stecSUH

EXPANSIÓN TEMPRANA DE VOLUMEN MEJORA EL PRONOSTICO DE CORTO Y LARGO PLAZO

Dr. Pablo Bonany
Nefrologo Infantil
Hospital de Niños Ricardo Gutierrez (CABA)

Giuseppe Arcimboldo, (Milán, 1527 - ibídem, 11 de julio de 1593) pintor italiano, Representa el rostro humano a partir de flores, frutas, plantas, animales u objetos; en el contexto de las ilusiones ópticas.

The hemolytic-uremic syndrome

The combination of acute renal failure, thrombocytopenia, and hemolytic associated with distorted erythrocytes("burr" cells) constitutes the hem syndrome. These observations of the natural history of 58 affected infants children represent the largest single group studied. Preliminary serologic st to a viral etiology in some cases. During the acute phase, the mortality rat lowered substantially by the judicious use of transfusions of packed ery improvements in the treatment of the acute renal failure. The severity of r and central nervous system abnormalities appear to influence the frequenc sequelae. It is not clear whether affected children represent the clinical one disease or reflect similar changes induced by diverse disease processes.

Carlos Gianantonio, M.D.,* Margarita Vitacco, M. D.,
Fernando Mendilaharzu, M.D., Arnaldo Rutty, M.D., and
Javier Mendilaharzu, M.D.

BUENOS AIRES, ARGENTINA

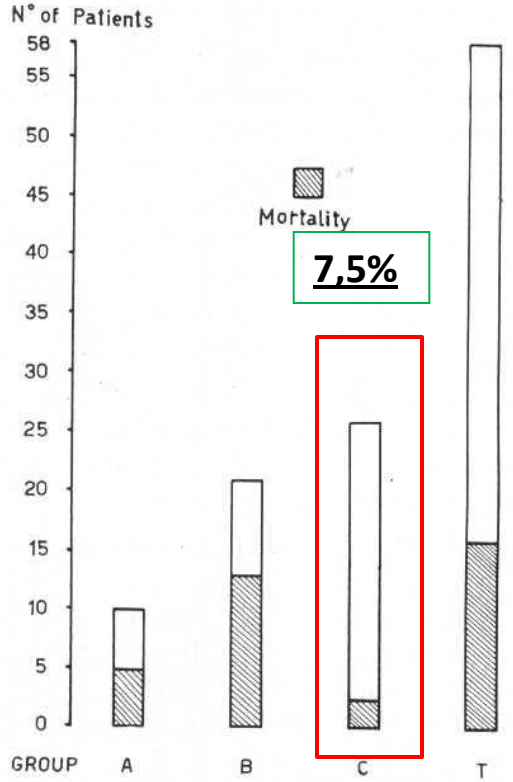
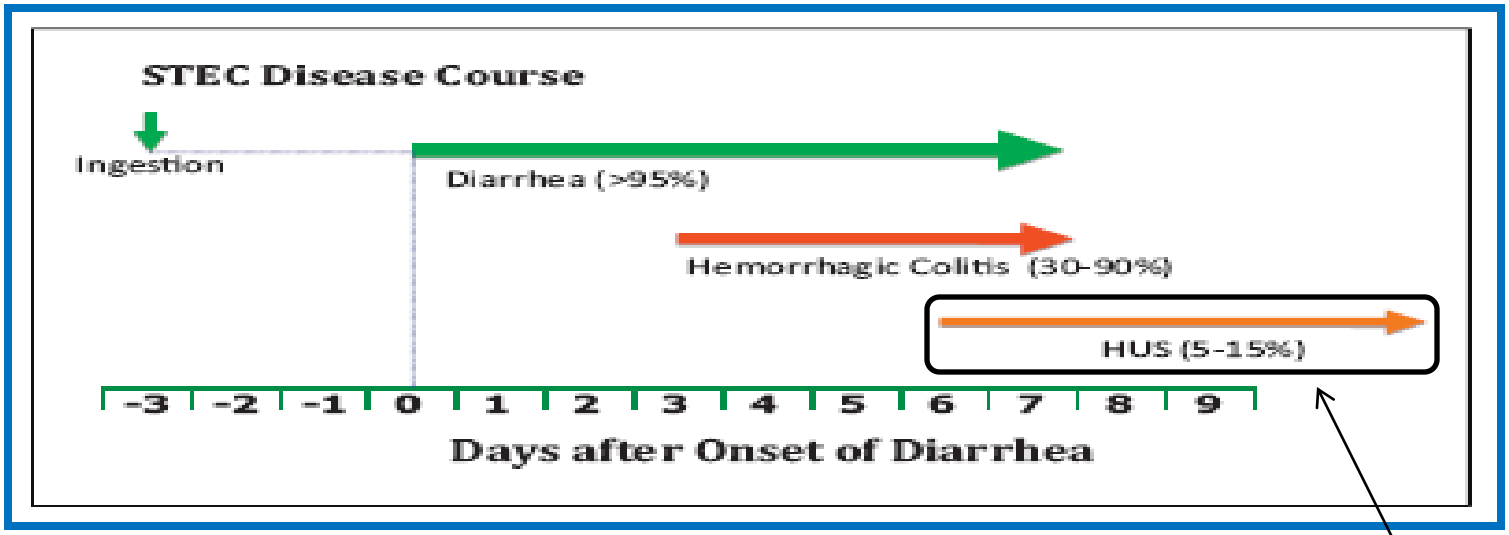


Fig. 2. Mortality rates related to year of admission. *Group A*—1957 to 1960; *Group B*—1960 to 1962; *Group C*—1962 to 1963. *T* = Total group (58 patients).



