SERUM ALBUMIN LEVEL OF CHILDREN WITH SEPTIC SHOCK IN INTENSIVE CARE UNIT OF PEDIATRIC HOSPITAL 1

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CONTENT

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2. Objectives
4. Methods
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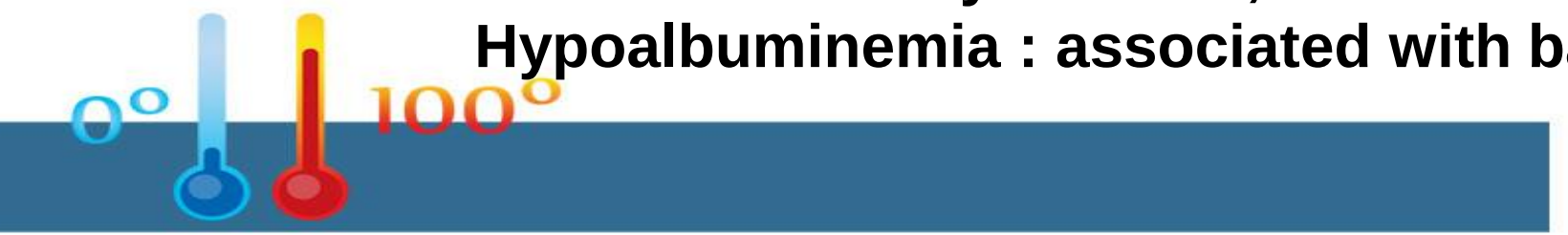
INTRODUCTION

Weiss et al (26 countries 2015): death 25%
T T Hòa (2005 – NĐ1): death 49%.
P N T Nguyên (2011): death 40%.

SEPSIS → **SEPTIC SHOCK** → **DEATH**

Resuscitation in septic shock : fluid & vasopressin
Kind of fluids: crystal fluid, albumin
Hypoalbuminemia : associated with bad outcome



INTRODUCTION

- **ALBIOS (2014), SAFE (2004): albumin is a safe, effective fluid**
- **Qian & Liu (2012): Mortality negatively correlated with serum albumin in septic shock.**
- **Xiaoming Huo (2014): stabilize early hemodynamic, reduce risk of pulmonary edema, increase rate of successful fluid resuscitation in septic shock children**
- **VN: No albumin studies in patients with septic shock**

OBJECTIVES

1. Determine the rate of epidemiology, clinical, lab test, treatment and prophylaxis.
2. Determine the mean concentration of albumin blood in patients with septic shock.
3. Describe the relationship between blood albumin levels in septic shock patients with mortality rate, organ dysfunction, length of hospital stay, mechanical ventilation time, duration of stay in ICU, and time to use vasopressors.

METHODS

design: observational case series.

Patients admitted to ICU, Δ septic shock

Ob 1

history, clinical, lab test
Diagnosis, treatment, monitoring

Ob2

Serum albumin at T0, T6, T24

Ob3

death

MODS

yes

no

yes

no

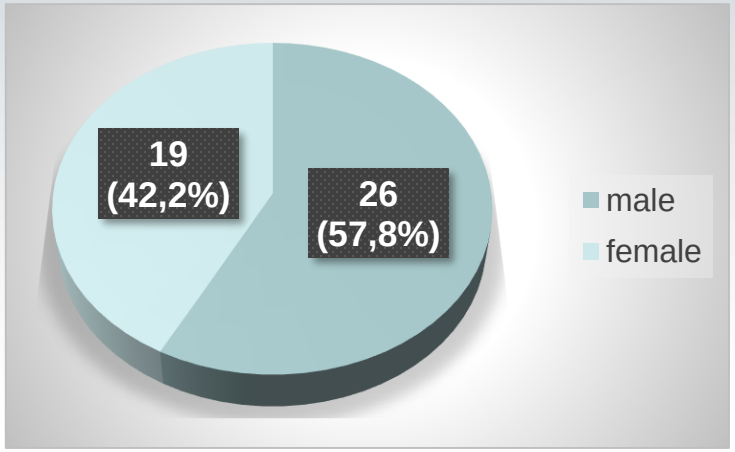
- length of hospital stay
- duration of stay in ICU
- mechanical ventilation time
- time to use vasopressors

