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Pedia Companion Newsletter

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Dear Doctor,
Greetings from Micro Labs Limited. We are happy to bring you **"PEDIA COMPANION"** which contain latest and interesting news in the field of Paediatrics.

This issue contain:

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited

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Management and Outcomes of Gastroschisis in Neonates

Introduction:

Gastroschisis is a congenital abnormality of the abdominal wall that is becoming more common. It is herniated intra-abdominal viscera exposed to amniotic fluid during gestation due to a congenital abdominal wall abnormality.[1, 3] There are two types of gastroschisis: complex and simple gastroschisis. The presence of intestinal atresia, perforation, necrotic segments, or volvulus is usually indicative of complex gastroschisis. One-third of pregnancies affected by gastroschisis are thought to have complex gastroschisis. Infants with gastroschisis now have a survival rate of more than 90%, even though the illness causes severe morbidity.[1] Intestinal dysfunction, sepsis, and reoperations prolong hospital stays and require parenteral nutrition (PN) The objective of this study was to evaluate the management and outcomes of gastroschisis and to find out predictors of poor outcome based on length of stay in hospital (LOS) and PN duration.

Low GA, staged closure, sepsis, and intestinal atresia were found independent predictors of impaired study outcome measured by LOS and PN duration

Methods:

The study by Räsänen *et al* was a retrospective observational study of neonates born between 1999 and 2020. It included all infants who were diagnosed with gastroschisis following surgery, according to the International Classification of Diseases, ICD (Q79.3). Data were obtained from medical and surgical records. Prenatal diagnosis, birth weight, gestational age at birth, mode of delivery, indication for urgent cesarean, sex, maternal age, parity, date and time point for surgery, duration of intubation, associated anomalies, fetal bowel dilatation, primary or staged closure, the technique of staged closure, date at final closure of the abdomen, intraabdominal pressure, reoperations and indications for reoperation, the occurrence of necrotizing enterocolitis (NEC), episodes of sepsis, intestinal atresia, intestinal necrosis, LOS, days of PN, and survival were collected.

Source: medlineplus.gov

Results:

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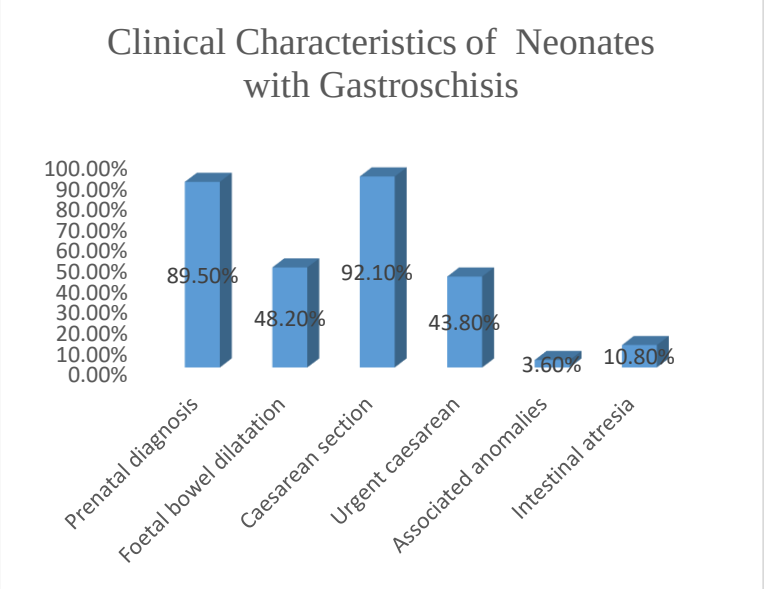
A total of 114 patients participated in the study by Räsänen *et al*.. At a median gestational age (GA) of 36 weeks (range 29–38), 105 (92.1%) caesarean sections were done, with 46 (43.8%) being emergency caesarean sections. In 82 % of the neonates, primary closure was achieved. The overall survival rate was 98.2%. One death occurred of abdominal compartment syndrome, while another death due to sepsis as a result of intestinal failure–associated liver illness. None of the patients that deceased was born after 2005. The median duration on PN was 18 days, while the median LOS was 26.5 days. The average length of time spent on mechanical ventilation was 22 hours Low GA, staged closure, intestinal atresia, and infection were found to be independent predictors of a longer LOS and on PN duration. Additionally, male sex was found to be an independent predictor of a longer LOS.