ZONA DE ACCIÓN

Presse Med. 2012; 41: e115–e135

Maintenance Intravenous Fluids in Acutely Ill Patients

Michael L. Moritz, M.D., and Juan C. Ayus, M.D.

N ENGL J MED 373;14 NEJM.ORG OCTOBER 1, 2015

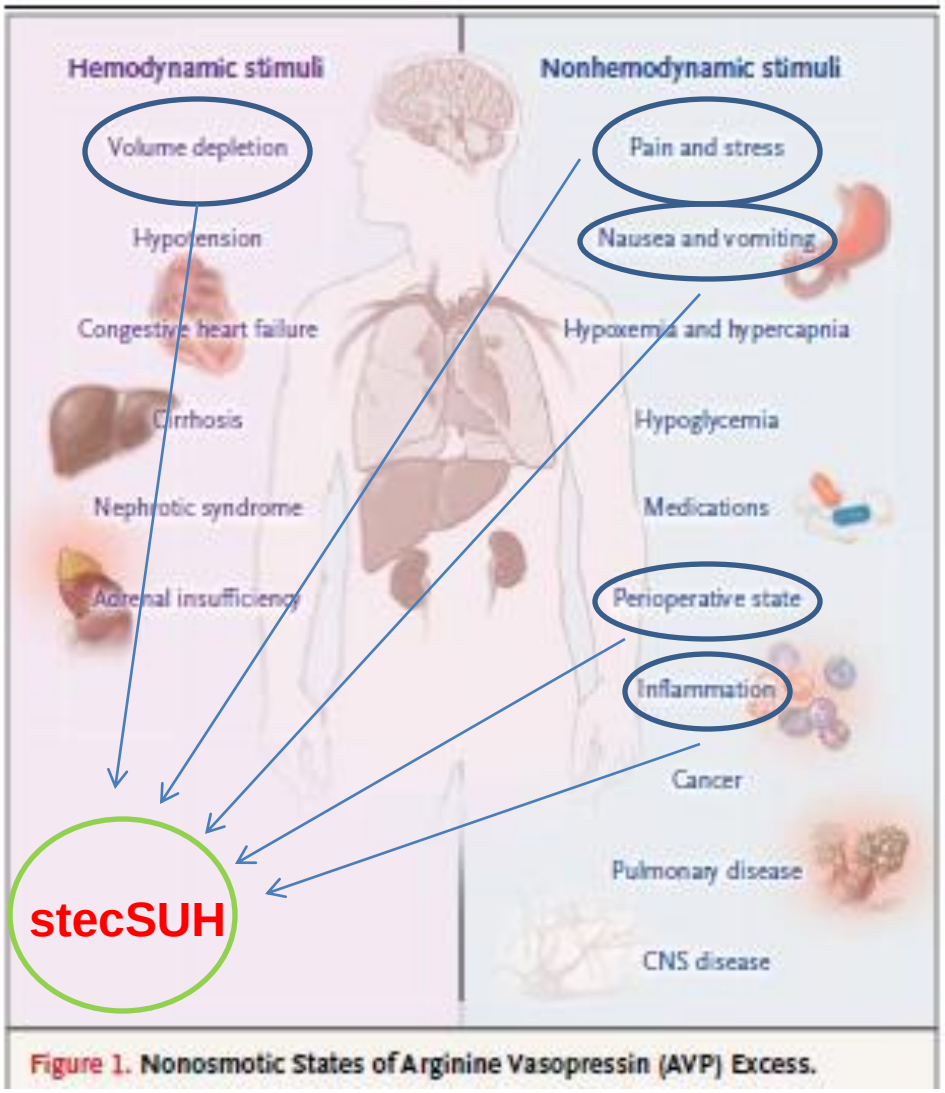


Figure 1. Nonosmotic States of Arginine Vasopressin (AVP) Excess.

Isotonic fluids are the most appropriate maintenance fluid in the vast majority of situations.

Relative Nephroprotection During Escherichia coli O157:H7 Infections: Association With Intravenous Volume Expansion

Julie A. Ake, MD*‡; Srdjan Jelacic, BS§; Marcia A. Ciol, PhD‡; Sandra L. Watkins, MD‡§; Karen F. Murray, MD‡§; Dennis L. Christie, MD‡§; Eileen J. Klein, MD, MPH‡§; and Phillip I. Tarr, MD‡§

From the *Department of Medicine, Madigan Army Medical Center, Tacoma, Washington; ‡Children's Hospital and Regional Medical Center, Seattle, Washington; and §Department of Pediatrics, University of Washington School of Medicine, Seattle, Washington.

