



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health, Nutrition & Indigenous Medicine

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Mysterious Hepatitis outbreak in children Part I

This is the first of a series of 2 articles

younger, since October 2021.

Background

An outbreak of unexplained cases of acute hepatitis among children has left health officials across the world puzzled and concerned. The outbreak was first detected on April 5th and since then 1010 probable cases of acute unexplained hepatitis have been reported from 35 countries across five regions of the world as of 13th of July 2022. Half of the probable cases have been reported from Europe out of which 27% of the global caseload is reported from the UK. Further, nearly one-third of the cases are reported from the United States. The number of deaths among children reported so far is 22, while around 40 children have required liver transplants. The recent cases of acute hepatitis have tested negative for the known viruses that cause acute hepatitis; including Hepatitis A, B, C, D, and E. Investigations to identify the probable cause of the disease are ongoing. Currently, adenovirus has become a major focus of an investigation, as a significant number of cases have become positive for adenovirus. However, other possible factors including the role of SARS-CoV-2 and the Covid-19 vaccine are under investigation.

Nevertheless, despite all efforts made by the experts the cause of the disease remains a mystery.

Definition of the disease

The current WHO definition of a probable case of acute mysterious hepatitis is a person presenting with acute hepatitis (test negative for Hep A-E), with transaminase >500IU/L (AST/ALT), aged 16 years or

Epidemiological link: A person presenting with acute hepatitis (non-hepatitis A-E) of any age who is in close contact with a probable cause, since October 1st 2021.

Clinical presentation

The most common presentation reported in cases remains jaundice (71.2%) followed by vomiting (62.7%). Pale stools were also reported frequently (50%). Gastrointestinal symptoms including diarrhoea too were a common presentation among the affected.

Epidemiology

Initially, a handful of cases were reported from Scotland during the end of March 2022 and gradually increased in number to report hundreds of cases primarily from Europe, the USA, and the UK. According to the World Health Organization, as of the 13th of July 2022, 1010 probable cases have been reported from 35 countries across the world in just four months period. The disease has already killed 22 children and led to liver transplantation in 41. According to the World Health Organization records out of the total caseload 27% are from the United Kingdom and 334 cases from the United States. Cases were also reported from the Western Pacific region (70 cases), South Asia (90 cases), and the Eastern Mediterranean (2 cases).

Who is affected?

So far, almost all mysterious hepatitis cases have been reported among children aged 1-16 years. However, the majority of cases have occurred among children less than five years of age, the median age be-

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WEB SRI LANKA 2022

Table 1. Distribution of probable cases of severe acute hepatitis of unknown aetiology in children by WHO Region since 1 October 2021, as of 8 July 2022, 5 PM CEST

WHO Region	Probable cases	Cases requiring liver transplants	SARS-CoV-2 positive by PCR (Number of positive cases)	Adenovirus positive by PCR+ (Number of positive cases)	Adenovirus type 41 (Number of positive cases)	Deaths
Americas	435	24	18	9	1	13
Eastern Mediterranean	2	0	Not available	1	Not available	1
Europe	484	22	54	193	30	2
Southeast-Asia	19	0	Not available	Not available	Not available	6
Western Pacific	70	0	6	6	0	0
Cumulative*	1010	46	78	209	31	22

ing 2 years. Fifty per cent of the affected are females while the majority are Caucasians

What is causing the disease?

Scientists are intensively working to find out the probable aetiology of the disease even though it remains unclear.

The data suggest that in all such cases of hepatitis the five hepatitis viruses that commonly cause liver inflammation has been ruled out. However, available reports indicate that 52% of the cases in Europe, 65% in the UK and about 45% in the US have tested positive for Adenovirus type 41. However, scientists have failed to identify any connection between the disease and the Covid 19 vaccination status, since the majority of the affected children are unvaccinated or not eligible to vaccinate. Anyway, after months of intensive work, the scientists suspect Adenovirus type 41, SARS CoV-2 infection or its delayed reaction, or a combination of both as possible culprits of the disease. Further, researchers have found no linkage to food, geographic area, animals, or travel.

Connection to Adenovirus

The potential connection of the disease to Adenovirus type-41 remains top of the list as many infected children were found to be positive for the pathogen. Adenovirus type-41 is a known cause of family infections including common colds to and eye infections. It has also been a known cause of mild to moderate gastroenteritis in children. However, the virus has never been a usual culprit of hepatitis even in healthy children, even though there have been previous reports of hepatitis in children with a weakened immune system.

In a study that was carried out in the UK, which involved 44 children aged 10 years and younger referred to the paediatric liver transplantation unit at NHS foundation, it

was found that 27 out of 30 patients (90%) who underwent molecular testing were positive for adenovirus type 41.

Linkage to Covid-19 infection

An analysis published on June 24th by the Centre for Disease Control (CDC) and prevention in the USA indicated that 26% of 123 cases of mysterious hepatitis in children in the United States had a history of positive Covid-19 test before the liver infection. CDC is now conducting further work to test for the antibodies against SARS-CoV-2 in children affected to find out whether there is a linkage between unexplained hepatitis and previous infection with Covid-19. Moreover, a study that was carried out by the NHS foundation trust in the United Kingdom reported that of the 39 children who underwent molecular testing, 11 (28%) tested positive for SARS-CoV-2, while 5 out of 13 (38%) were found positive for Covid-19 antibodies.

