3,4-DAP	Avoid quinine, quinidine, or fluoxetine
Rapsyn deficiency	Pyridostigmine, 3,4-DAP, albuterol	
Musk deficiency	Variable response to 3,4-DAP. Good response to albuterol in one patient	Conventional doses of pyridostigmine can worsen symptoms
Dok-7 myasthenia	Albuterol or ephedrine	Avoid pyridostigmine
Agrin deficiency	No response to pyridostigmine or 3,4-DAP in one pt; partial response to ephedrine in a second pt.	Use pyridostigmine with caution
LRP4 deficiency	Albuterol or ephedrine not tested	Avoid pyridostigmine
GFPT1, DAPGT1, ALG2 and ALG14	Pyridostigmine; 3,4-DAP may confer additional benefit.	
Na-channel myasthenia	Pyridostigmine and acetazolamide	
PREPL deficiency	Pyridostigmine beneficial in infancy	Older patients are refractory to pyridostigmine

Toxoplasmosis in humans: a brief outline

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Biology

Toxoplasmosis is a widespread parasitic infection which is caused by an obligate intracellular protozoan Toxoplasma gondii (T. gondii). T. gondii is parasite that can infect, survive and replicate in almost all the mammalian cells. The definitive hosts are the members of the family Felidae, which include domestic cats and various warm-blooded animals are intermediate hosts. Cats acquire Toxoplasma by ingesting any of the infectious stages of the organism, including (rapidly multiplying) tachyzoites, (quiescent) bradyzoites (reside inside tissue cysts within infected tissues) and oocysts (shed in the feces of the definitive host).

Transmission to humans

The modes of transmission are animal to human, foodborne, mother to child, and in rare instances via organ transplantation or transfusion of blood from an infected donor. Furthermore, laboratory workers who handle infected blood with live tachyzoites can acquire infection by accidental inoculation.

Disease epidemiology

Toxoplasmosis is one of the neglected parasitic infections in many countries. It is estimated that about one-third of the world's population is infected with T.gondii. The prevalence of toxoplasmosis in different regions and countries varies depending on environmental factors, food habits, healthcare facilities, hygiene and sanitation, host susceptibility, geographical location and soil humidity.

Clinical manifestions

In immunocompetent individuals

When healthy people get infected with T. gondii they often do not show symptoms as their immune system can battle against the parasite or in some, it causes only a mild flu-like illness. The most common symptom in immunocompetent individuals with acute toxoplasmosis is lymphadenopathy which is associated with fever, muscle pain, headache sore throat, and fatigue. Myocarditis, polymyositis, polyarthritis of the hand and knee joints and polytenosynovitis have rarely been reported in some (1).

Congenital infection

Eye disease (choriorenititis) with T.gondii can result in as part of congenital infection or acquire after birth. T.gondii infection can also result in a variety of adverse outcomes in fetuses (such as stillbirths or fetal death) and newborns (such as a long-term disabling sequelae if the pregnant woman acquires toxoplasmosis as a primary infection during pregnancy. Babies born with congenital toxoplasmosis may have hydrocephaly or microcephaly, chorioretinitis, visual impariments, mental retardation, convulsions, jaundice, hepatosplenomegaly, maculopapular rash, enlarged lymph nodes, deafness, fever, growth retardation, spasticity, palsies and learning difficulties later in life (2). Most cases of congenital toxoplasmosis can be prevented by educating women of childbearing age and pregnant women to refrain from eating raw or undercooked meat, to avoid cross-contamination of other foods with raw or undercooked meat, and to use proper cat-litter and soil-related hygiene.

Immunocompromised patients

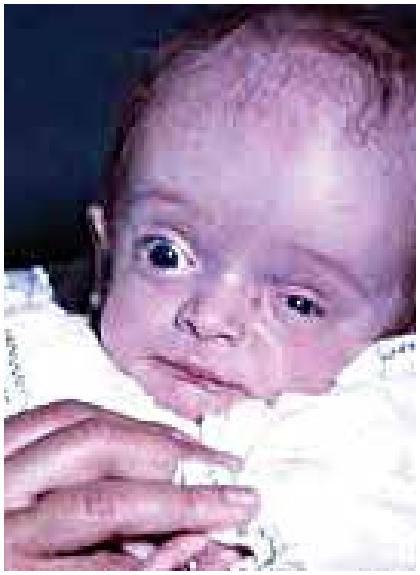
Toxoplasma gondii is considered an opportunistic infection among immunocompromised patients. Toxoplasmosis is seen

among immunocompromised individuals such as renal transplant recipients, HIV patients and those with cancers. In them the parasite can persist and reactivate if the person's immune system weakens thus causing life-threatening infection. Toxoplasosis among immunocompromised patients affects multiple organs. The most frequent site of infection is the brain, followed by the lung, bone marrow, peritoneum, and heart (3). Involvement of the liver, kidney, pancreas, eye, lymph node and spinal cord has also been reported (4). Toxoplasmosis among cancer patients has been associated with Hodgkin's disease, leukemia, myeloma, melanoma and brain cancer, such as meningioma, astrocytoma, glioblastoma and ganglioglioma (5-9). All transplant recipients prescribe immunosuppressive drugs to prevent graft rejection. The renal transplant recipients who had not received anti-Toxoplasma gondii prophylaxis would be at high risk of suffering from toxoplasmosis due to these immunosuppressive drugs.