PEDIATRICS Vol. 115 No. 6 June 2005

El volumen y el contenido de sodio de los fluidos intravenosos,

administrado temprano en la enfermedad,

afectan el riesgo de desarrollar
síndrome urémico hemolítico oligoanúrico

después de la infeccion con E coli O157: H7

METODO:

✓Estudio prospectivo de cohorte.

✓29 niños con stecSUH confirmado microbiológicament (*E coli O157:H7).*

✓Periodo: Mayo 1997 a Mayo 2003.

RESULTADOS

✓Grupo SUH Oligoanúrico (16 ptes.)

✓Todos requirieron diálisis,

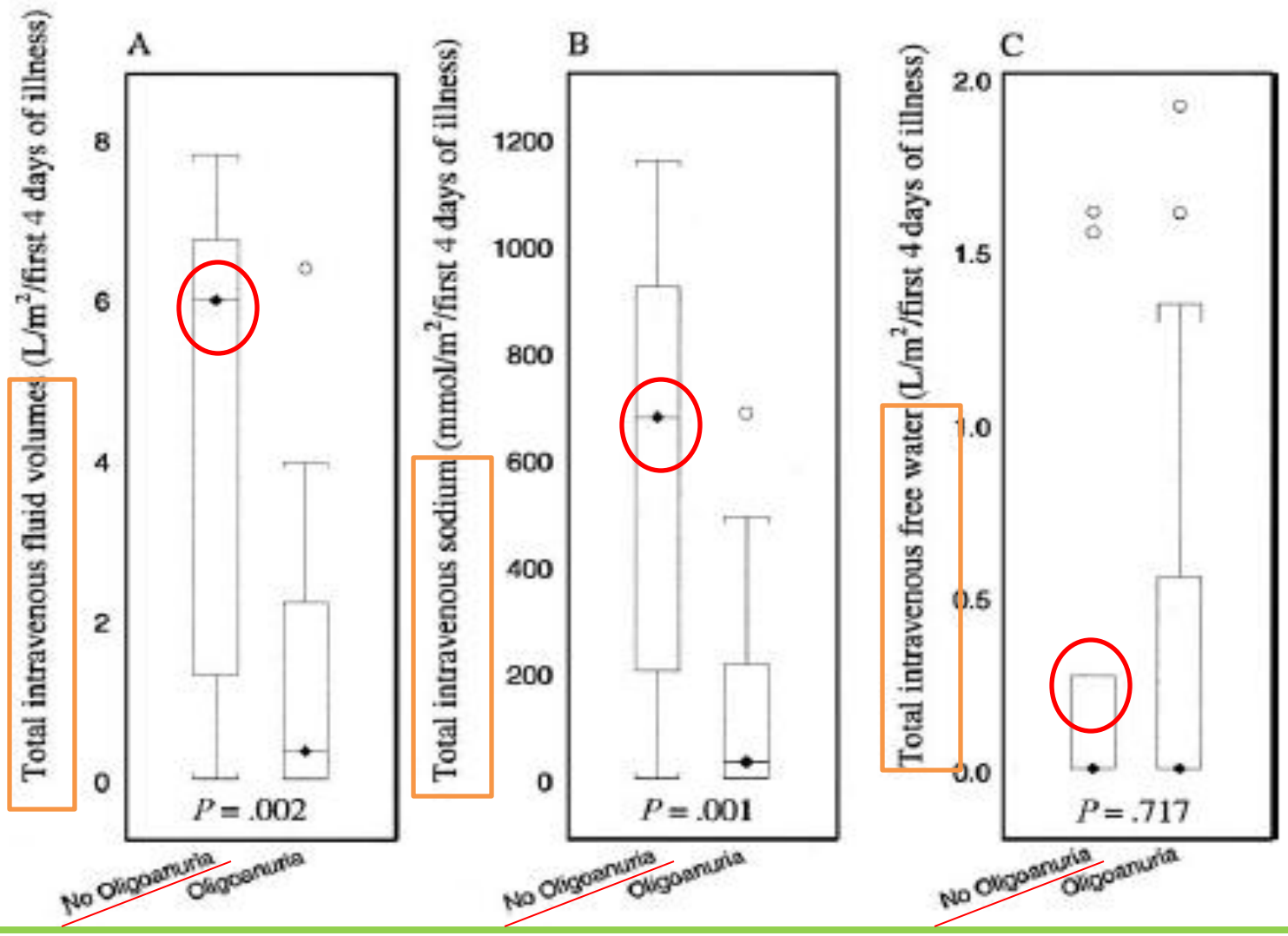
✓Recuento inicial de GB y Cr mas alto,

✓Recuento de plaquetas mas bajo,

✓Mas días de hospitalización

✓SUH No oligoanúrico (13 ptes)

✓Ninguno requirió diálisis.