Virologists also suspect some connection with the pandemic where the disease can be a consequence of direct damage from the Covid-19 infection, reduced exposure to common viruses during the lockdown period, or abnormal immune response following SARS- CoV-2 infection.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 02nd- 08th Jul 2022 (27th Week)

RDHS	Dengue Fever		Dysentery		Encephaliti		Enteric Fever		Food Poi-		Leptospirosis		Typhus		Viral Hep-		Human		Chickenpox		Meningitis		Leishmania-		WRCD		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**	
Colombo	84	6717	0	3	0	3	0	0	0	5	11	99	0	0	0	0	2	0	0	1	17	2	6	0	2	13	96
Gampaha	18	3643	1	5	0	1	0	0	0	12	1	80	0	0	0	6	0	2	0	0	24	1	21	0	24	5	73
Kalutara	11	2113	1	8	0	1	0	1	0	6	11	197	0	2	0	2	0	2	0	1	34	1	15	0	1	2	100
Kandy	27	2124	0	12	0	0	0	2	0	4	3	80	0	0	0	7	0	0	0	1	35	1	5	0	13	12	98
Matale	34	502	0	2	0	0	0	0	0	0	2	66	0	3	1	2	0	0	0	0	10	0	1	0	186	18	99
NuwaraEliya	10	124	1	14	0	0	0	2	0	0	0	36	0	10	0	1	0	0	0	0	24	0	2	0	0	22	97
Galle	10	2059	2	7	0	0	0	0	0	0	6	229	0	11	0	2	0	0	0	0	38	0	12	0	0	11	98
Hambantota	85	743	0	24	0	0	0	0	0	2	6	126	2	23	0	3	0	0	0	1	19	0	6	11	260	16	98
Matara	81	858	0	10	0	0	0	0	0	0	2	146	0	6	0	1	0	0	0	2	21	0	6	9	169	28	100
Jaiffna	60	2191	2	29	0	2	0	53	1	25	0	19	2	403	0	5	0	4	2	2	69	0	8	0	0	65	88
Kilinochchi	2	89	0	4	0	0	1	1	0	19	0	11	0	8	0	0	0	0	0	0	4	1	1	0	1	31	100
Mannar	2	167	0	1	0	0	0	0	0	0	0	17	0	3	0	2	0	0	0	0	5	0	15	0	0	20	76
Vavuniya	1	57	0	0	0	1	0	2	0	0	0	12	0	1	0	0	0	0	0	1	6	0	0	0	2	2	78
Mullaitivu	0	39	1	4	0	0	0	2	0	3	0	20	0	5	0	0	0	0	0	0	4	0	1	0	1	22	94
Batticaloa	30	913	0	44	0	7	0	0	3	20	1	28	0	0	0	1	0	1	4	12	0	23	0	1	36	100	
Ampara	1	101	0	7	0	1	0	0	0	17	0	72	0	1	0	1	0	0	0	0	35	1	15	0	12	10	96
Trincomalee	8	939	0	22	0	0	0	1	0	2	0	17	0	3	0	4	0	0	0	0	29	0	4	0	0	18	84
Kurunegala	67	1572	0	10	0	1	0	0	0	4	0	82	0	18	0	0	0	1	1	1	37	1	21	3	281	8	96
Puttalam	16	1171	0	3	0	0	0	0	0	0	0	13	0	6	0	0	0	0	1	7	0	18	0	4	16	88	
Anuradhapur	4	217	0	8	0	2	0	1	0	5	0	110	1	18	0	2	0	1	0	0	28	0	23	0	218	9	84
Polonnaruwa	9	76	0	4	0	0	0	0	0	1	10	75	0	0	0	2	0	0	0	0	8	0	3	16	233	17	84
Badulla	30	629	1	12	0	1	0	0	0	5	3	114	0	28	3	80	0	0	1	1	36	0	8	0	14	14	100
Monaragala	15	255	0	5	0	1	0	4	0	2	4	202	0	18	1	28	0	0	0	0	37	3	26	2	82	10	100
Ratnapura	42	1372	1	27	0	5	0	3	0	24	8	507	1	14	0	15	0	0	2	46	4	29	0	119	12	93	
Kegalle	12	1283	0	9	0	5	0	1	0	5	18	310	1	13	0	3	0	0	0	58	0	29	0	14	8	99	
Kalmune	17	602	1	24	0	0	0	1	0	5	0	14	0	1	0	1	0	0	2	33	0	21	0	0	30	99	
SRI LANKA	21	30556	11	298	0	31	1	74	4	166	86	2682	7	615	5	17	0	11	20	676	15	319	41	1637	17	93	

Source: Weekly Returns of Communicable Diseases (esurveillance.epid.gov.lk). T=Timeliness refers to returns received on or before 08th July, 2022 Total number of reporting units 361 Number of reporting units data provided for the current week: 274 C**-Completeness

Table 2: Vaccine-Preventable Diseases & AFP **02nd– 08th Jul 2022 (27th Week)**

Disease	No. of Cases by Province									Number of cases during current week in 2022	Number of cases during same week in 2021	Total number of cases to date in 2022	Total number of cases to date in 2021	Difference between the number of cases to date in 2022 & 2021
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	00	00	01	43	25	72 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	00	00	00	00	00	00	01	01	02	35	48	- 34.8 %
Measles	00	00	01	00	00	00	00	00	00	01	00	13	10	20 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	05	02	150 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
Tuberculosis	00	00	00	00	00	00	00	00	00	00	280	3050	2906	4.9 %

Key to Table 1 & 2

Provinces: W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.
RDHS Divisions: CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matale, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.

Data Sources:
Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,
Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis
CRS** =Congenital Rubella Syndrome
NA = Not Available

Covid-19 Prevention & Control

For everyone's health & safety, maintain physical distance, often wash hands, wear a face mask and stay home.

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to chepid@slt.net.lk. **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

ON STATE SERVICE

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