Diagnosis

The diagnosis of T. gondii infection is routinely done by serology by measuring specific IgG and IgM and/or less commonly IgA antibodies in infants. Variety of serological tests, such as dye test (DT), agglutination test (MAT), immunosorbent agglutination assay (ISAGA), indirect fluorescent antibody test (IFAT) and indirect haemagglutination assays (IHA), ELISA have been developed to detect different antibodies.

Even though it the main and frequently used method of detection of toxoplasmosis, serology has major limitations. It frequently give false positive results. Therefore, when the tests are done to diagnose acute infection in pregnant women, serologic diagnosis must be confirmed with a second test prior to treatment with potentially



toxic drugs.

The presence of anti-T. gondii IgG antibodies imply only the occurrence of infection at some point of time, but gives no information on the timing of the infection; anti-T. gondii IgM is not an accurate marker of acute infection as it persists for up to 18 months; IgA antibodies which are produced earlier than IgM, is also not specific markers of acute infection and not widely available or used (10). According to a previous study, seronegative patients have been positive by PCR (11).

In immunocompromised patients specific anti-Toxoplasma antibodies may fail to rise, thus serological tests may not detect T.gondii infection (10).

Other methods are visualization of the parasite in clinical specimens directly or after growing them in tissue cultures, or after animal inoculation and by specific nucleic acid amplification by PCR for T. gondii. Ophthalmologic evaluation (to detect choriorenitis), haematological (low heamobgloin, low platelet counts) and radiological investigation (to observe intracranial calcifications) may also support the diagnosis.

Treatment

Treatment of immunocompetent adults with lymphadenopathy toxoplasmosis is not necessary and is usually self-limited. If the patient has visceral involvements with clinical evidence or severe or persistent symptoms, treatment may be indicated for 2 to 4 weeks. Pyrimethamine is the most effective drug against toxoplasmosis. Pyrimethamine is a folic acid antagonist which can suppress the bone marrow.

Therefore, concurrent administration of folinic acid is advisable. A second drug, sulfadiazine (mostly) or clindamycin (if the patient is allergic to sulpha drugs), should also be included. These drugs target the tachyzoite stage of the parasite and do not eradicate encysted parasites in tissues.

The fixed combination of trimethoprim with sulphamethoxazole has been used as an alternative. Treatment for ocular diseases depends on many factors such as acuteness of the lesion, degree of inflammation, visual acuity, lesion size, location, and persistence. Healed lesions can be left alone without treating.

Management of maternal and fetal infection varies depending on gestational age. Spiramycin is commonly used during the early part of the pregnancy to reduce transmission to the fetus. Congenitally infected newborns are often treated with pyrimethamine, a sulfonamide, and folinic acid for 12 months. Toxoplasmosis in immunocompromised patients is often fatal if not treated.

Pyrimethamine (with folinic acid) and sulphadiazine are standards of therapy for immunodeficient patients too.

Treatment is recommended for at least 4 to 6 weeks beyond resolution of all clinical symptoms and signs, but may be for 6 months or longer.

Relapses may occur in them and maintenance therapy is recommended in AIDS patients until a significant immunologic improvement is achieved (12).

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Air pollution and health effects – How trees reduce the atmospheric particulate matter (PMO.$_1$, $PM_{2.5}$, and PM_{10})

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Air pollution in Colombo *(Photo by Dr Kalyani Guruge- PRO -SLMA)*

Air pollution is a major environmental health problem affecting the entire world. Among many air pollutants, particle pollution / particulate matter (PM), ground-level ozone (O_3), carbon monoxide (CO), sulphur oxides (SOx), nitrogen oxide (NO), and lead (Pb) are the most important. This article mainly focuses on particulate matters, their health effects, and how trees reduce particulate matter in outdoor air. PM is a complex mixture of tiny particles and liquid droplets made up of acids, organic chemicals, metals, and soil or dust particles (Anderson et al., 2012).

In the recent past, various authorities described that atmospheric $PM_{2.5}$ has increased around Colombo, Sri Lanka.