A
Total intravenous fluid volumes (L/m²/first 4 days of illness)
8
6
4
2
0
P = .002
No Oliguria
Oliguria
B
Total intravenous sodium (mmol/m²/first 4 days of illness)
1200
1000
800
600
400
200
0
P = .001
No Oliguria
Oliguria
C
Total intravenous free water (L/m²/first 4 days of illness)
2.0
1.5
1.0
0.5
0.0
P = .717
No Oliguria
Oliguria

Expansión de Volumen

Mejora la perfusión renal
Mantiene flujo tubular renal

contraresta

Trombosis de pequeños vasos

Hipoperfusión e isquemia

Nefrotoxicidad de Uratos, Hb y Stx

Células tubulares renales
Monocitos

Arch Pediatr Adolesc Med. 2011;165(10):884-889.

Early Volume Expansion During Diarrhea and Relative Nephroprotection During Subsequent Hemolytic Uremic Syndrome

Christina A. Hickey, MD; T. James Beattie, MB, CHB, FRCPCH; Jennifer Cowieson, DPN; Yosuke Miyashita, MD, MPH; C. Frederic Strife, MD; Juliana C. Frem, MD; Johann M. Peterson, MD; Lavjay Butani, MD; Deborah P. Jones, MD; Peter L. Havens, MD; Hiren P. Patel, MD; Craig S. Wong, MD, MPH; Sharon P. Andreoli, MD; Robert J. Rothbaum, MD; Anne M. Beck, MD; Phillip I. Tarr, MD

Objetivo:

-Determinar si la intervención pre SUH D+ ayuda a mantener diuresis en la fase de SUH.

Estudio:

-Prospectivo observacional de cohorte. N= 50 ptes, < 18 años.

Intervención:

-Infusión de líquidos isotónico IV dentro de los 4 días de iniciada la diarrea.

Resultados:

-Pctes. oligoanúricos 68%

-84% de oligoanúricos no recibieron líquidos IV

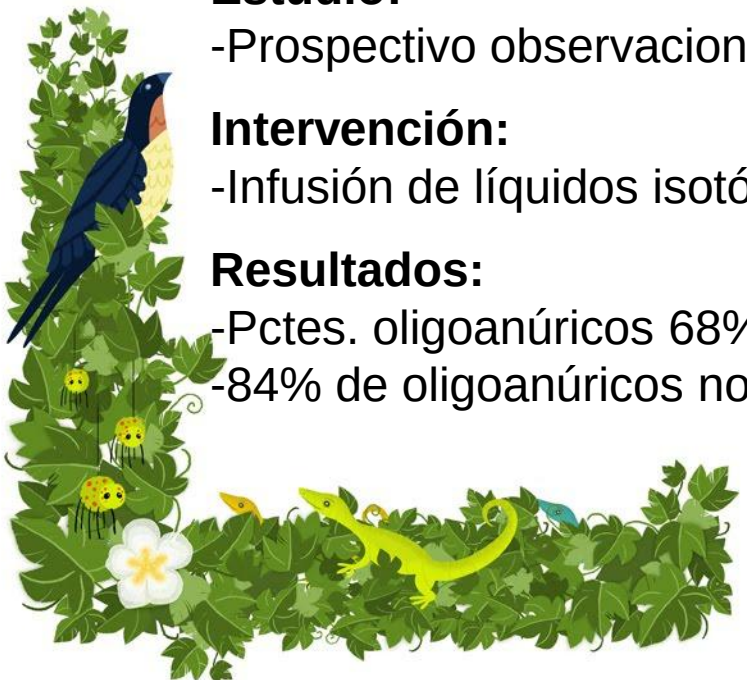


Table 3. Differences in Total Fluid Volume and Sodium Given Intravenously to the Oligoanuric and Nonoligoanuric Groups

	Median (Range) [IQR]					
	All Patients (n=50)	Anuric Patients (n=34)	Nonoligoanuric Patients (n=16)	*U*	Effect Size (*r*)[a]	*P* Value
Total fluid volume, L/m²						
During all days before HUS	1.5 (0.0-10.0) [4.3]	1.3 (0.0-9.5) [3.9]	3.8 (0.0-10.7) [6.7]	182	−0.26	.06
During first 4 days of illness	0.05 (0-7.5) [2.8]	0 (0-4.9) [1.7]	1.7 (0-7.5) [3.4]	170	−0.32	.02
Total sodium, mEq/m²						
During all days before HUS	193 (0-1457) [483]	170 (0-1457) [430]	370 (0-1225) [551]	193	−0.23	.13
During first 4 days of illness	7.8 (0-755) [295]	0 (0-755) [220]	189 (0-483) [362]	185	−0.27	.05

Table 4. Logistic Models

Logistic Model	Variable	Odds Ratio (95% Confidence Interval)
First	Age	1.1 (0.9-1.3)
	Antibiotics	2.9 (0.7-11.4)
	Total intravenous fluid given during the first 4 days of illness	6.1 (0.8-46.8)
	Total intravenous sodium given during the first 4 days of illness	1.0 (0.97-1.0)
Second[a]	Antibiotics	3.1 (0.8-11.9)
	Total intravenous fluid given during the first 4 days of illness	1.4 (1.0-2.0)
Final[b]	Total intravenous sodium given during the first 4 days of illness	1.4 (1.0-1.9)