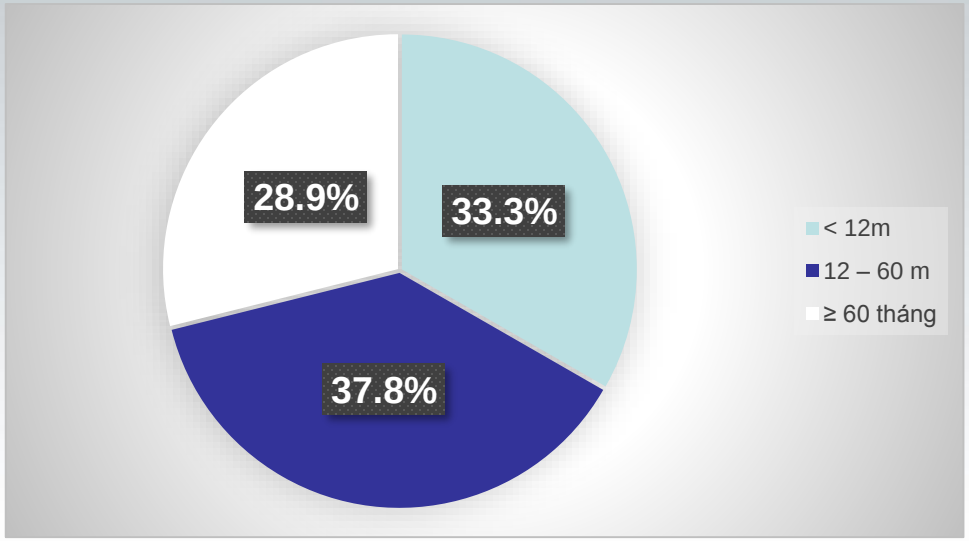
RESULTS

OBJECTIVE 1

RESULTS

1. Epidemiology





R. S. Watson: male/female 1,31/1

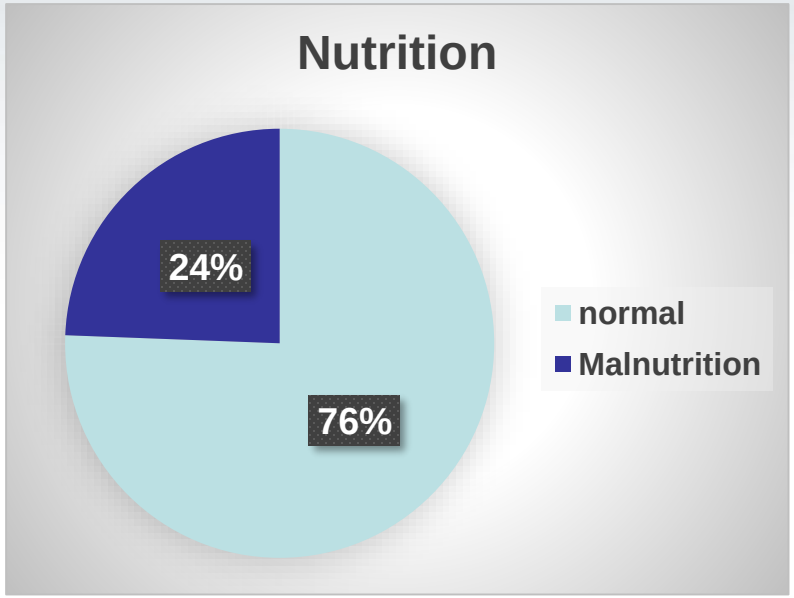
V. C. Đồng: male/female 1,47/1

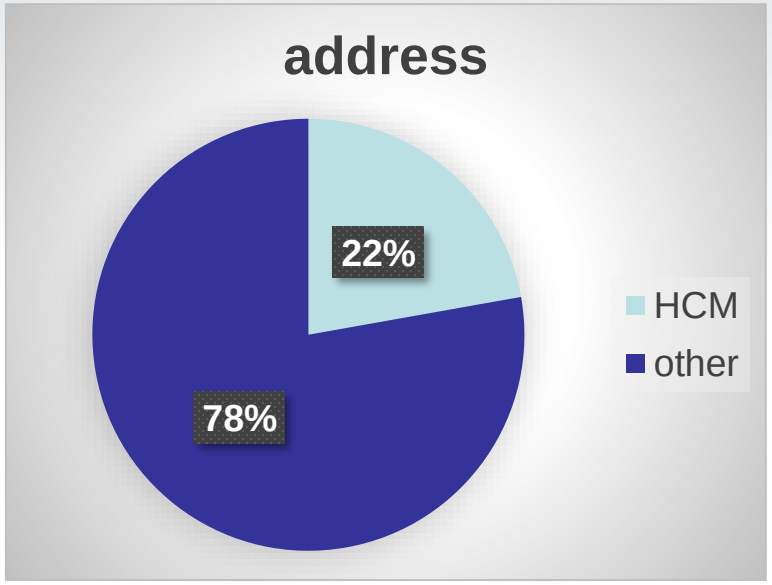
T. T. Hòa: male/female 1,7/1

	<5 years old
Kann Ram (2011)	90%
P.V.Quang (2008)	81,8%
L.T.B.Quyên (2015)	84,3%

RESULTS

1. Epidemiology





RESULTS

2. Clinical:

source

	our research (%)	T.T. Hòa (%)	A. Wolfler (%)	R.S. Watson (%)
- Respiratory	55,6	38,3	47,2	37,2
- Digestion	31,1	31,7		28,3
- Skin, tissue	11,3			5
- nerve system	2,2			
- Eye	2,2			

RESULTS

2. Clinical :

	our research (%)	P.N.T. Nguyên (%)	T.T. Hòa (%)	L.T.B. Quyên (%)	Siami S (%)
> 38,5 ^{0}C	31,3	88,5	48,33		
respiratory support	100				
mechanical ventilation	88,9				
decompensated shock	88,9			87,7	
mental disorder	84,4		80		9-71