Particulate matter or PM is a common representation indicator for air pollution. PM is categorized according to its width / aerodynamic equivalent diameter (AED). Particles with AED between 2.5 to 10 micrometres in diameter are considered "rough particles" and labelled as PM_{10}. These larger particles are typically found near dusty roads and industrial sites. Fine particles are defined as AED of 0.1 to 2.5 micrometres in diameter and labelled as $PM_{2.5}$. Ultrafine particles (UFP), also called nanoparticles, have AED less than 0.1 micrometres in size. They are more soluble than larger particles and are designated as $PM_{0.1}$(Crinnion, 2017). The major components of PM are sulphate, nitrates, ammonia, sodium chloride, black carbon, mineral dust, and water. Therefore we are looking at a mixture of solid and liquid

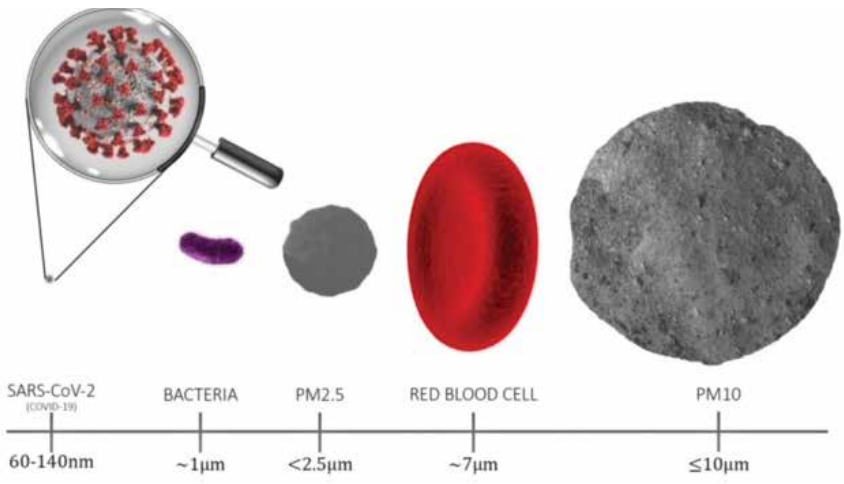

Figure 02 – Comparative illustration of the PM

particles of organic and inorganic matter suspended in the air.

Where do these PMs come from?

These PMs could be divided into human-made and natural in origin. The human-made PM is more important to discuss and investigate as it contributes to the total concentration on a massive scale. Industrial and construction sites are important sources of air pollution.

The fumes emitted from industrial waste, vehicles that operate at the industrial sites, dust particles generated from demolitions, and burning of waste products/plastics produce a considerable amount of PM. Vehicle fume emission, especially from diesel engines, contributes to the PM concentration. Diesel exhaust particles are probably the most toxic component of urban outdoor air pollutants (Crinnion, 2017).

Low-sulphur diesel and biofuels (made from a mix of resources such as recycled cooking oil, soybean oil, and animal fats) emit fewer sulphur oxides.

Although the total mass of PM from the biodiesel fuels is lower than for regular diesel, they produce much more ultrafine particles ($PM_{0.1}$). The wood-burning stoves and ovens also contribute to the PM concentration.

How is the air quality assessed?

The air quality is assessed in many ways. In Colombo, the air quality is assessed by the Colombo US Embassy Air Pollution: Real-time Air Quality Index (AQI). It is an online indicator of the real-time air pollution around Colombo (https://aqicn.org/city/sri-lanka/colombo/us-embassy/). The US Embassy use $PM_{2.5}$, which is the standard recognized by the U.S. Environmental Protection Agency (EPA), to measure AQI and compare it against U.S. standard measurements.

AQI	Air Pollution Level	Health Implications	Cautionary Statement (for $PM_{2.5}$)
0 - 50	Good	Air quality is considered satisfactory, and air pollution poses little or no risk	None
50-100	Moderate	Air quality is acceptable; however, for some pollutants, there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
101-150	Unhealthy for Sensitive Groups	Members of sensitive groups may experience health effects. The general public is not likely to be affected.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
151-200	Unhealthy	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects	Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion
201-300	Very Unhealthy	Health warnings of emergency conditions. The entire population is more likely to be affected.	Active children and adults, and people with respiratory disease, such as asthma, should avoid outdoor exertion; everyone else, especially children, should limit outdoor work.
300+	Hazardous	Health alert: everyone may experience more serious health effects	Everyone should avoid all outdoor exertion

Figure 03 – AQI of Colombo in 2020 to present (Source - Colombo US Embassy Air Pollution: Real-time Air Quality Index (AQI))

Lower the AQI, cleaner the air. Figure 03 represent the AQI in the year 2020 and 2021.

Usually, an AQI less than 50 is considered good air with no health impact. As presented in the table, the air quality has improved dramatically during the lockdown period from April to October 2020 (Shown in green). Once society returned to the normal daily living pattern, the AQI has increased, indicating that the air quality has dropped (November 2020 to March 2021).

Why should we be aware of PM?

The pathogenicity of PM depends on their size, composition, origin, solubility, and ability to produce oxygen-free radicals. The tiny PM has the capability of absorbing various chemicals and toxins while they are in the atmosphere. Smaller the particular diameter, the greater the surface area. When the surface increases, there is a high possibility of absorbing chemicals and toxins.