CONCLUSIÓN:

- la expansión de volumen es una intervención subutilizado que podría disminuir la frecuencia de insuficiencia renal oligúrica en pacientes de riesgo de SUH

Pediatr Nephrol (2012) 27:1407–1410
DOI 10.1007/s00467-012-2158-0

BRIEF REPORT

Dehydration at admission increased the need for dialysis in hemolytic uremic syndrome children

Alejandro Balestracci · Sandra Mariel Martin · Ismael Toledo · Caupolican Alvarado · Raquel Eva Wainsztein

Nephrology Unit, Hospital General de Niños Pedro de Elizalde, Montes de Oca 40,
1270 Ciudad Autónoma de Buenos Aires, Argentina

Estudio restrospectivo

Objetivo:

Determinar si los pacientes SUH D+ que ingresaban deshidratados tenían mas requerimientos de diálisis.

Metodo:

-Revision de HC de 137 pacientes,

-Dividieron en 2 grupos: normohidratados (n 86) y deshidratados (n 51).

Resultados:

El grupo “deshidratados” presento mayor taza de diálisis (70.6 versus 40.7 %, p00.0007).

Characteristic	Normohydrated	Dehydrated	*p* value
Creatinine mg/dl	1.65 (0.3–7.5)	2.4 (0.11–11)	0.07[b]
Need for dialysis	35 (40.7 %)	36 (70.6 %)	0.0007[a]
Days of oligoanuria	1 (0–28)	5 (0–23)	0.007 [b]
Days of dialysis	8 (2–30)	12 (3–25)	0.005 [b]

Shifting the Paradigm in Hemolytic Uremic Syndrome

David N. Cornfield, MD

Divisions of Center for Excellence in Pulmonary Biology, Pulmonary, Asthma, and Critical Care Medicine, Department of Pediatrics, Stanford University Medical School, Stanford, California

Pediatrics. 2016;137(1):e20153524

Los datos son
los primeros en varias décadas
que motivan a una
cambio
en la práctica clínica estándar.

Early Volume Expansion and Outcomes of Hemolytic Uremic Syndrome

Gianluigi Ardissino, MD, PhD,[a] Francesca Tel, MD,[a] Ilaria Possenti, MD,[a] Sara Testa, MD,[a] Dario Consonni, MD,[b] Fabio Paglialonga, MD,[a] Stefania Salardi, BS,[c] Nicolò Borsa-Ghiringhelli, MD,[c] Patrizia Salice, MD,[d] Silvana Tedeschi, MD,[c] Pierangela Castorina, MD,[a] Rosaria Maria Colombo, BS,[e] Milena Arghittu, BS,[e] Laura Daprai, BS,[e] Alice Monzani, MD,[f] Rosangela Tozzoli, MD,[g] Maurizio Brigotti, PhD,[h] Erminio Torresani, BS[e]

[a]Center for HUS Control, Prevention and Management, [b]Epidemiology Unit, [c]Laboratory of Medical Genetics, [d]Pediatric Cardiology Unit, and [e]Unit of Microbiology, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy; [f]Division of Pediatrics, Department of Health Science, University of Piemonte Orientale, Novara, Italy; [g]Istituto Superiore di Sanità, Roma, Italy; and [h]Univerità di Bologna, Bologna, Italy

PEDIATRICS Volume 137, number 1, January 2016

BACKGROUND:

✓La Hemoconcentración al inicio se asocia con una enfermedad más grave.

✓El tratamiento ha sido influenciada por el riesgo de sobrecarga de líquidos (FO).

✓Los beneficios de la expansión de volumen después del inicio síndrome urémico hemolítico (SUH) no se han explorado.

Objetivo:

-Determinar si la EVT puede reducir la severidad del SUH

Metodo:

- ✓38 ptes. stecHUS atendidos entre 2012 and 2014
- ✓Recibieron infusion IV de solución isotónica (+10% del working weight).
- ✓Fueron comparados con 38 pacientes históricos del periodo que el tratamiento era la restricción hidrosalina.
- ✓Se evaluó la evolución a corto y largo plazo (1 años).

Expansion de Volumen

Infusiones de **solución salina al 0,9%** desde el momento del diagnóstico de SUH hasta alcanzar su peso objetivo :

- ✓**+7% del WW*, c/albumina plasmática >3 g/dL or ,**
- ✓**+10% de WW* c/ albumina plasmática de <3 g/dL.**

<u>*working weight (WW)</u>

•En base a:

-Peso histórico del paciente reportado por cuidador,

-por evaluación clínica.

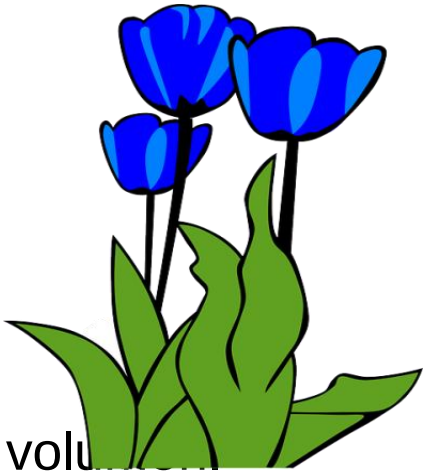
- **Comienzo EV con diagnóstico de SUH:**
- **Dosis: 10 a 15 mL/kg por hora** (dependiendo del grado de DSH)
- **Matenimiento** con solucion glucosada isotonica.