RESULTS

3. Lab test:

	our research (%)	T.T. Hòa (%)	P.N.T. Nguyên (%)	B.T. Liêm (%)
Leukocytosis	55,6	56,7	53,3	55,6
Hct < 30%	44,4	25		
Thrombocytopenia	13,3	55		24,4
INR > 2	35,8			
Serum glucose> 180 mg/dl	31,1			
CRP > 10 mg/L	84,4	78,3	79,7	
ALT > 100 UI/L	28,9		15,9	28,3
creatinin ≥ 2 ULN	17,8		9,2	11,3

RESULTS

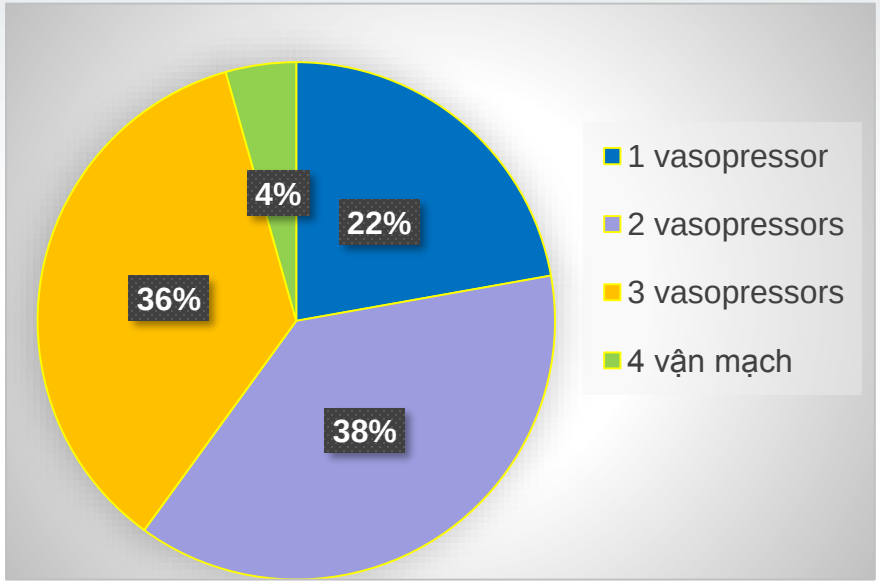
- **4. Treatment: Fluids**

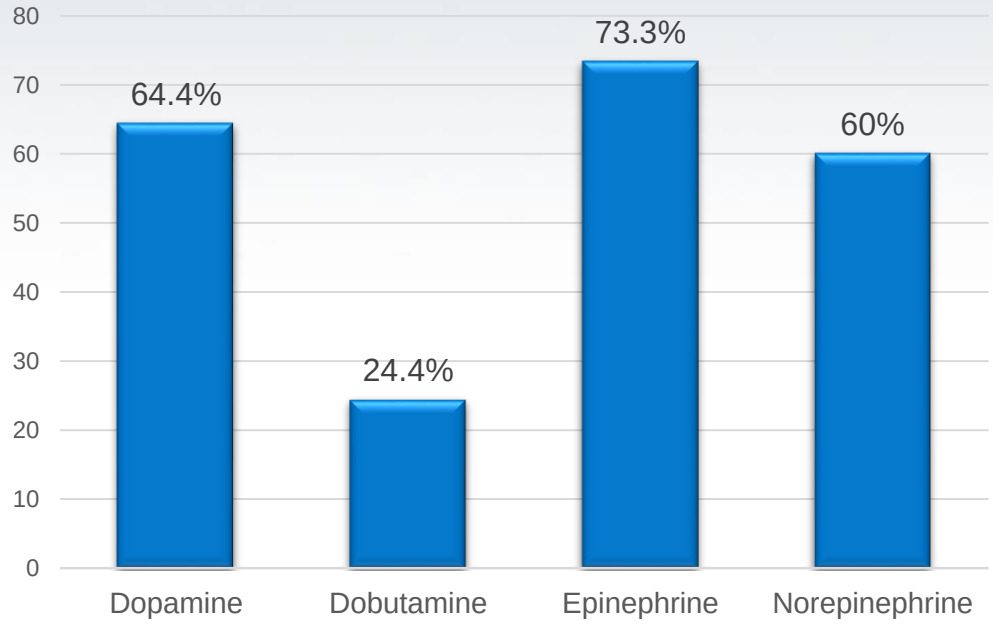
Mean amount of fluid **47,5 ml/kg.**

RESULTS

Bùi Thanh Liêm (2
-dopamine **87,1%**
-dobutamine 38,7%
-epinephrine **35,5%**
-norepinephrine 22,

