RISK FACTORS FOR DEATH AMONG UNDER FIVE CHILDREN WITH DIARRHOEA AND BACTERAEMIA IN BANGLADESH

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Background:

Mortality in diarrhoeal children specifically having bacteraemia had gained less attention in spite of its enormous impact in under five mortality. So we aimed to evaluate risk factors for death among under-five children having both diarrhea and bacteraemia

Method:

- Retrospective analysis we used hospital patients’ electronic database of Dhaka Hospital of ‘icddr,b’, Bangladesh
- We enrolled those were admitted to hospital’s in-patient wards and had bacterial growth in their cultured blood samples on admission, between June-2014 and May-2017
- Those who died during hospital stay constituted cases, and those were recovered and discharged considered as controls

Distribution of bacterial isolates in blood among deaths and survivors

Bacteria	Deaths (n=45) (%)	Survivors (n=356) (%)	OR (95% CI)	p
Salmonella typhi	3 (7)	135 (38)	0.12 (0.35-0.38)	0.001
Staphylococcus sp.	3 (7)	62 (17)	0.34 (0.10-1.13)	0.103
Pseudomonas sp.	7 (16)	28 (8)	2.16 (0.88-5.27)	0.083
Escherichia coli	10 (22)	17 (5)	5.69 (2.42-13.39)	0.001
Klebsiella sp.	8 (18)	16 (4)	4.59 (1.84-11.46)	0.001
Acinetobacter sp.	2 (4)	20 (6)	0.78 (0.18-3.46)	1.000
Streptococcus sp.	1 (2)	21 (5)	0.36 (0.05-2.76)	0.491
Salmonella paratyphi	0 (0)	9 (2)	-	-
Campylobacter sp.	0 (0)	9 (2)	-	-
NTS	1 (2)	7 (2)	1.13 (0.14-9.43)	1.000
Enterococcus sp.	3 (7)	5 (1)	5.01 (1.16-21.74)	0.049
Shigella sp.	1 (2)	6 (2)	1.32 (0.16-11.27)	0.568

Organism specific antibiotics resistance pattern

Bacteria	AMX	GEN	CIP	AZM	CRO	CFM	CAZ	AMK	LVX
S. typhi	26	0	2	8	0	0	-	-	100
Staphyloocccus	90	41	60	71	58	80	33	33	0
Pseudomonas	67	29	17	-	0	-	12	20	-
Escherichia coli	100	41	63	85	73	84	62	15	50
Klebsiella sp.	96	42	32	86	62	76	62	14	100

AMX = ampicillin, GEN = gentamycin, CIP = ciprofloxacin; CRO = ceftriaxone, CAZ = ceftazidime, AMK = amikacin, AZM = azithromycin; CFM= cefixime; LVX= levofloxacin; NTS= Non-typhoidal salmonella

Factors associated with deaths (logistic regression)

Variables	OR	95% CI	P
Age in months	1.04	0.99 - 1.10	0.133
Pneumonia	2.88	0.93 - 8.90	0.066
Sepsis	4.74	1.53 – 14.72	0.007
Hypoxemia	3.66	1.24 - 10.74	0.018
Convulsion	0.77	0.25 - 2.38	0.647
Severe malnutrition	1.04	0.32 - 3.37	0.948
Sensitive Abx received	0.43	0.16 - 1.15	0.094
Abnormal WBC count	1.45	0.43 - 4.90	0.548
Hyperkalemia	1.47	0.45 - 4.78	0.523
Acute kidney injury	1.00	0.32 - 3.14	0.998
Hypermagnesemia	0.46	0.15 - 1.43	0.181

Overall resistance of different ABx among cases and controls

Conclusion:

Case fatality rate was considerably high among the children having both diarrhea and bactereamia. E. coli and Klebsiella could be main culprits. Traditional or empirical antibiotics may not be safe in this clinical scenario. Clinical sepsis and hypoxaemia were found to be independent predictors for death in these children. Thus, case management with vigilant examination for the signs of clinical sepsis and hypoxaemia and adequate treatment with proper antibiotics are necessary in this group especially in resource limited settings.