PM with different sizes deposit in the different parts of the lung and other tissues. Large/rough particles can get deposited in upper airways. Fine and ultrafine PM enters the lower airways and gets deposited in the alveoli. PM triggers pulmonary oxidative stress and inflammation. It is proven that the human respiratory epithelium exposes to the PM express inflammatory cytokines.

After exposure to PM, the alveolar macrophages produce reactive oxygen species, nitrogen species and release TNF-ά and IL-1 (Driscoll et al., 1990). In addition to oxidative stress generated from the activation of inflammatory cells in the lung tissue, reactive oxygen species may be directly generated from the surface of PM (Risom et al., 2005). These inflammatory changes lead to the development of asthma and chronic obstructive pulmonary disease (COPD). Furthermore, long-term exposure to PM lead to airway remodelling and chronic inflammation (Hogg et al., 2004).

Ultrafine PM may deposit deep in the lungs (at the alveolar level). These particles easily cross the epithelial barriers and get into the circulation. After entering into the circulation, these PMs are carried to distal organs such as the heart, liver, spleen, kidney, and brain. After reaching the end organ, these PM enters intracellular compartments and disrupt normal cell function (Geiser et al., 2005).

Several animal and human studies have proven that PM exposure could increase the risk of atherosclerosis in coronary arteries by activating inflammatory cytokines IL-6, TNF-ά, and C-reactive protein (CRP) and development of acute myocardial infarction (Ridker et al., 2000, Wennberg et al., 2012). It is shown that acute exposure to PM can cause changes in the coagulation cascade and platelet activation (Chuang et al., 2007). Animal studies conducted in hamsters show that the PMs translocate into the bloodstream and has prothrombotic effects (Nemmar et al., 2002). A prospective cohort study done in 1995 by Pope et al. has shown a 17% increase in all-cause mortality and a 31% increase in cardiopulmonary mortality when comparing the most and least polluted cities (Pope et al., 1995). In 2007, the