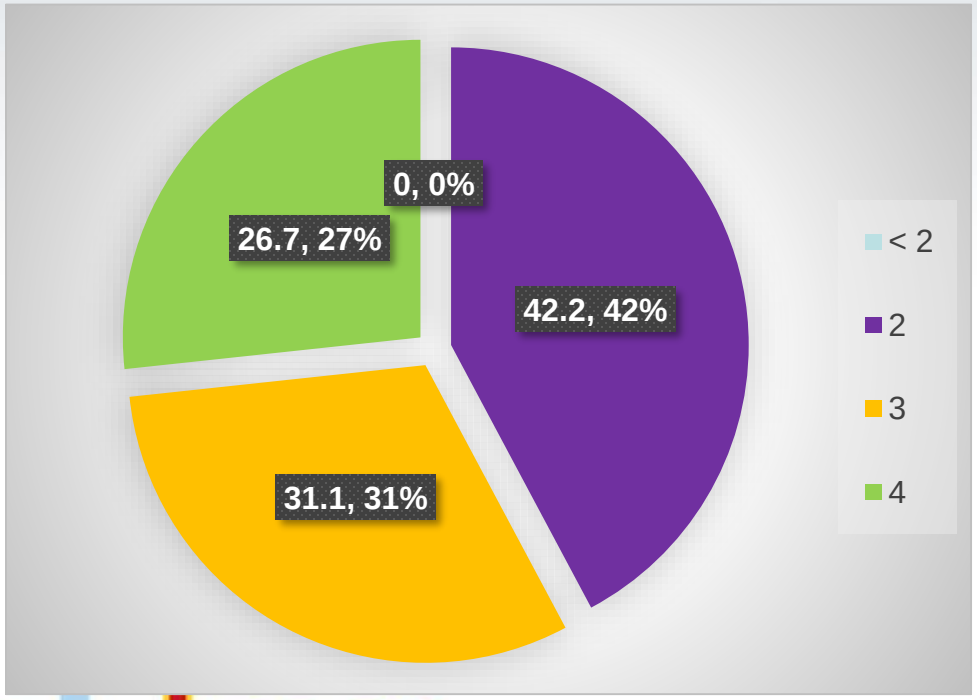
4. Treatment : vasopressor drug

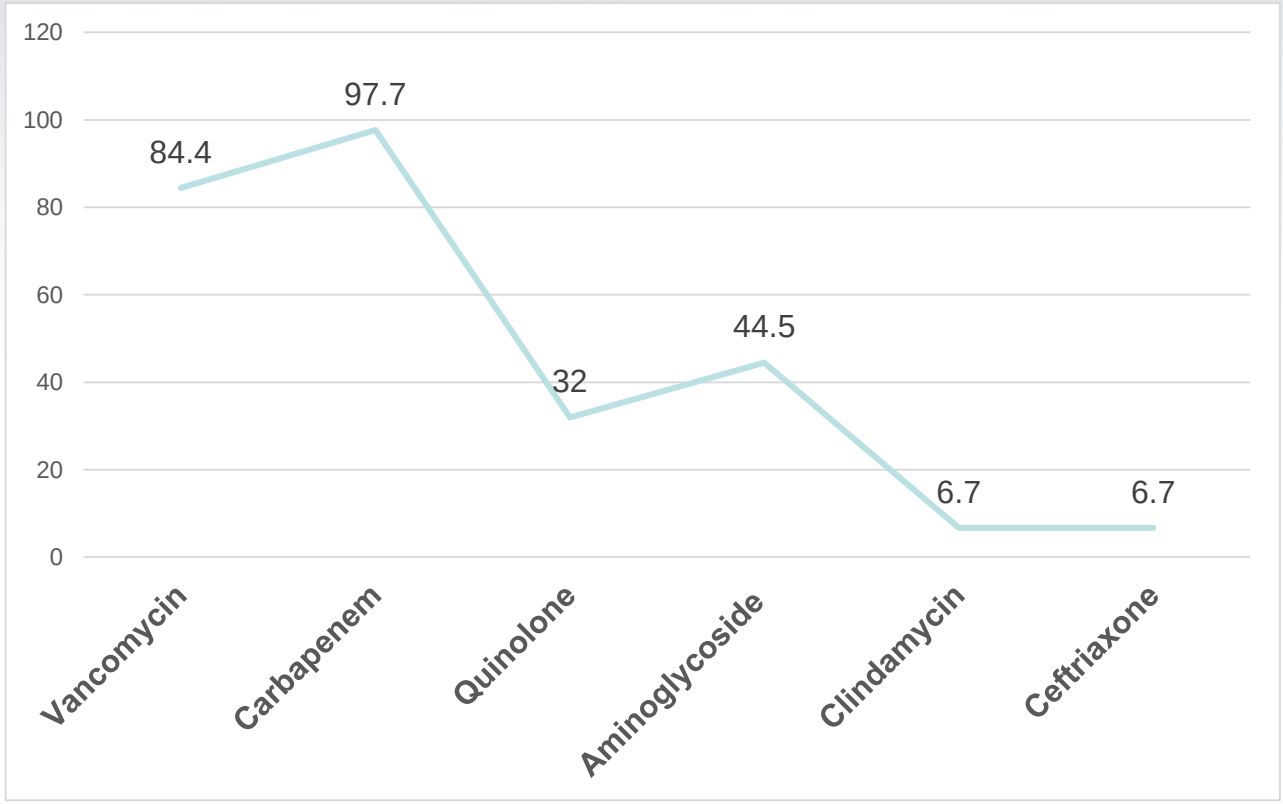


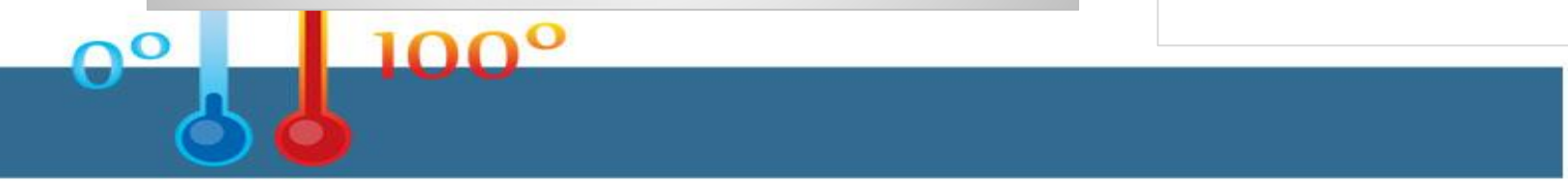