RESULTADOS

Al momento del diagnostico**, no habia diferencia significativas** entre los grupos en cuanto a

- sexo,
- edad,
- peso,
- dias antes del diagnostico de SUH,
- TA,
- recuento de GB,
- Hb,
- Albumina,
- Acido Urico,
- Recuento plaquetario.

RESULTADOS



Pacientes del grupo EVT mostraron

✓**Incremento medio del peso del 12.5% (vs 0%),**
no registraron casos de sobrecargas cardio-pulmonares de volumen

✓ **resultado a corto plazo significtivamente mejor:**

*-menor tasa de **TRR*** (26.3% vs 57.9%, *P = .01)*

*-menos días en **UTI** (2.0 vs. 8.5 days, P = .02),*

*-menos días de **hospitalizacion** (9.0 vs 12.0 days, P = .03).*

--Menor tasa de **compromiso del SNC** (7.9% vs 23.7%, *P = .06),*

✓ **Resultados a largo plazo**

-menor porcentaje de secuela renales y extra-renales (13.2% vs 39.5%,

P = .01)

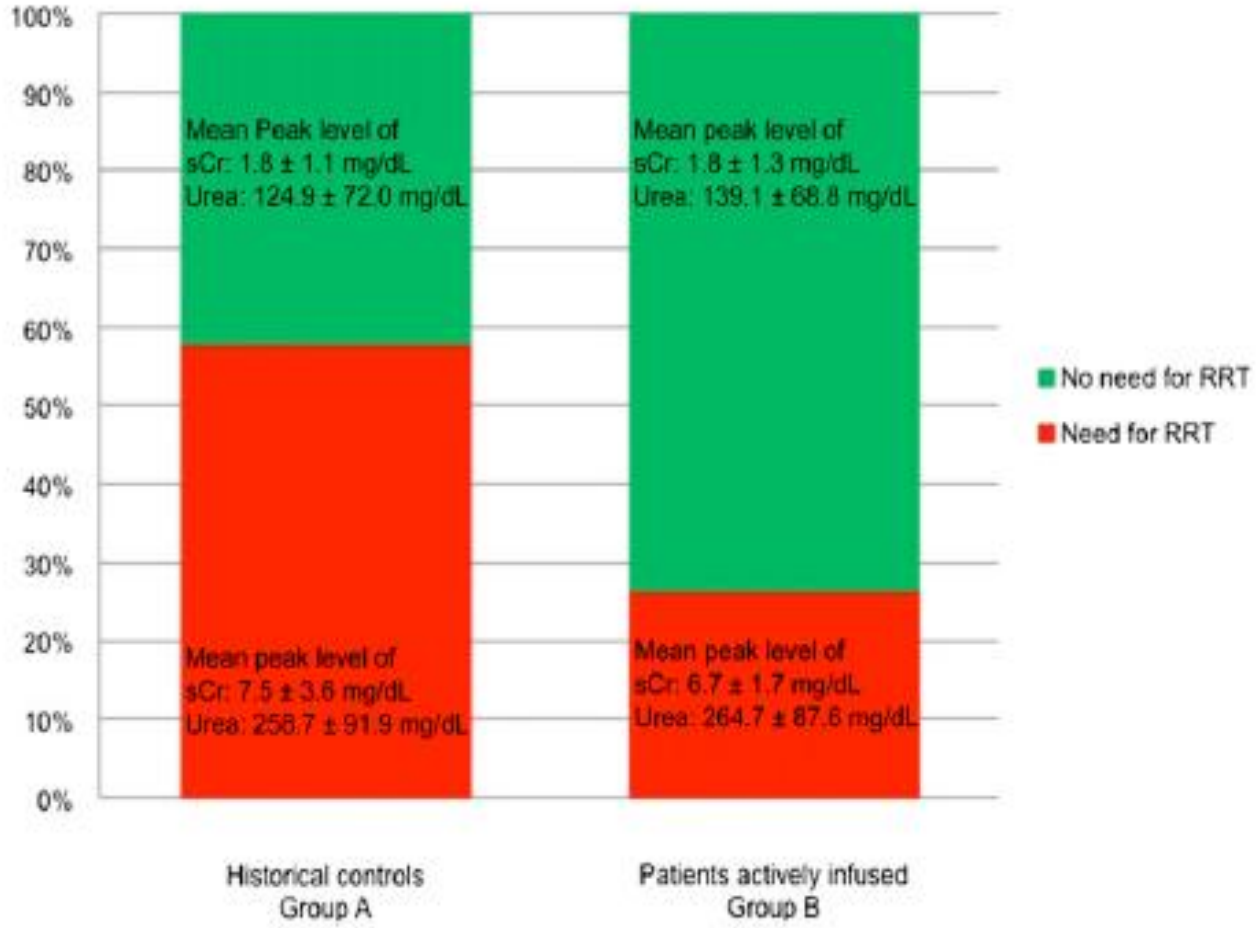


FIGURE 3

Rate of need for RRT in historical controls and in patients actively infused and respective peak of sCr in dialyzed and nondialyzed patients.