Discussion:

The outcomes of a group of neonates with gastroschisis were evaluated in this study, and researchers found a high overall survival rate for hospital discharge (98.2%). The patients' survival rates were identical to those seen in earlier studies. Raymond et al. reported a 95 percent survival rate in their cohort of 566 infants with gastroschisis in a recent multicenter retrospective research from 2020.[2] The results of this study found a longer median LOS (26.5 days), median PN length (18 days), and median time of ventilation (22 h), however, Raymond et al. reported a larger median LOS (37 days), PN duration (27 days), and time on mechanical ventilation (27 days) in a study from 2020.[2] (5 days) In the current study, primary closure had a higher success rate (82%) and yet no more complications compared to a study from 2021 in which primary closure was successful in 66% of neonates with gastroschisis. Primary closure had a higher success rate (82%) and no additional complications in the current study, which was similar to a study from 2021 in which primary closure was successful in 66 % of newborns with gastroschisis.[3]

Conclusion:

In conclusion, the results of this study suggest that the management regimen for gastroschisis used in this study was successful, with high survival, no fatalities in neonates born after 2005, and favorable LOS, PN duration, and time on mechanical ventilation compared to other studies.

Low GA, staged closure, sepsis, and intestinal atresia were found independent predictors of impaired study outcome measured by LOS and PN duration. Additionally, male sex was found to be an independent predictor of LOS. To determine the best gastroschisis management, a multicenter registry with long-term follow-up is required.

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Type 1 diabetes trends in paediatrics and young adults during the COVID-19 pandemic

Introduction:

Diabetes mellitus has been linked to a worse outcome for COVID-19 infection, as well as immediate complications and higher mortality, throughout the COVID-19 pandemic.[1]Moreover, COVID-19 patients have had significant hyperglycemia, necessitating insulin treatment and, in some cases, a new diagnosis of diabetes. Diabetic ketoacidosis (DKA) was the most common adverse outcome related to concomitant COVID-19 infection in patients with Type 1 Diabetes(T1D), according to the T1D Exchange.[1,2]

There was an increase in newly diagnosed T1D and a higher proportion of newly diagnosed T1D presenting in DKA is seen during COVID-19

During the COVID-19 pandemic, a rise in newly diagnosed T1D has been reported.[2] The objective of this study was to describe trends in newly diagnosed T1D, as well as the severity of presentation at diagnosis during COVID-19 compared to the prior year using data from seven large clinical centers.

Methods:

This was a multi-center retrospective study by Wolf RM *et al*. It was part of the T1D Exchange Quality Improvement Collaborative (T1DX-QI) project, which is a collaborative quality improvement platform that involves over 40 diabetes clinics evaluating the current state of diabetes care and sharing data and best practices promote greater type 1 diabetes care. for this study of analysing trends in newly diagnosed T1D, seven member locations provided longitudinal data. Patients diagnosed with T1D in 2019 and 2020, aged 0-26 years, were the target population. The number of newly diagnosed T1D patients, their DKA data, and the total number of outpatient T1D patients followed at each centre were assessed. The total number and percentage of newly diagnosed patients seen in 2019 and 2020 were the main outcomes of interest. Monthly new-onset trends were calculated as a percentage of T1D patients seen, and DKA in new-onset trends by in-person/telemedicine visits by every month. Patient age at time of diagnosis, gender, race/ethnicity, insurance type, and type 1 diabetes autoantibody data, DKA and DKA severity at the time of presentation were noted.

Results:

In 2019 and 2020, these centres saw a total of 17749 and 17597 T1D patients as outpatients, respectively. In 2020, there were 1399 newly diagnosed T1D patients across seven sites, compared to 1277 in 2019. In 2020, there was a higher proportion of newly diagnosed patients (42.8 percent in 2020 vs. 38.6 percent in 2019) presented with DKA, with a higher proportion presenting with severe DKA, as characterized by a pH of 7.1 and/or a bicarbonate of 5mmol/L.