RESULTS

4. Treatment: Antibiotics

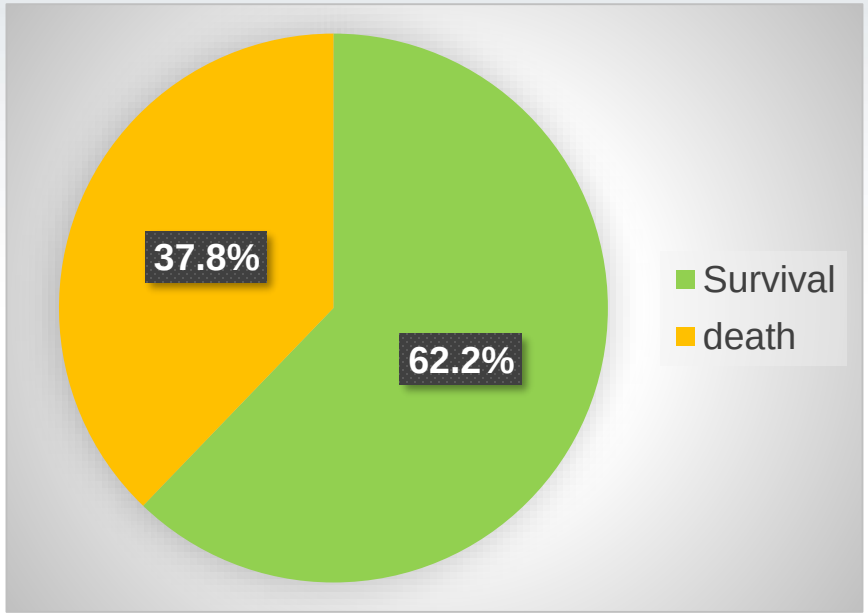






RESULTS

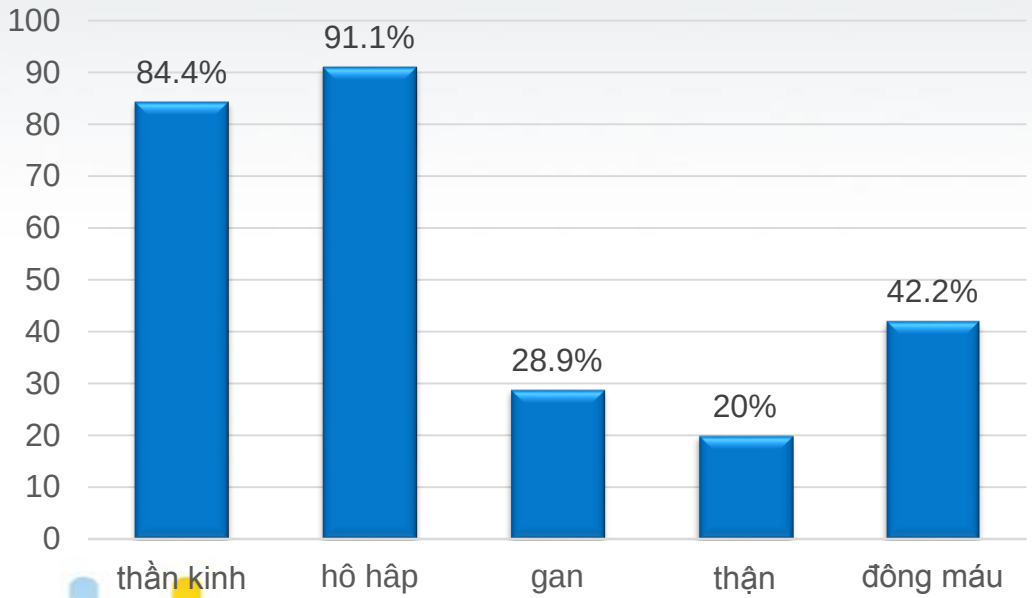
5. Outcome:

