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METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS: AN OVERVIEW

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ABSTRACT

It is form of bacterial infection that is resistant to numerous antibiotics including Methicillin, amoxillin, penicillin and oxacillin, thus making it challenging to treat the infection successfully Methicillin-resistant Staphylococcus aureus (MRSA) is a bacterium that causes infections in different parts of the body. *Staphylococcus aureus* continues to be a dangerous pathogen for both community-acquired as well as hospital-associated infections. *S. aureus* resistant to Methicillin were reported soon after its introduction in October 1960. Methicillin resistant *S. aureus* (MRSA) is now endemic in India. The incidence of MRSA varies from 25 per cent in western part of India to 50 per cent in South India. Community acquired MRSA (CA-MRSA) has been increasingly reported from India.


How is MRSA Spread?

1) Close contact with infected person.
2) Staph can come off the skin during skin to skin contact.

3) Through drainage and pus which is very infection.

MRSA risk factor

Recent antibiotic use.

Recent hospitalization.

Hemodialysis.

IV drug use.

Diabetes.

Previous MRSA infection or colonization.

Who is at risk for MRSA?

1) Spend a lot of time at crowded places such as hospital, school.
2) Share sports equipment.
3) Share personal hygiene item.
4) Overuse or misuse antibiotics.

Risk factor for healthcare associated MRSA infections

1) Previous hospitalization.
2) Surgery.
3) Internal feeding.
4) Prior antibiotics.
5) Invasive devices.
6) History of MRSA colonization.
7) Residence in a long term care facility.

The overall MRSA prevalence in study was 42 per cent in 2008 and 40 per cent in 2009. The prevalence of MRSA in a study from Chennai was reported as 40-50 per cent. *S. aureus* constituted 17 per cent of catheter related blood stream infections (CRBSIs) in that centre. A high prevalence of MRSA (35% in ward and 43% in ICU) was observed from blood culture specimens in a study in Delhi. In the present study, MRSA isolation rates from ICU and wards were higher than that seen among out patients. A change in the blood stream infections with *S. aureus* emerging as the predominant pathogen in recent years.

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a substantial public health problem worldwide, causing significant morbidity and mortality and elevated health care costs. There

were an estimated 94 360 invasive MRSA infections in the United States in 2005, causing more than 18 000 deaths per year.

Methicillin-resistant *S aureus* prevalence has increased over the last 10 years; MRSA-related hospital discharges have doubled over 10 years, with hospital discharges for MRSA skin and soft tissue infection tripling since 2004. Infections caused by MRSA are associated with longer hospital stays and an increased financial burden on society, costing an estimated US $14.5 billion for all inpatient days in 2003.An example of the increased morbidity and mortality associated with MRSA can be seen when comparing the yearly infection rates and mortality rates in the United States for MRSA, AIDS, viral hepatitis, and tuberculosis. Methicillin-resistant *S aureus* is estimated to cause more infections than the other diseases combined and more deaths per year than AIDS The prevalence of MRSA varies between regions and between hospitals in the same region as seen in a study from Delhi where the MRSA prevalence in nosocomial SSTI varied from 7.5 to 41.3 per cent between three tertiary care teaching hospitals.

Vancomycin is considered inferior to β-lactams for the treatment of MRSA bacteraemia and endocarditic. Therefore, the first-generation cephalosporins are the drugs of choice for the treatment of MSSA infections in patients who are unable to tolerate antistaphylococcal penicillins. De-escalation of vancomycin to β-lactams should be encouraged in all cases of MSSA. With MRSA isolates being widespread, it is imperative that treating physicians de-escalate to β-lactams once the culture sensitivity results reveal a MSSA isolate. Preservation of Methicillin resistant *Staphylococcus aureus* (MRSA) is endemic in India and is a dangerous pathogen for hospital acquired infections. This study was conducted in 15 Indian tertiary care centers during a two year period from January 2008 to December 2009 to determine the prevalence of MRSA and susceptibility pattern of *S. aureus* isolates in India.

TREATMENT

The treatment of MRSA is based upon the type of infection, the location, and the severity. When MRSA infection is suspected, clinical practice guidelines on the treatment of MRSA suggest immediate referral to initiate appropriate medical care. The patient should avoid spreading the infection and not use wet compresses. For skin abscesses, medical care using incision and drainage is the treatment of choice. Daily cleansing of the skin with a disinfectant is often part of CA-MRSA dermatological care.

If evidence of surrounding cellulites is found, antibiotics may be added. Antibiotic choice should be guided by community susceptibilities but usually begins with trimethoprim-sulfamethoxazole or, for the sulfa allergic patient, doxycycline or minocycline. Additional coverage for Methicillin-susceptible *S aureus* and streptococci is usually provided by cephalexin, dicloxacillin, or clindamycin.–Methicillin-resistant *S aureus* infections that fail initial treatment may require multidrug therapy, such as the combination of vancomycin with one or more additional antibiotics.

Patients should be encouraged to take their full course of medication and contact their primary care provider immediately should adverse effects develop. Common adverse effects reported from antibiotic treatment include gastrointestinal distress, such as diarrhea, nausea, and abdominal pain; rashes; itching; fevers or chills; jaundice; dyspnea; dysphagia; and headache.

Manual therapists should be aware of the medications prescribed for MRSA that have adverse effects to the musculoskeletal system, such as joint aches, joint stiffness or swelling, weakness, chest or back pain and tightness, and unusual bleeding or bruising Drugs in the fluoroquinolone class are infrequently used in the management of patients with MRSA, but may be used in multidrug therapy for osteomyelitis or osteoarticular infections or be prescribed unnecessarily. Fluoroquinolone use is associated with an increased prevalence oftendinopathy and joint lesions.

Age greater than60 years, sex, use of corticosteroids, diabetes, and strength-training and aerobic-conditioning activities areassociated with higher rates of fluoroquinolone-induced tendinopathy. This tendinopathy may manifest in both the lower and upper extremities; range from minor discomfort to frank tendon rupture; or become symptomatic within hours of the initial dose, but typically a week after the start of therapy; and may persist for months following cessation of medication therapy. Awareness of medication use should influencemanual therapists' clinical decision making, such as when not to engage in strenuous activity or deep tissue mobilization.

INTERPRETATION AND CONCLUSION

The study showed a high level of MRSA in our country. There is a need to study epidemiology of such infections. Robust antimicrobial stewardship and strengthened infection control measures are required to prevent spread and reduce emergence of resistance.

Methicillin-resistant *S aureus* is commonly found in the population and may result in a harmful and potentially fatal infection. Identification of likely MRSA cutaneous lesions is straightforward and can lead to early treatment and perhaps even the prevention of systemic disease. Manual practitioners can use a variety of simple and routine infection control measures to prevent infections and the transmission of MRSA between patients, clinic staff members, and the community.

PREVENTION

People with skin infections should be careful to keep lesions covered with a dressing or band aid and wash their hands thoroughly after changing the bandage. Place bandages in the trash.

How to prevent serious skin infection from MRSA

	Do	**not**
I.	Wash your hands regularly	Share personal equipment – Razor, towels, clothes
II.	Seek medical attention from the training	Shave your body (below the Neck) with razor
III.	Staff if you or your family members have lesions	ignores any skin infections

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