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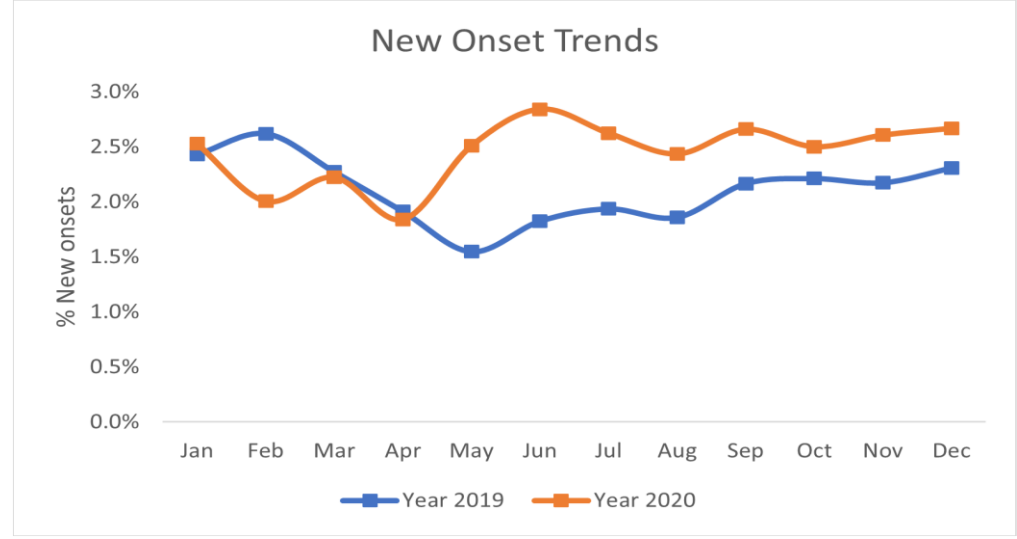
Monthly data trends revealed a larger number of new T1D diagnosis than in 2019 in the summer months of 2020. Between the two years, the percentage of newly diagnosed T1D by race/ethnicity did not change considerably.



Percentage of newly diagnosed T1D patients in 2019 vs. 2020

Discussion:

This study is the largest multi-center study of newly diagnosed T1D trends during the COVID-19 pandemic. In comparison to the previous year, there was a considerable increase in newly diagnosed T1D patients. in a similar analysis of newly diagnosed T1D during the first wave of the pandemic there was no increase in T1D diagnoses compared to the previous eight years.[3] however the prior studies has been limited to small sample sizes and only includes data from the first wave of the pandemic, this study is the first to look at longitudinal data from various institutions, multiple waves of the pandemic, and a diverse study population. In this study, there was also an increase in the proportion of newly diagnosed T1D patients who presented in DKA during COVID-19 compared with the same period the previous year, which is similar to findings from previous studies,[4] the percentage of newly diagnosed T1D patients who present with DKA increased from 38.6 percent to 42.8 percent between 2019 and 2020.

Conclusion:

In conclusion, during the COVID-19 pandemic, there was an increase in newly diagnosed T1D and a higher proportion of newly diagnosed T1D presenting in DKA at diagnosis compared to the previous year. Further study is required to confirm these results with population-level data and to investigate COVID-19's long-term effect on diabetes trends.

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Impact of Structured transition of Paediatric to Adult Inflammatory Bowel Disease

Introduction:

Nearly 25% of people with Inflammatory Bowel Disease (IBD) are diagnosed before the age of 20, with an increase in incidence of diagnoses made during childhood. When compared to adult IBD, paediatric IBD has more extensive illness and also more upper gastrointestinal tract involvement.[1] Transitioning patients from paediatric to adult treatment can be accomplished in a number of ways, depending on the needs and structure of the local healthcare system.