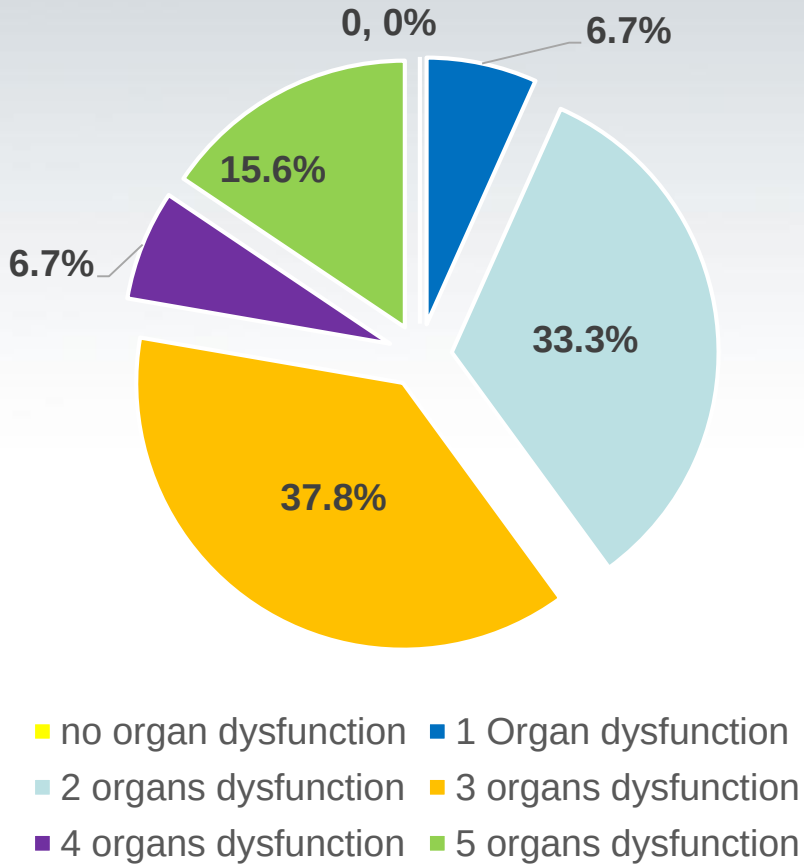


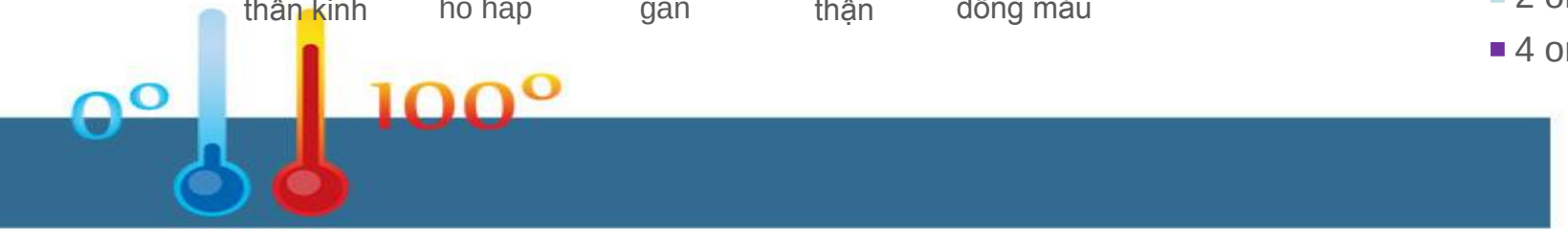
P.N.T. Nguyên (2011): TV 40,5%
P.V. Quang (2008): TV 70%
V.C. Đồng (2005): TV 86,7%
Hoa Kỳ (04 -12): TV 42,2%

