Methicillin-resistant Staphylococcus aureus(MRSA) in nasopharyngeal samples: Asymptomatic colonization or True Infection- Experience from a Diagnostic Referral Laboratory

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MICROBIOLOGY

BACKGROUND

Since the discovery of Penicillin in 1940, Antibiotics have saved millions of lives. Unfortunately, today, in the 21st century we are amidst an Antibiotic resistance crisis. Our referral laboratory, catering to out-patient clinics in the community receive nasopharyngeal swabs of all age -groups for culture and sensitivity testing. The nasopharyngeal region of the human body is colonized by various bacteria,Staphylococcus aureus being among the pre-dominant one. Nasal methicillin-resistant Staphylococcus aureus(MRSA) has become extremely relevant in this era of widespread antibiotic resistance due to its therapeutic challenges.

OBJECTIVES

This study was carried out in the microbiology laboratory with two objectives:- to find the prevalence of MRSA in nasopharyngeal samples and secondly, to compare these culture findings with inflammatory markers like C-reactive protein and white blood cell count (WBC) of the patients. This would help ascertain with some degree of certainty mere colonization or true infection by MRSA.

Clinicians and surgeons persistently face the dilemma whether to treat MRSA isolated from nasal swabs. This study, the first in United Arab Emirates with this large sample size, attempts to differentiate mere colonization of MRSA from true infection. Medical literature showcases numerous studies from hospitals and institutional settings but none from diagnostic referral laboratories.

METHODS

The study was carried out at Aster Diagnostic laboratory which caters to out-patient health clinics in Dubai. Since this was a retrospective study between January 2018 - January 2019, hematological parameters like White blood cell count(WBC) and C Reactive Protein(CRP) of these patients were also studied for co-relation. Identification and susceptibility testing for all MRSA isolates was done on BD PhoenixTM M50(Becton, Dickinson,Md.,USA) automated system. WBC count and CRP were analysed on Abott CELL-DYN Ruby automated blood cell counter and Roche COBAS 6000 chemistry analyzer respectively.

RESULTS

Between January 2018 - January 2019, Microbiology laboratory received 1730 nasal /nasopharyngeal swabs for culture. 15.7% of these grew Staphylococcus aureus out of which 5.2% were MRSA(91 isolates). Comparison between isolation of MRSA, WBC Count and CRP is depicted as Figure1and 2. The findings, proven statistically significant infer the relationship between high WBC count(>11000/ul) and CRP(>40mg/L) and MRSA isolation. Antibiotic sensitivity was carried out for all the MRSA isolates which is presented as Figure 3.

CONCLUSION

The epidemiology of MRSA colonization in the community and the association between colonization and infection need to be better understood, as does the role of attempted decolonization and treatment in the clinical management of CA-MRSA infections

REFERENCES

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CATEGORY	N	%	INTERPRETATION
CRP=>40	19	20.88	Probable infection
WBC=>11	28	30.77	Probable infection
Either (CRP=>40 or WBC=>11)	17	18.68	Probable infection
Both (CRP=>40 and WBC=>11)	15	16.48	True infection
At least one (CRP=>40 and/or WBC=>11)	32	35.16	Infection

Figure-1

CATEGORY	N	%	INTERPRETATION
CRPPos_WBCneg	4	4.40	
CRPneg_WBCpos	13	14.29	
Either	17	18.68	Probable infection
Both	15	16.48	True infection
None	59	64.84	No infection (Colonization)
Total	91		
Either or both	32	35.16	Total Infection