TABLE 3 Comparison of Short- and Long-Term Outcomes in Patients Addressed to Early FI (Group B) and in Controls (Group A)

	Controls (*N* = 38)	Volume Expansion (*N* = 38)	RR/GMR (95% CI)	*P*
Outcomes during acute phase				
Death, *N* (%)	2 (5.2)	0 (0)	NA	.49
CNS involvement, *N* (%)	9 (23.7)	3 (7.9)	0.33 (0.10–1.14)	.06
Need for RRT, *N* (%)	22 (57.9)	10 (26.3)	0.45 (0.25–0.83)	.01
Days of hospitalization, median (IQR)	12 (7–18)	9 (7–12)	0.75 (0.59–0.96)	.02
Days in PICU, median (IQR)[a]	8.5 (3.5–15.5)	2 (1–4.5)	0.31 (0.12–0.82)	.02
Long-term outcomes				
Extrarenal sequelae, *N* (%)	1 (2.6)	1 (2.6)	NA	.99
Renal sequelae				
Major (CKD II-V), *N* (%)	1 (2.6)	0 (0)	NA	.49
Minor (CKD I), *N* (%)	12 (34.3)	5 (13.2)	0.38 (0.15–0.98)	.03
Total patients with long-term sequelae, *N* (%)[b]	15 (39.5)	5 (13.2)	0.33 (0.13–0.83)	.01

GMR, geometric mean ratio; NA, not applicable.

[a] 8 patients in group A and 8 patients in group B.

[b] Because renal and extrarenal sequelae are not mutually exclusive, the total of long-term sequelae exceeds the number of patients.

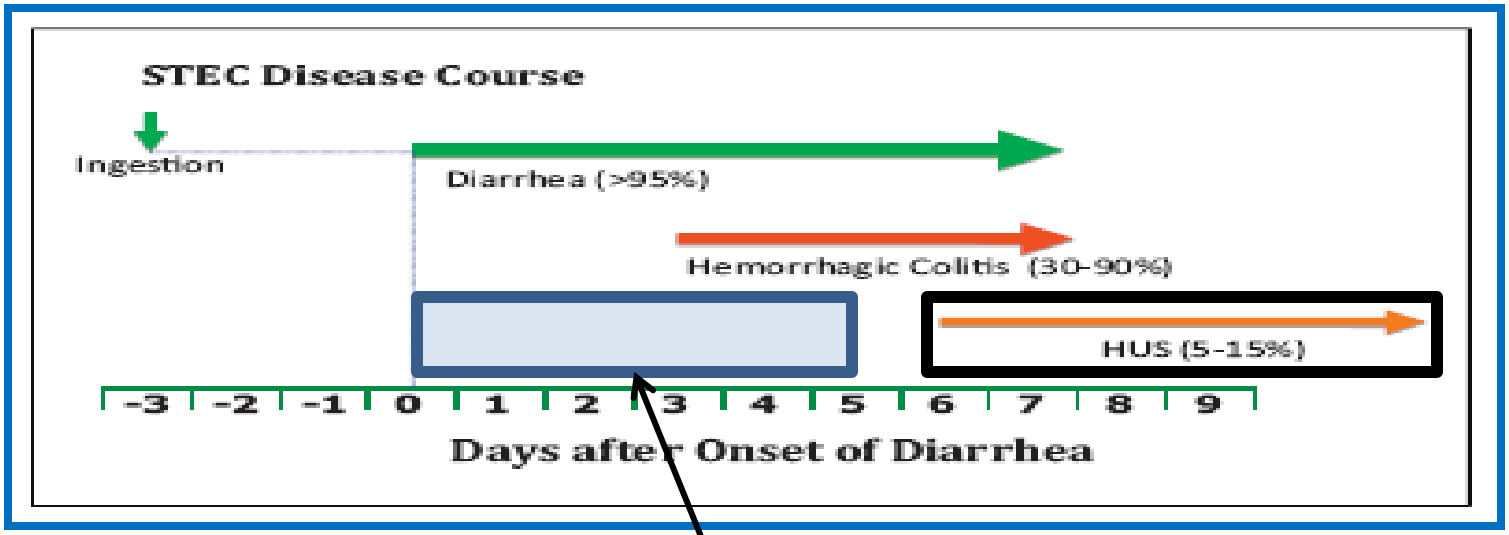
Limitacion:

✓**Estudio retrospectivo**

Poco ético para llevar a cabo un ensayo clínico aleatorizado, ya que los pacientes infundidos evolucionan mucho mejor.