RESULTS

5. Outcome:



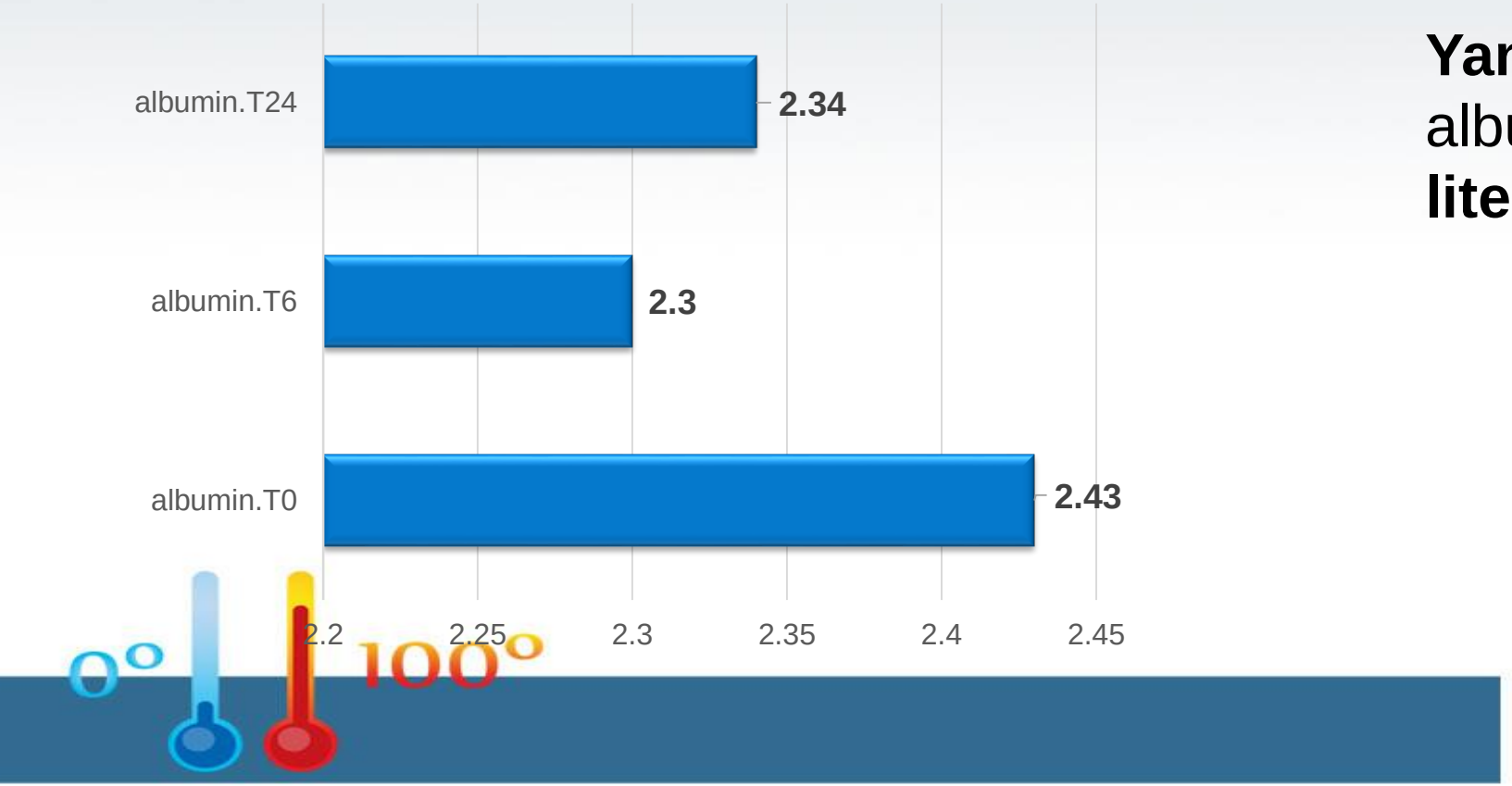




OBJECTIVE 2

RESULTS

Serum albumin



Yang, C (2016) :serum albumin 2,1 g/dl.
literature: < 1 g/dl

OBJECTIVE 3

RESULTS

1. Albumin máu và sống còn

Albumin máu (g/dl)	Sống (n = 28)	Tử vong (n= 17)
Thời điểm T_0	2,5 ± 0,6	2,3 ± 0,5
Thời điểm T_6	2,3 ± 0,6	2,3 ± 0,5
Thời điểm T_{24}	2,4 ± 0,5	2,2 ± 0,4

p > 0,05

RESULTS

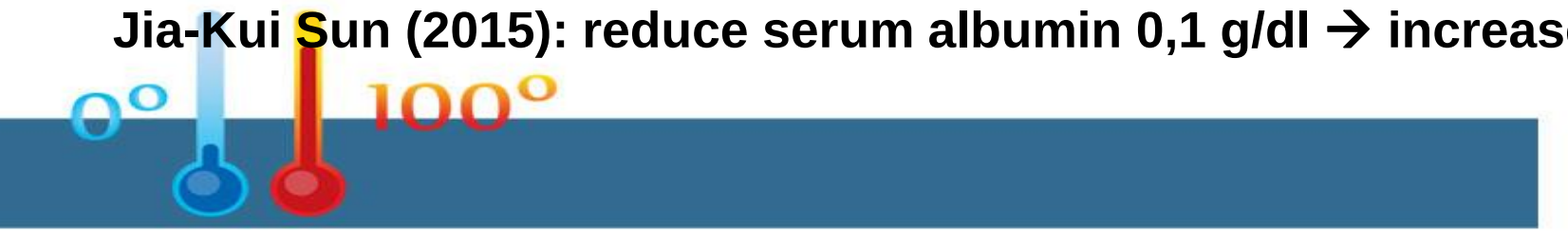
1. Serum albumin & survival

Serum albumin T0	survival		p
	Living (n=28)	Die (n=17)	
Albumin < 2,6 g/dl (n = 25)	12 (48%)	13 (52%)	**0,03**
Albumin ≥ 2,6 g/dl (n = 20)	16 (80%)	4 (20%)	

Serum albumin T24	survival		p
	Living (n=28)	Die (n=17)	
Albumin < 2,3 g/dl (n = 22)	10 (45,5%)	12 (54,5%)	**0,03**
Albumin ≥ 2,3 g/dl (n = 23)	18 (78,3%)	5 (21,7%)	