Structured transition from pediatric to adult IBD care services leads to significantly improved disease outcomes in patients with IBD

Transferring of patients from paediatric to adult services may result in disruption of care and challenging to patients and physicians.[2] Some paediatric patients transferred directly to adult treatment, without any plan between paediatric and adult services to maintain continuity of care ("non-transition care"). Others receive "structured transition" ("joint transition care"), for continued combined treatment from paediatric and adult clinicians. Studies suggest that a well-coordinated and age-appropriate transition programme could help IBD patients achieve better clinical outcomes. In this study, patients with IBD (Crohn's disease [CD] and ulcerative colitis [UC]) were compared to see how structured transition care and non-transition care impacted resource and medication utilisation, as well as patient-reported results.[2]

Methods:

An observational retrospective research conducted in 11 gastrointestinal clinics. Participants were aged ≥16 years and had been under the care of adult gastroenterology services for ≥12 months at the time of enrollment and had a confirmed CD or UC diagnosis before the age of 16. Transition patients attended ≥2 visits to the gastroenterology service with both paediatric and adult personnel jointly present. Non-transition individuals were transferred to adult care without joint visits. Data was gathered retrospectively from medical records for the 12-month period prior and after the initial visit for IBD care.

Results:

The study comprised a total of 129 participants: 95 transition patients and 34 non transition patients. At the index visit and recruitment, patients in the both groups were equivalent in terms of sex, IBD diagnosis, and age. At post index visit, a larger percentage of transition patients were on immunomodulators at the 12 months' visit compared with non-transition patients (67% and 41%, respectively). The distribution of all other IBD-related treatments was similar in transition and non-transition patients, with 9 percent of transition patients and 21% of non-

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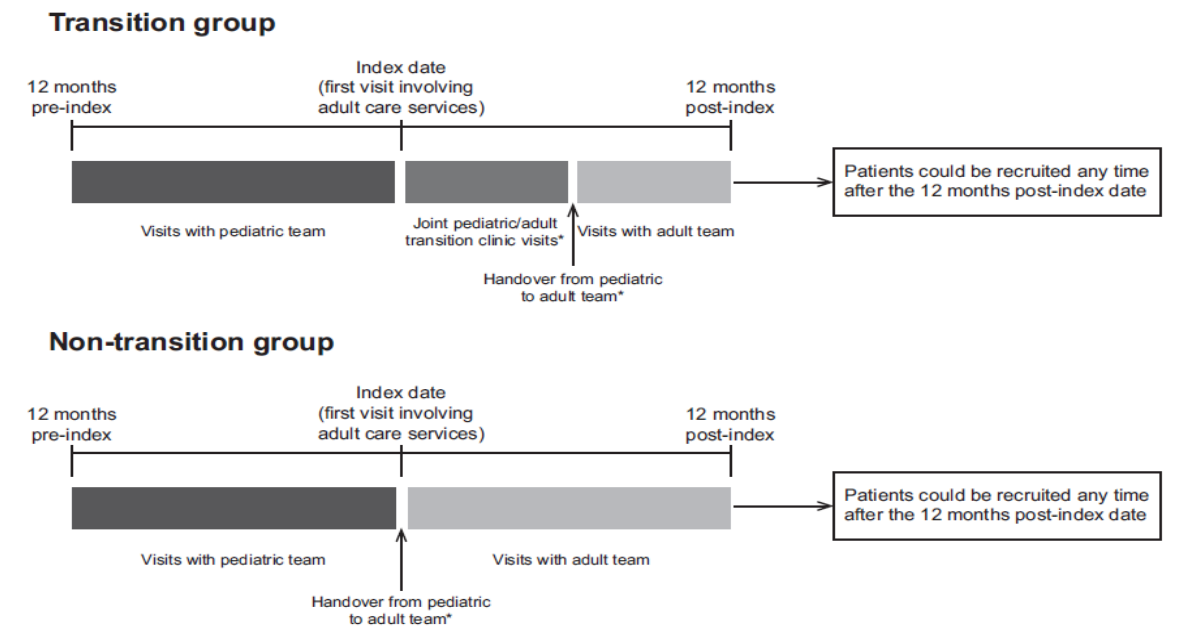
transition patients taking corticosteroids. However, the transition group had a significantly lower mean number of disease flares per patient than the non-transition group (0.4 vs 1.0, respectively), In comparison to the non-transition group, a considerably higher number of patients in the transition group were steroid-free (71 % vs 41 %, respectively) and were less likely to have an emergency department visits leading to hospitalisation (5 % vs 18 %). There was no difference between transition and non-transition patients, according to cost estimates.



