NET, IAS, State-SET (KSET, WBSET, MPSET, etc.), GATE, CUET, Olympiads etc.: Science and Technology Superbug NMD-1

Superbug NMD-1

1. Of late, in the Indian sub-continent, Gram-negative Enterobacteriaceae stains, resistant to the powerful antibiotic carbapenem, are becoming more widespread, especially in India and Pakistan, Incidentally, the antibiotic carbapenem is considered to be the last line of treatment for infections caused by Gram-negative bacteria. How does the resistance arise?
2. The resistance arises on account of a new gene that is responsible for production of the metallobeta-lactamase enzyme that makes the antibiotic carbapenem ineffective. This drug-resistance bacterial gene, the so-called superbug, was named New Delhi Metallo-beta-lactamase-1 (NDM-1) in 2009 when it was first identified in a Swedish national admitted to a hospital in New Delhi.
3. The potential of NDM-1 to be a worldwide public health problem is great, and co-ordinated international surveillance is needed.
4. Resistance to extended-spectrum beta-lactamase (ESBL) drugs like third-generation cephalosporins is less than 15% in developed countries. For treatment of ESBL infections, carbapenem a reserved antibiotic and the last line of treatment is the drug of choice as it has the lowest resistance rates and the broadest action against Gramnegative infections. However, its indiscriminate use has played a major role in the development of the carbapenem-resistant gene, including the new NDM-1 strain.
5. NDM-1 was unknown until a few years ago, but has begun to show up in the last three years.

NDM-1 is, in all probability, still a hospital-acquired infection. Drug-resistant NDM-1 strains are a cause for worry because very few drugs are available to treat Gram-negative infections.

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