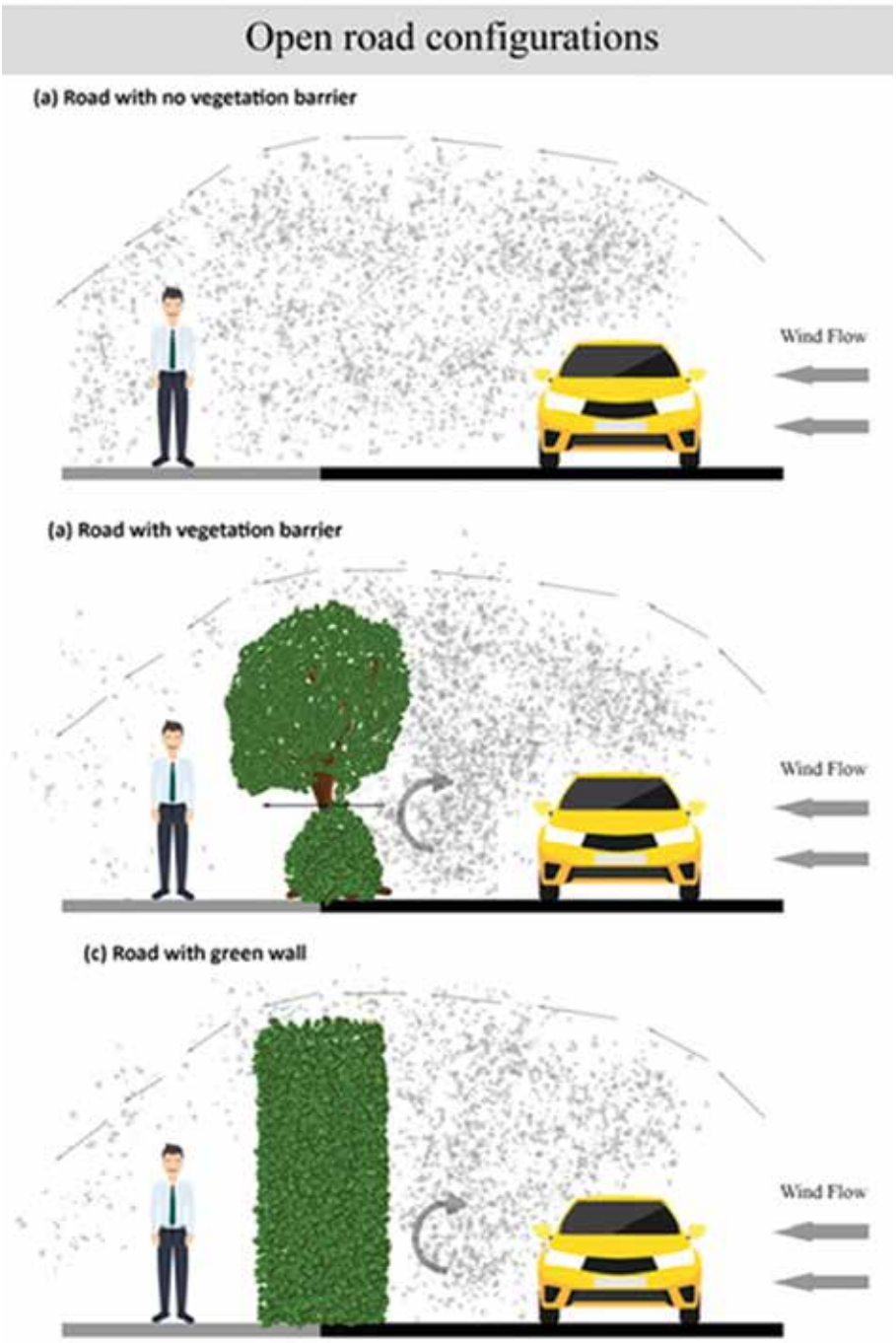

Figure 04 –How the PM is reduced behind the green fence

Women's Health Initiative Study followed a cohort of postmenopausal women with no previous heart disease over approximately six years. The investigators revealed that long-term PM exposure in this population resulted in a 24% increase in cardiovascular events and a 76% increase in cardiovascular mortality per 10-μg/m3 increase in $PM_{2.5}$ (Miller et al., 2007).

In literature, it has been shown that PM can cause cancers. An animal study conducted using PM2.5-treated mice showed that 57 genes were mutated in mice. Out of these 57 genes, 14 were up-regulated, and 43 were down-regulated (Sancini et al., 2014). p53 is an important regulatory gene in cell proliferation, apoptosis, and damage repair. Mutation of p53 could lead to lung cancer. An alveolar cell culture study has shown that $PM_{2.5}$ induces p53 gene inactivation (Zhou et al., 2016). PM may contribute to the development

of liver cancers (VoPham et al., 2018) and increase the risk of cancers in the kidney parenchyma (Raaschou-Nielsen et al., 2017) addition to lung cancers.

How trees reduce the PM?

The trees or hedges, and bushes could remove toxic gaseous pollutants by absorption through leaf stomata or plant surfaces. The pollution removal values for each pollutant vary among cities based on the amount of tree cover, pollution concentration, the surface area of the leaf, and other meteorological conditions.

The PM deposited on vegetation can be retained after high wind speed, washed off by rain, or transferred to soil with falling parts of the trees, including leaves (Nowak et al., 2014).

When focusing on the plant parameters, shrubs/bushes have the greatest PM leaf depositions while herbs (plants that do not have woody stem) and liana (climbing plants with long woody rope-like stems) had the least deposition quality. The trees are having in between property.

The PM trapping capacity of coniferous species (trees usually having needle-shaped or scale-like leaves such as pine trees) is significantly higher than broad-leaved species. When considering the leaf habit, the evergreen species have significantly higher PM trapping capacity than deciduous species.

Figure 05 - Pollution-sucking Smog Free Tower (Source - https://urbannext.net/smog-free-tower/)

Figure 06 – Park and ride "CityBUS" service – *(Source - www.lankabusinessonline.com)*

It has been proven that in open-road environments, a mixture of trees and bushes included with the creation of the hedge can act as barriers to improve air quality behind them. (Figure 04) (Brantley et al., 2014, Lin et al., 2016).

In addition to the trapping of PM, planting trees on either side of the road under proper guidelines could lower the air temperature.

Scientific inventions to clean the air

1. The Dutch designer Daan Roosegaarde developed a pollution-sucking Smog Free Tower in Beijing. The Scientists at the Eindhoven University of Technology studied the effectiveness of the Smog Free Tower and found it can capture up to 70% of PM_{10} particles and up to 50% of $PM_{2.5}$. (Figure 05)
2. Introducing lead-free gasoline, which allows the use of catalytic converters on vehicles' exhaust systems. Such technologies significantly reduce the emissions of several air pollutants from vehicles
3. Improving diesel quality by lowering its sulfur content is another way to reduce air pollution.
4. Promote electric or fuel-efficient vehicles, such as hybrid gas-electric vehicles.
5. Park and ride systems (CityBUS service) help minimize "unnecessary" driving, and traffic demand management can also reduce air pollution in urban areas. (Figure 06)

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What is the difference between an Ordinary Thief (OT) and a Political Thief (PT)?

1. The *Ordinary Thief* steals your money,
bag,
watch,
gold chain etc.
But,
The *Political Thief* steals your future,
career,
education,
health and business!

2. The hilarious part is: ..
The *Ordinary Thief* will choose whom to rob.
But, you yourself choose the *Political Thief* to rob you.