stecSUH = restricción de volumen


stecSUH = expansión de volumen



ZONA DE ACCIÓN AMPLIADA

ALGORITMO DIAGNOSTICO Y TERAPEUTICO

DIARREA c/ Sangre

- Diarrea que se convierte en sanguinolenta después de 1-3 días.
- No hay fiebre
- Dolor abdominal que empeora con defecacion.
- Más de 5 deposiciones en las últimas 24 horas.
- No hay, pocos o moderados leucocitos fecales
- La diarrea sanguinolenta, persiste durante la primera 8 horas en el hospital.
- No hay bandemia relativa en el diferencial de células blancas.

ngPo2

Cult/Stx/LPS

INTERNACION POR 48hs

+

EV

+

MANTENIMIENTO C/ SC. ISOTONICA

REDUCE

-MORBILIDAD DE stecSUH

- DOLOR ABDOMINAL

-CONTAGIO INTERPERSONAL

CRITERIOS DE ALTA

-COPROCULTIVO STEC (-)

-> 4 DIAS DESDE INICIO DE DIARREA

-MARCADORES DE TROMBOSIS/DAÑO ENDOTELIAL (-)

-LABORATORIO SUH (-)
(Hto, formas de hemolisis, LDH, Rto. plaq U, Cr, HPTG)

Acute Bloody Diarrhea: A Medical Emergency for Patients of All Ages

Lori R. Holtz* Marguerite A. Neill‡ Phillip I. Tarr*

GASTROENTEROLOGY 2009;136:1887–1898

Treatment of Shiga Toxin–Producing *Escherichia coli* Infections

T. Keefe Davis, MD[a], Ryan McKee, MD[b], David Schnadower, MD, MPH[b], Phillip I. Tarr, MD[c,*]

Infect Dis Clin N Am 27 (2013) 577–597

Shiga Toxin/Verocytotoxin-Producing *Escherichia coli* Infections: Practical Clinical Perspectives

T. KEEFE DAVIS,[1] NICOLE C. A. J. VAN DE KAR,[2] and PHILLIP I. TARR[3]

[1]Division of Nephrology, Department of Pediatrics, Washington University School of Medicine, St. Louis, MO 63110; [2]Division of Nephrology, Department of Pediatrics, Radboud University Medical Centre, Nijmegen, The Netherlands; [3]Division of Gastroenterology, Hepatology, and Nutrition, Department of Pediatrics, and Department of Molecular Microbiology, Washington University School of Medicine, St. Louis, MO 63110

Citation: Davis TK, Van De Kar NCAJ, Tarr PI. 2014. Shiga toxin/verocytotoxin-producing *Escherichia coli* infections: practical clinical perspectives. *Microbiol Spectrum* 2(4):EHEC-0025-2014. doi:10.1128/microbiolspec.EHEC-0025-2014.

PACIENTE	EDAD	SEXO	COPROCULT	DIAS DE DIARREA	DIARREA SANGUINO.
1	2	F	E Coli O157:h7	4	SI
2	5	F	E Coli O157:h7	4	SI
3	2	M	E Coli O157:h7	6	SI

Colaboración: Dra. Luz Mery Rivera Parra

INGRESO

PCTE	PESO	RD	Cr	U	Na	Au	Hto	PLAQ.	LDH
1	13,2	ANUR. 6 hs	1,09	108	134	8,6	27	52000	1841
2	18,4	ANUR. 8 hs	0,7	55	134	6,6	21	46000	993
3	11,1	ANUR. 12 hs	1,34	144	134	11,4	25	47000	1296

Colaboración: Dra. Luz Mery Rivera Parra

24 horas

PCTE	PESO	RD	Cr	U	Na	Hto	PLAQ.	LDH
1	14,8 (+12%)	2,5	0,68	87	138	24	67000	1928
2	18,8 (+2%)	2	0,5	35	135	26	53000	1354
3	11,3 (+1,8%)	2,6	0,81	105	136	30	49000	867

Colaboración: Dra. Luz Mery Rivera Parra

48 horas

PCTE	PESO	RD	Cr	U	Na	Hto	PLAQ.	LDH
1	14,7	2	0,55	43	139	26	59000	1660
2	18,3	3	0,58	39	137	24	87000	1377
3	11,7	2,5	0,48	32	140	32	98000	830

Colaboración: Dra. Luz Mery Rivera Parra

Por su atención...

Gianluigi Ardissino 15 de febrero de 2016, 3:41 Para: "buen365 ."

Thanks for appreciating our work.
The described approach has really changed the outcome of HUS a lot.

Yes, in your example if what is reported by parents is reasonable according to the clinical conditions (including the determination of the child's stroke volume),

I would infuse the child with saline solution as needed to reach a body weight of 11 kg within the next 24 hours.
The earlier's the better.
This specific child will be infused 3 L during the first 24 hours (150-200 cc/hour for the first 12 hours followed by 50-100 cc/hour for the following 12 hours).
If anuric the total amount might have to be reduced as soon as you realize that the patient's diuresis is inadeguate.
If you need more details, please do not hesitate to contact me.
Best regards.

Gianluigi Ardissino
Centro per la Cura e lo Studio della Sindrome Emolitico-Uremica (Center for HUS Control, Prevention and Management) Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italia Tel. +39.02.55032300 Mob. +39.335.6065755 Mail ardissino@italkid.org ardissino@centroseu.org