Figure-2

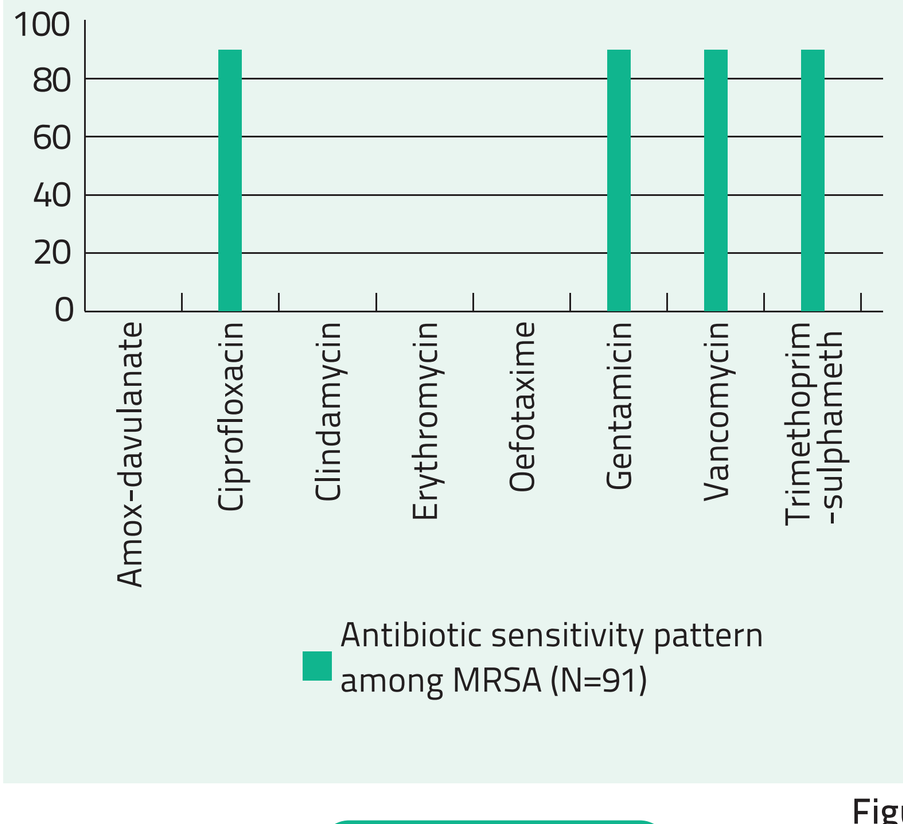

Figure-3

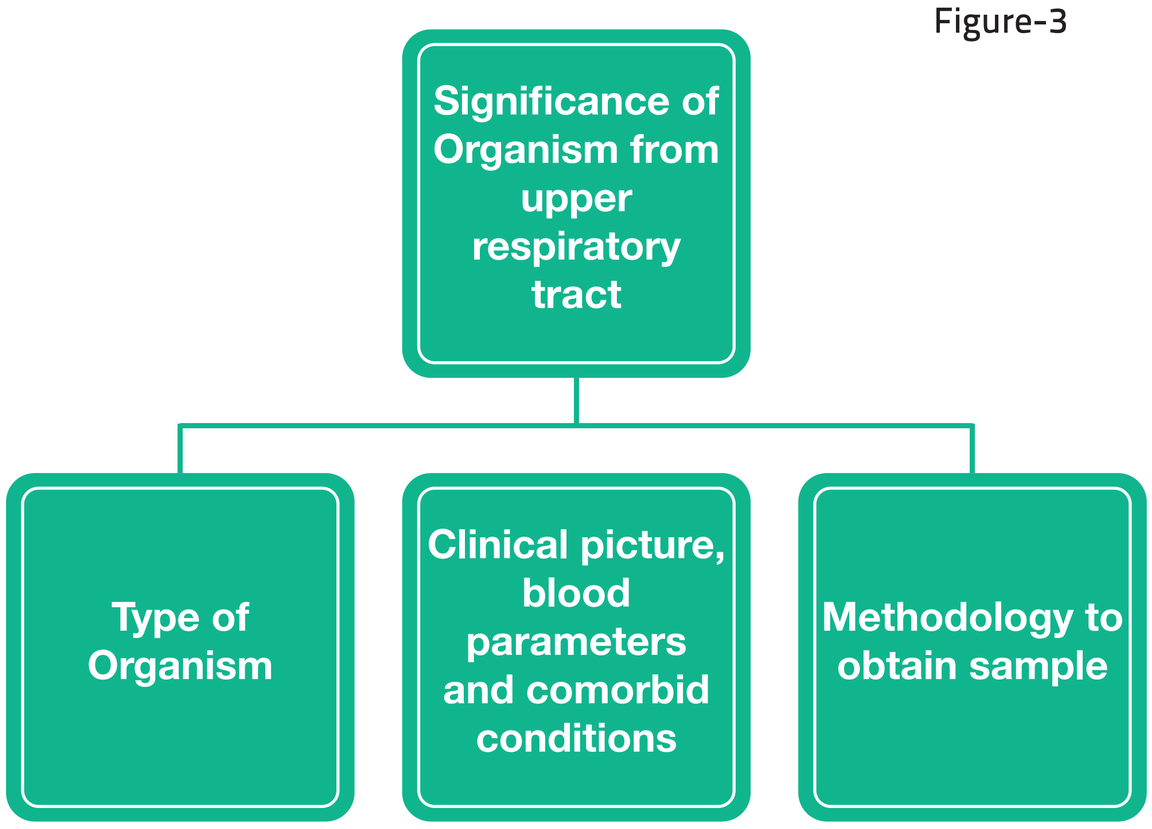

Figure-4