P1970 : Carbapenemase-producing Enterobacterales carriage in the paediatric population in a hospital in West Algiers

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I-INTRODUCTION: Currently, there are very few specific data on rectal Carbapenemase Producing Enterobacterales (CPE) carriage in children in Algeria. This gap limits our ability to target interventions. The risk is heightened in children due to their immune immaturity, presence of comorbidities, prolonged ICU stays, and repeated antibiotic exposure.

II-AIMS :This study aims to assess the frequency of rectal carriage of CPE in hospitalized pediatric patients, characterize the isolated strains, and identify risk factors associated with this carriage.

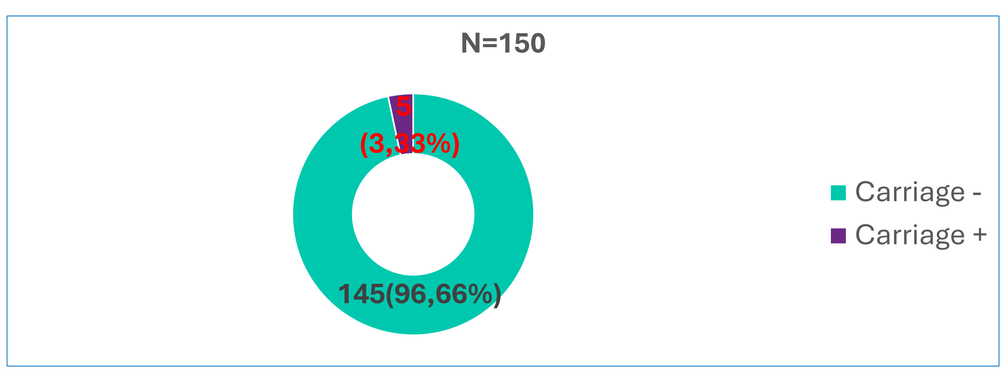
III-METHODS: This prospective study was conducted over a six-month period (December 2024 – June 2025). A total of 150 children hospitalized in different pediatric wards were included. Rectal swabs were collected and cultured on a selective chromogenic medium containing ertapenem. CPE were identified and characterized using phenotypic,automated (BD Phoenix™) and immunochromatographic (Coris®) assays. Clinical data were collected using standardized data sheets and statistically analyzed using Spss V26 software. Intrinsic risk factors included age and underlying pathologies, while associated extrinsic factors included a hospital stay of ≥ 7 days and prior antibiotic exposure.

IV-RESULTS:

1-Study Population Characteristics: The study included a total of 150 patients hospitalized in different pediatric units. The cohort comprised 74 male patients (49.3%) and 76 female patients (50.7%), with a sex ratio of 0.97.Patient ages ranged from 4 days to 5475 days, with a mean of 1583.43 days.Distribution by pediatric specialties showed predominance in general pediatrics with 47 patients followed by neonatology (40 patients), oncology (35 patients), pediatric surgery (25 patients) and pediatric ICU (3 patients).

2-CPE Carriage :

***Rectal CPE Carriage Rate : 3.33%**



***Age and Pediatrics specialty of CPE Carriers:**

CPE Carriers	Age	Pediatrics specialty
1	12 Years	General pediatrics
2	02 Years	Oncology
3	15 Days	Neonatology
4	09 Days	Neonatology
5	08 Months	General pediatrics

***Isolated Bacterial Species and Enzyme Types: 06 strains from 05 patients, co-carriage in one , 06 CPE : 05 NDM + 01 OXA-48.**

CPE Carriers	Bacterial Species	ESBL			Carbapenemase				Carbapenemase type		
		Synergy Image	Double Disk Synergy Test	BIORAD B LACTA TEST	Modified Hodge Test	EDTA TEST	Temocilln Test	BIORAD B CARBA TEST	BD Phoenix™ 501 EMERGE Panel	Coris Resist-5	
1	*Escherichia coli*	-	-	-	+	+	-	+	Class B	+	NDM
	Klebsiella oxytoca	-	-	-	+	+	-	+	Class B	+	NDM
2	*Klebsiella oxytoca*	-	-	-	+	+	-	+	Class B	+	NDM
3	*Enterobacter cloacae*	-	-	-	+	+	-	+	Class B	+	NDM
4	*Enterobacter cloacae*	-	-	-	+	+	-	+	Class B	+	NDM
5	*Escherichia coli*	+	+	+	+	-	+	+	Class D	+	OXA -48

***Antibiotic susceptibility of CPE :**

Antibiotic	5 NDM strains
β-lactams (cephalosporins/carbapenems)	Complete resistance
Aztreonam	Resistant except for the 2 *Enterobacter cloacae* strains
β-lactamase inhibitors (AMP-SUB, CAZ-AVM, PIP-TAZO)	Complete resistance
Amikacin	Susceptible except for 2 strains
Gentamicin	Frequent resistance (except for two susceptible strains)
Fluoroquinolones	Frequent resistance (except for two susceptible strains)
Minocycline	Susceptible except for 1 *Escherichia coli* NDM strain
Tigecycline	Susceptible

Antibiotic	1 OXA-48 strain
Cephalosporins / Carbapenems	Complete resistance
Cefoxitin	Susceptible
β-lactamase inhibitors	Resistant
Ceftazidime-avibactam	Susceptible
Amikacin, Nitrofurantoin	Susceptible
Tigecycline, Minocycline	Susceptible

***Risk Factor Study :**

Statistical Analysis of the Study Population (Carriers + Non-Carriers) :

No statistically significant (p>0,05) correlation was found between CPE carriage and:

- **Antibiotic use in the previous 3 months (p=0.170).**
- **Previous hospitalization (p=0.501).**
- **Sex (p=0.679).**
- **Age (p=0.486).**
- **Presence of comorbidity (p=0.497).**

*** Suspected cross-transmission:**

- **Two newborns in the same room with *Enterobacter cloacae* NDM.**
- **Two patients occupying adjacent rooms with *Klebsiella oxytoca* NDM.**

V-CONCLUSION: The present study reveals a substantial prevalence of rectal CPE carriage in pediatrics, dominated by NDM-producing strains, which are associated with resistance profiles that severely restrict therapeutic options. These findings call for strengthened systematic screening, reinforced isolation measures, and improved hospital hygiene. A prudent antibiotic stewardship policy, combined with close follow-up of colonized patients, is essential to prevent nosocomial dissemination.

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