ALBIOS (2012): in septic shock, increase serum albumin 1 g/dl → reduce risk dead 13%, p = 0,03

Jia-Kui Sun (2015): reduce serum albumin 0,1 g/dl → increase rate death # 20%, p = 0,047



RESULTS

2. Serum albumin & MODS

p > 0,05

	Serum albumin T0		Serum albumin T24	
Characteristics	Albumin < 2,6 g/dl (n = 25)	Albumin ≥ 2,6 g/dl (n = 20)	Albumin < 2,3 g/dl (n = 22)	Albumin ≥ 2,3 g/dl (n = 23)
MODS	92%	95%	95,5%	91,3%
≥ 3 Organs	56%	65%	59,1%	60,9%
≥ 4 Organs	24%	20%	27,3%	17,4%
5 Organs	16%	15%	18,2%	13%

Jia-Kui Sun: reduce serum albumin 0,1 g/dl → increase # 30% MODS, p = 0,034
Ira N. Horowitz: sepsis in children: reduce serum albumin → increase MODS

RESULTS

3. Serum albumin & length of hospital stay, mechanical ventilation time, duration of stay in ICU, and time to use vasopressors

		Serum albumin < 2,6 g/dl		Serum albumin ≥ 2,6 g/dl		
		n	Median	n	Median	p*
length of hospital stay (days)		25	15	20	22	0,6
	Survival	12	19	16	24	0,7
mechanical ventilation time (days)		25	7	20	4	0,08
	Survival	12	8	16	4	0,1
duration of stay in ICU (days)		25	10	20	6	0,2
	Survival	12	12	16	6	0,1
time to use vasopressors (days)		25	6	20	4	**0,04**
	Survival	12	6	16	4	**0,002**

RESULTS

3. Serum albumin & length of hospital stay, mechanical ventilation time, duration of stay in ICU, and time to use vasopressors

		Serum albumin < 2,3 g/dl		Serum albumin ≥ 2,3 g/dl		
		n	Trung vị	n	Trung vị	P*
length of hospital stay (days)		22	15	23	22	0,6
	Survival	10	23	18	22	0,4
mechanical ventilation time (days)		22	6	23	4	0,2
	Survival	10	6	18	4	0,2
duration of stay in ICU (days)		22	9	23	8	0,6
	Survival	10	9	18	8	0,4
time to use vasopressors (days)		22	5	23	4	0,2
	Survival	10	5	18	4	0,06

CONCLUSIONS

1. Epidemiology, clinical, subclinical, treatment

- 57,8 % male; 71,1% < 5 years old
- Respiratory (55,6%)

CONCLUSIONS

1. Epidemiology, clinical, subclinical, treatment :

- Average amount fluid: 47,5 ml/kg. LR (73,3%) → NS (35,6%). Albumin: 6 cases (13,3%).
- 77,8% cases use more 2 vasopressor drugs, epinephrine is used 73,3%.
- 97,7% cases: treat Carbapenem; 84,4% cases: treat Vancomycin.

CONCLUSIONS

1. Epidemiology, clinical, subclinical, treatment :

- Death: 37,8% cases. length of hospital stay: 22 days, ICU 8 days, mechanical ventilation time 5 days, time use vasopressors 5 days.
- 100% organ dysfunction. MODS: 92,3%.

CONCLUSIONS

2. Serum albumin

- Serum albumin at T0, T6 & T24: 2,4 g/dl; 2,3 g/dl & 2,3 g/dl.

CONCLUSIONS

3. Serum albumin and outcome

- Serum albumin T24: cut off 2,6 g/dl.
  - The mortality rate in group serum albumin <2.6 g / dl higher than group serum albumin ≥ 2.6 g / dl (52% vs 20%), p <0.05.
  - The rate of MODS in group serum albumin <2.6 g / dl higher than group serum albumin ≥ 2.6 g / dl (92% vs 8%), p> 0.05.
  - length of hospital stay, duration of stay in ICU , mechanical ventilation time in group serum albumin <2.6 g / dl longer than group serum albumin ≥ 2.6 g / dl, p> 0.05
  - time to use vasopressors in group serum albumin <2.6 g / dl longer than group serum albumin ≥ 2.6 g / dl, p> 0.05

CONCLUSIONS

3. Serum albumin and outcome

- Serum albumin T24: cut off 2,3 g/dl.
  - The mortality rate in group serum albumin <2.3 g / dl: higher than group serum albumin ≥ 2.3 g / dl (54.5% vs 21.7%), p <0.05 .
  - The rate of MODS in group serum albumin <2.3 g / dl higher than group serum albumin ≥ 2.3 g / dl (95.5% versus 4.5%), p> 0.05 .
  - length of hospital stay, duration of stay in ICU , mechanical ventilation time, time to use vasopressors in group serum albumin <2.3 g / dl longer than group serum albumin ≥ 2.3 g / dl, p> 0 , 05.

RECCOMENDATION

1. Hypoalbuminemia is a poor prognostic factor. Therefore, serum albumin should be tested in all septic shock.
2. Serum albumin and resuscitation with albumin should be studied in septic shock with larger sample sizes.

THANK YOU!