Study design.Number of joint pediatric/adult visits and point of handover to adult team is patient-dependent but ≥2.

Discussion:

This is the first multicenter, actual study to look at the effect of structured transitions from paediatric to adult care on patient outcomes in IBD and hospital resource utilization. In the 12 months following the first adult care visit, a significant reduction in disease flares, a higher prevalence of steroid-free patients, fewer prescribed courses of IBD medication, and fewer emergency visits leading to hospitalisation were observed among paediatric patients undergoing structured transition compared to non-structured transition, similar to previous studies.[2] While transitional care reviews in many counties in IBD have recently resulted in the development of consensus guidelines for medical practice.[3]

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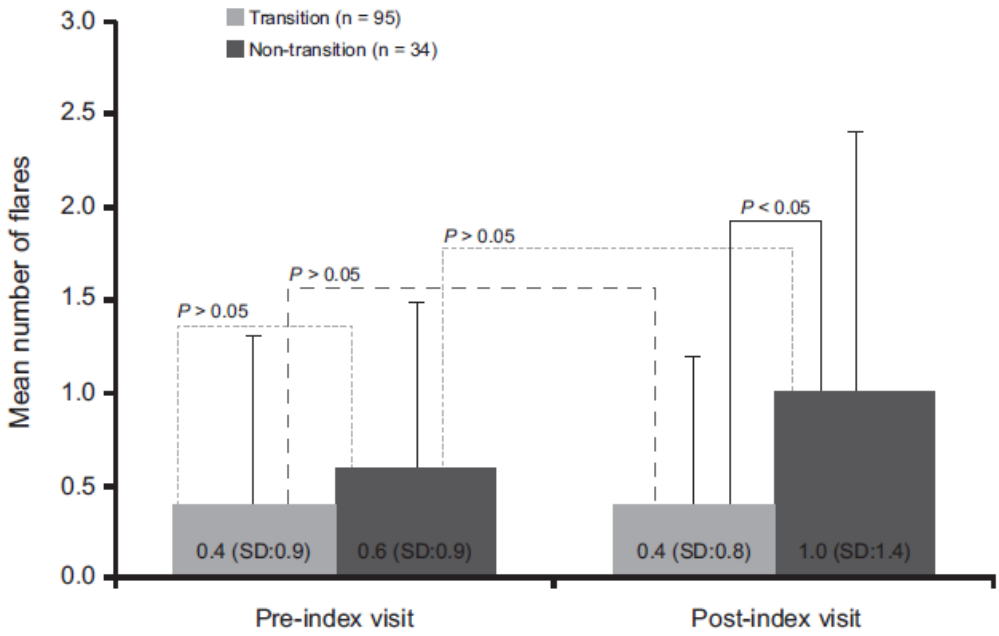

Mean (SD) number of flares per patient in the 12-month periods pre- and post-index visits.
Statistical analysis of the between-group differences in number of flares per patient was estimated using the independent samples t-test, while within-group comparisons were estimated using the paired t-test. SD=standard deviation.

Conclusion:

The outcomes of this trial examining structured IBD transition care reveal that it has a beneficial and cost-neutral effect on measurable outcomes in patients with pediatric-onset of IBD after transfer to adult healthcare facilities. These findings will need to be confirmed by larger studies with longer follow-up periods that consider alternative transition care models.

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A Case of Multisystem inflammatory syndrome following mRNA COVID-19 vacciation

Introduction:

Multisystem inflammatory syndrome (MIS-A) in adults and in children (MIS-C) are febrile syndromes with elevated inflammatory markers that commonly appear 2–6 weeks after a severe acute respiratory syndrome, infection with the SARS-CoV-2 virus.[1] MIS-C after SARS-CoV-2 infection is relatively familiar. a similar multisystem hyper-inflammatory response post COVID-19 vaccination has not been extensively reported the pediatrics.[2] this is a case of a 12-year-old boy who developed MIS-C after getting 2 doses of mRNA COVID-19 vaccines. A possible connection between the SARS-CoV-2 vaccine and MIS-C cannot be ruled out

MIS-C cases should be carefully evaluated, as miss-interpretation of these cases may leads to vaccine hesitancy.