3. The most ironic one: ..
Police will chase and nab the *Ordinary Thief.*
But,
Police will look after and protect the *Political Thief!*
That's the travesty and irony of our current society!
And,
we blindly say we are not blind!

4. The stupid part of the whole issue is that we insult and fight the *Ordinary Thief* but we Fight each other for the *Political Thief*

Problematic internet use (PIU) among adolescents: Do we know enough?

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Problematic internet use (PIU) is characterized by excessive or poorly controlled preoccupations, urges, or behaviors regarding computer use and internet access that lead to impairment or distress. This may present with problems of with gaming, social media use, pornography or information seeking (1). These four prominent presentations PIU differ in terms of their uses, gratifications, risk factors and predisposing factors. For example, social anxiety is known to predispose to excessive use of social media, while sexual dysfunction may predispose to compulsive use of pornography (1). Similarly, problems with gaming are commoner among boys, while excessive social media use is more prevalent among girl

PIU has become a major problem among Sri Lankan adolescents with an increasing number presenting to Child and Adolescent mental health services due to PIU. The reliance on online education during the COVID-19 pandemic has led to exacerbation of this problem. Although there are no formal studies on the awareness of PIU in the general population or healthcare workers in Sri Lanka, clinical experience suggests that this is limited in Sri Lanka. This results in adolescents struggling with PIU becoming invisible to health system and not receiving the help they need.

Epidemiology

A review carried out in the South Asian region revealed that the prevalence of internet addiction ranged from 0-47.4% and the prevalence of over users/problematic use ranged from 7.4% to 46.4% (2). This is higher than the prevalence of PIU in other countries such as Japan (2% addicted, 21.7% possibly addicted), Spain (16.3%), Netherlands (11%), Tunisia (18.05%) and USA (4%). A study done on PIU among university students in Sri Lanka has revealed that 27.6% of students had at least one problematic behaviour related to the internet (3).

Risk factors

Socio-demographic factors

A higher risk of PIU is associated with male gender, older age, early exposure to the internet, easy accessibility to the internet, owning a personal device, daily life with unstructured time, personal investment in social networking sites (by posting four or more times a day), academic stress and childhood physical and sexual abuse (4).

Type of internet application

It has been found that internet applications differ in their addictive potential due to the difference in their rewarding properties (5). Previous literature suggests that internet gaming, social networking and chatting have the highest addictive potential (5). However, there seems to be a gender difference in the addictive properties with males having a higher addictive potential for internet gaming and females having a higher risk of addiction to social networking and chatting. Information searching and E-shopping has been shown to have less addictive potential (5).

Psychological mechanisms

Attachment with parents is thought to be one of the psychological mechanisms associated

with PIU. Secure attachment is shown to be negatively associated with PIU, while dismissive and preoccupied attachment styles increased the risk of PIU.

Peer attachment also plays a role in PIU. Insecure peer attachment, characterized by a lack of trust and communication as well as a high sense of alienation, is a risk factor for PIU, while secure peer attachment appears to be a protective factor (4).

Individual who lacks offline social skills may turn to online communication rather than face-to-face communication, due to the greater anonymity of online interactions. The online world provides greater control over ones image and lower risk of negative evaluation, thus making it a more acceptable form of communication to those with social anxiety and body image concerns (1). Internet provides an opportunity for an individual to create a virtual "ideal self" liberated from real-life stress and limitations and can be used by some as a method of avoidance of real or perceived problems (1).

Family factors

Factors within the family such as family dissatisfaction, parent-adolescent conflict and poor parent-adolescent relationship has been described to be associated with PIU in adolescents (6).

Parental supervision and monitoring has been described to be negatively associated with internet addiction in younger adolescents (6).

Parenting style, particularly low parent involvement, parental rejection and punitive parenting as well as parental mental health, especially problematic drinking or moderate to severe depression in parents have all shown to be associated with internet addiction in adolescents (6).

Comorbidities

PIU is associated with a multiple psychiatric as well as physical comorbidities. Attention Deficit Hyperactivity Disorder (ADHD) and anxiety disorders, especially social anxiety are the most commonly described psychiatric comorbidities (1). In addition, depression, substance induced disorders, suicidal ideas and attempts, sleep disturbances and oppositional defiant disorder have also shown to be associated (1).

PIU is also associated with several forms of disordered eating including anorexia nervosa, bulimia nervosa, binge-eating disorder, food preoccupation, loss of control eating, and dieting (7). Furthermore, excessive internet use has shown to cause negative effects on cognitive functions, namely impairments in inhibitory control, decision making and working memory (8).

Moreover, several physical comorbidities such as weight gain, nutritional deficiencies, musculoskeletal problems, poor oral health and chronic pain syndromes are also known to be associated with internet addiction (1). (Table 1)

The combination of psychiatric comorbidity and physical ill health often results in significant functional deterioration in the adolescent. Moreover, studies have also shown that PIU is associated with poorer Health Related Quality of life (HRQol) and that the HRQol decreased with increasing severity of PIU.

Table 1 – Impact of PIU on adolescents

Mental health	Physical health	Social and emotional
Attention Deficit Hyperactivity Disorder (ADHD)	Weight gain or loss	School avoidance
Disorder (ADHD)	Nutritional deficiencies	Academic deterioration
Anxiety disorders	Musculoskeletal problems	Less study time
Depression	Poor oral health	Family discord
Suicidal ideas and attempts	Chronic pain syndromes	Isolation from peers
Substance use disorders	Eye strain	Less physical activity
Oppositional defiant disorder	Reduced immune function	
Eating disorders		
Sleep disturbances		
Cognitive impairment		

Management

In contrast to other addictive disorders, the goal of management of internet addiction is not complete abstinence from technological devices. The aim of management is building young peoples' capacity to use interactive media as tools in focused, mindful ways (1).

The management involves self-monitoring of internet use with computer restructuring, which involves deleting bookmarks, favourite sites or apps that create problems online, using filtering software to screen out problematic online sites and setting time management goals.

Several psychological therapies such as Cognitive Behavioural Therapy (CBT), family therapy and interpersonal therapy are also effective in the management. Currently there are no FDA approved medications to treat PIU.

Given the physical, psychological and social adverse outcomes associated with PIU, health care workers should take a more active role in identifying and referring these adolescents for appropriate services.

Programmes to increase awareness among the general population is also needed to ensure timely referral of these adolescents to child and adolescent mental health services.

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Doctor's Expectations from His Patients

(Extracted from an E mail of an unknown author)

Please bring your old medical records but do not bring your opinion about your old doctor. I may not be any better than him/her.

Wait patiently for your turn to see me.

My phone is to be used only for an emergency.

Do not use your mobile phone in the consultation room. Keep it on the silent mode.

Just listen to me.

Come prepared with your complaints, ideally written down in point form.

Do understand that complications of the illness or adverse effects of drugs are often unexpected and do not blame me for those.

Do not praise me for "saving" you as it is my duty to treat you.

If you are not happy with my treatment please consult a colleague of mine without wasting your or my time.

Do not read the internet and try to diagnose or treat your illness. I do not try to repair my faulty computer with advice from the internet.

Do not suggest any investigations to be done on you, things that you have read or heard somewhere.

I am the doctor and you are my patient. Do not expect any special treatment because of your status etc. I treat all with respect.

If you like please wish me if you meet me at a social gathering, hotel, supermarket etc but do not try to discuss your health matters there also.

Do keep in mind that I am only a human being just like yourself.

CARTOON

Interaction with Colleagues

Medicine has advanced greatly ever since we qualified as doctors half a century ago. It has diversified greatly with many finer specialties in addition to the major fields like medicine, surgery, paediatrics, obstetrics and gynaecology. New investigative techniques have developed to a great extent and no single doctor is ever able to master all that.

The diseases too are better understood thus making it more and more complex. For these reasons asking for a second opinion or a specialist opinion from colleagues has been an age old practice among medical professionals, and is becoming even more relevant now. That serves the best interests of the patient. Such interaction between well qualified professionals is a sensitive matter that has the potential of causing much misunderstanding and ill feeling.

Mutual respect and humility is essential to ensure the best outcome for the patient. No one should view such seeking of an opinion from a high pedestal.

1. Referrals should be clearly written, not too long, giving the exact reason for asking advice. This should be on the BHT in the case of an in ward patient or on the OPD notes.
2. Adequate history, if not already written on the BHT, should be given as a summary.
3. Addressed properly with the full name and title eg. Dr. A B Perera, Consultant Physician. It may not be necessary to put down all the qualifications of the referee. It should be legibly signed. Hardly legible scribbled notes are an insult to the recipient.
4. A telephone call to give details or to indicate the urgency of the situation is most welcome.
5. The receiving consultant should respond similarly if possible giving the likely delay in seeing the patient or where the patient has to be sent for examination. A two word reply to a detail referral is best avoided.
6. It is discourteous to send a junior to see the patient when a consultant had made the referral unless there is an agreement for such. This may become necessary when the consultant is busy in the clinic or the operating theatre and the patient has to be seen without delay.
7. It is not in the best interest of patient care for a sick, bed ridden patient to be wheeled down corridors to the other end of the hospital, and then wait in a queue for a long time to be seen. If the consultant is too busy he can send a junior to see the patient in the ward.
8. After seeing a referred patient, it is not prudent to get into detailed discussion with the patient or the bystanders about the diagnosis, treatment etc. as this may conflict with the opinion given by the primary consultant. All communications should be to the referring consultant. I have faced embarrassing situations in this regard. I have referred a poorly controlled diabetic in the ward to a surgeon for a minor surgical complaint. I found that the surgeon had told the patient that he can be discharged and come to his clinic, ignoring the many medical problems to be sorted out!
9. It is universally accepted that one should not openly find fault with the treatment already given by the referring consultant or someone else.