Case Presentation:

A 12-year-old child developed a high-grade fever for three days, redness in his eyes, a diffuse erythematous non-itchy rash, lethargy, and abdominal pain five weeks after receiving his second dose of Moderna vaccine, followed by a three-week-apart initial dose of Pfizer-BioNTech vaccine. He had no history of COVID-19 infection and no history of previous exposure. No history of cough or other respiratory symptoms, headache, convulsions, or joint pain. There was also no travel history, contact with sick people, bird or animal exposure, or usage of raw milk products. No allergies or drug use. He was hypotensive and febrile after hospitalization, with mild tachypnea and tachycardia. There was conjunctivitis on both eyes. There was no lymphadenopathy or sore throat, though. Cardiac, chest, abdominal and neurologic examination was unremarkable. The following day, vomiting, diarrhea and face puffiness developed in the patient.The PCR for SARS-CoV-2 was negative, but the IgG for SARS-CoV-2 (against S protein) was extremely positive (>5680 IU/ML). the patient had thrombocytopenia, neutrophilia, and lymphopenia, as well as elevated inflammatory markers and troponin levels. The echocardiography revealed LV function was mildly impacted (EF=55%). The diagnosis of MIS-C after vaccination was considered. Additionally, intravenous fluids, acetaminophen and empirical antibiotic use (azithromycin and ceftriaxone), patient was put on intravenous immunoglobulin 2 gm/kg on the fourth day of hospitalization. Patient responded well, with the fever, rash, and facial swelling subsiding and improving laboratory parameters. The patient developed thrombocytosis and was discharged on an aspirin regimen of 81 mg/d, and asked to review after one week in the clinic. Apart from mild fatigue, the patient was returned to premorbid condition

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Discussion:

Few cases of MIS-C have been documented after SARS-CoV-2 vaccination, and practically all cases were diagnosed in adults with or without prior COVID-19 infection. [1,2]Almost all the cases were successfully treated by immunomodulatory therapy except one fatal who had previously been infected with COVID-19, MIS-A occurred after vaccination with SARS-CoV-2.[3]

Lab Parameter	Intial Lab Result	Labs After IVIG	Follow-Up Lab One Week From Discharge	Normal Range
Leukocytes	13	13	6.7	4.5–13.5 K/uL
Lymphocytes	0.66	3.17	4.06	1.5–4 K/uL
Neutrophils	12	2.9	4.73	2–7.5 K/uL
Hemoglobin	11.3	13.6	13.4	12–15 gm/dL
Platelets	145	516	365	150–450 K/uL
creatinine	48	33	NA	53–115 µmol/L
CRP	136	20	2	0–3 mg/L
ESR	26	62	22	< 20 mm/h
D-dimer	5	2.5	NA	0–0.5mg/L
Ferritin	522	303	NA	10–244 ng/mL
Fibrinogen	>370	262	NA	200–393 mg/dL
Troponin-I	0.8	0.03	NA	0.02–0.04 ug/L
AST	36	55	NA	<34–118 U/L
ALT	28	37	NA	10–49 U/L
procalcitonin	10	0.33	NA	0.0–0.1 ng/mL
SARS-CoV-2 PCR	Negative			
SARS-CoV-2-IgG	>5680			< 17 IU/ML
ASOT	98			0–200 IU/ML
ANA	Negative			
Blood culture	Negative			
Urine culture	Negative			
Bacterial, viral GI multiplex stool	Negative			
Other virology	Negative			
Malaria film	Negative			
Brucella culture	Negative			

Laboratory investigations

This is the first case of a child developing MIS-C after receiving two doses of distinct mRNA COVID-19 vaccines, according to researchers, and it meets the exact case description of MIS-C following the SARS-CoV-2 vaccine.[4]Due to the lack of a nucleocapsid antibody test in this patient, a past history of asymptomatic COVID-19 infection cannot be ruled out, and so this case cannot be linked to vaccination or MIS-V. This case highlights the importance of testing for nucleocapsid antibody, which is induced only by infection and not vaccination, to rule out previous SARS-2-CoV infection.[2]

Conclusion:

In conclusion, the study tells that Cases of MIS-C should be evaluated with caution, since attributing such cases to vaccination can unjustifiably increase vaccine apprehension.

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