– Dr. Sarath Gamini De Silva

A message from the Editor-In-Chief

We would also like to invite the membership to contribute to the SLMA newsletter by sending,

- Articles on subject matter
- Letters to the editor-matters related to the profession
- Picture quizzes (with written consent from patients if photos are being used)
- Poems/funny stories/puzzles/cartoons etc on matters related to medical profession.

Author guidelines could be obtained from the SLMA office or the Editor *(office@slma.lk or hasini.banneheke@gmail.com)*.

Thank you,
Professor Hasini Banneheke
(Editor-In-Chief-2021)

A Tale of Two Trousers

(With Apologies to Charles Dickens)

By a connoisseur

The setting is the beautiful grand wedding of two lovely people in April 2021 at a famous water-front citadel of hospitality. The wonderful ceremony and the reception were under an open-air marquee in the distant spacious lawn of the main edifice, with the cool breeze blowing from the water front.

The miserable COVID-19 mandated very limited participation at this splendid occasion. The guests; a hand-picked and chosen few, felt tremendously privileged and honoured, to be a part of this affair. They were also the crème de la crème of the medical fraternity; a sartorial extravaganza of tremendous glitter. The ladies in their very best, and dolled-up as well, while the gents were in suits of all shades, shapes and sizes. However, two gents had problems with their pants and hence the title of this narrative. Those who were privy to the tale were convinced that the details had to be recorded; hence this fancy narrative.

It is indeed a tale of two pairs of trousers. One gentleman involved had just bought a brand-new pair of trousers from a dwelling of fashion. Somehow there had been a miscalculation. He had an imposing waistline of 40 inches but the pants that were purchased had a waist of 44 inches. So, it was perilously perched on the waist, held in place by the last hole of a belt. Even then there was a tendency for the pants to slip down. To be on the safe side, the gentleman held it in place with a hand holding the waist of the pants, to prevent it sliding down.

Well and good but there was a little problem whenever he needed both hands to be freed, such as when trying to take 'selfies' and when serving from the sumptuous buffet. However, he managed to blow up the abdomen by way of a breath held in maximal expiration to momentarily bloat and hold the waistline at 44 inches. So far so good; no catastrophes.

Once all formalities were over, the crowd made their way back to the main edifice to go home. On the way back, there were several climbing steps to negotiate. There was a lady recuperating from a recent attack by a surgical knife and this gallant man with the trouser problem offered his hand to the lady, to help her up the steps. He had his left hand helping the lady and he carried another item on his right hand. The trousers were left free to its own devices. Once again, the breathing technique came to his rescue and the steps were negotiated nicely. However, at the top of the steps he was a bit cyanosed due to prolonged holding of his breath!!!

The second person involved in the tale of the two trousers was a sporty type who, not all that long ago, was as thin as a rake and had a waistline of around 28 inches. However, in recent times that waist had gone up quite a bit to a daunting 34 inches. Recently he had got the pants of his suits adjusted to fit the waist of 34 inches. Then he had gone on a strict diet and the waist had come down to around 30 inches. There lay the vexed problem of a 34-inch waistline of the pants on a biological 30-inch waist. He had gotten over the problem of the four-inch mismatch by tightening the belt to the maximum, barely sufficient to hold the pants in place. His problem developed gradually at the wedding due to the unrestrained intake of fluids, particularly because the ambient temperature was hovering around the late thirties centigrade.

The problem that arose was a compelling biological urge but the wash-rooms were in the main building about 100 metres away. The belt had to be loosened to accommodate the distended bladder and he too had to go up those steps as well. He could not try the breathing technique as there was a real risk of the flood breaking the banks, so to speak, before he managed to reach the wash-rooms. So, he too had to resort to the right hand giving a helping hand to the waistline of the pants to hold it in its place. Luckily, he managed to reach his destination without any problems of the dampest kind.

Then later on, at the end of the event, he had to once again climb those steps, carrying a plant sapling kindly provided by the hosts, to plant in the home garden as a memento. However, he was quite safe, as with the bladder empty, the pants could be held up by the belt and also with the facility of the emergency fall-back breathing technique and the free hand, just in case of an emergency slip-down. All was well, that ended quite well too.

The solution to the trouser problems of these two gentlemen would have been a set of suspenders. These refer to clip-on stirrups that are attached to the waistline of the pants, crossing over antero-posteriorly over each shoulder to hold up the trouser. Neither of them had recourse to such contraptions which would free their hands. Incidentally, one is reluctant to use that word 'suspenders' because in Sri Lankan colloquial English, the word may be mistaken to mean a vestment that holds up another set of sagging anatomical jewels.

So ends this tale of the two trousers. One does wonder what Charles Dickens would have thought of this defilement of his original masterpiece. He must surely be turning in his grave; hopefully, laughing his guts out.

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