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Mucormycosis

- Black fungus or mucormycosis, a rare but serious fungal infection, is being detected frequently among Covid-19 patients in some states.
- **Causes** - Mucormycosis is caused by a group of moulds known as mucormycetes present naturally and abundantly in the environment.
- Sinuses or lungs of such individuals get affected after they inhale fungal spores from the air. It can lead to loss of the upper jaw and even the eye.
- It mainly affects people who are on medication for health problems that reduces their ability to fight environmental pathogens and sickness.
- **Symptoms -** The disease often manifests in the skin and also affects lungs and brain. The symptoms include,
    - Sinusitis - nasal blockade or nasal discharge (blackish/bloody);
    - Pain and redness on the cheek bone, eyes; one-sided facial pain, numbness or swelling; Blackish discoloration over nose/palate;
    - Loosening of teeth, jaw involvement;
    - Blurred or double vision with pain;
    - Thrombosis, necrosis, skin lesion;
    - Chest pain, pleural effusion, bloody vomits, altered mental status.
- **Vulnerable -** Vulnerable groups include those patients with diabetes mellitus, cancer, or those who have had an organ transplant.
- Those who are in immunosuppression by steroids, prolonged ICU stay, and comorbidities — post transplant/malignancy, voriconazole therapy.
- **Prevention -** Use masks if visiting dusty construction sites. Wear shoes, long trousers, long-sleeved shirts and gloves while handling soil, moss or manure. Maintain personal hygiene including a thorough scrub bath.
- **Diagnosis** - It depends on the location of the suspected infection.
- A sample of fluid from respiratory system may be collected for testing in the lab; or a tissue biopsy or a CT scan of lungs, sinuses etc may be done.
- **Treatment** - Mucormycosis needs to be treated with antifungal medicine. In some cases, it can require surgery.
- To maintain adequate systemic hydration, the treatment includes infusion of normal saline (IV) before infusion of amphotericin B and antifungal therapy, for at least 4-6 weeks.

Magnetoreception in Sharks

- Several birds and animals have been known to use magnetoreception or the special sense to detect Earth's magnetic field to perceive the location and also track the direction during migration.
- A new study found the first solid evidence that sharks also use Earth's magnetic fields for their long-distance travel. Sharks undergo precise, long-distance migrations and make round-trips for over 20,000 kms.
- The team exposed 20 juvenile bonnethead sharks to artificial magnetic conditions which represented locations hundreds of kilometres away from their capture location.
- They found that the sharks orientated themselves according to the provided artificial magnetic field.
- Bonnethead sharks return to the same estuaries each year showing that they know where 'home' is and can navigate back to it from any distance.

Bonnethead Sharks

- It is the first known omnivorous shark species identified. It grazes upon seagrass, in addition to eating bony fish, crabs, snails and shrimp.
- They are abundant in the shallow waters of the Western Atlantic, and the Gulf of Mexico.
- As they lack the kind of teeth best suited for mastication, they rely on strong stomach acids to weaken the plants' cells so the enzymes can have their digestive effects.
- International Union for Conservation of Nature (IUCN) Status - Endangered.

Mount Sinabung

- Mount Sinabung, located in the Karo regency, North Sumatra province of Indonesia erupted, belching volcanic ash and smoke 3,000 metres into the sky.
- The volcano has been active since 2010 when it erupted after nearly 400 years of inactivity.
- The eruptive phase began in September 2013 and continued uninterrupted till June 2018, according to the National Museum of Natural History's Global Volcanism Program.
- Indonesia is home to many active volcanoes owing to its location in the "Ring of Fire" or the Circum-Pacific Belt - an area along the Pacific Ocean characterised by active volcanoes and frequent earthquakes.

Volcanic Eruption

- Basically, there are three types of volcanoes — active, dormant or extinct.
- An eruption takes place when magma (a thick flowing substance), that is

formed when the earth's mantle melts, rises to the surface.

- As magma is lighter than rock, it rises through vents and fissures on the surface of the earth. Following eruption, the magma is called lava.
- Not all volcanic eruptions are explosive since explosivity depends on the composition of the magma.
    1. If the magma is runny and thin, gases can easily escape it. In such cases, the magma will flow out towards the surface.
    2. If the magma is thick and dense and gases cannot escape it, it builds up pressure inside resulting in a violent explosion.
- **Vulnerable** - The most common cause of death from a volcano is suffocation, making people with respiratory conditions such as asthma and other chronic lung diseases susceptible.
- People living close to the volcano or in low-lying downwind areas are also at higher risk in case of an explosion since the ash may be gritty and abrasive and small particles can scratch the surface of the eyes.
- Volcanic eruptions can result in additional threats to health - Floods, mudslides, power outages, drinking water contamination and wildfires.
- Lava flows, however, rarely kill people since it moves very slowly, giving enough time to escape.

Ring of Fire

- The Ring of Fire or Pacific Ring of Fire or Circum-Pacific Belt is a long seismically active belt along the Pacific Ocean characterized by earthquake epicentres, active volcanoes, and tectonic plate boundaries.
- It is home to about 75% of the world's volcanoes and about 90% of earthquakes also occur here.
- It traces boundaries between several tectonic plates - The Pacific, Cocos, Indian-Australian, Nazca, North American, and Philippine Plates.
- The abundance of volcanoes and earthquakes along the Ring of Fire is caused by the amount of movement of tectonic plates in the area.
- For much of its 40,000-km length, the belt follows chains of island arcs, the Indonesian archipelago, the Philippines, Japan, the Kuril Islands, and the Aleutians, as well as other arc-shaped geomorphic features.

Identifying Backward Classes

- The Supreme Court ruled that after the passage of the 102nd Constitution Amendment Act in 2018,
    1. The States do not have any power to identify 'socially and educationally backward' (SEBC) classes.
    2. Only the President can publish a list of backward classes in relation to

each State and only Parliament can make inclusions or exclusions in it.

- The Supreme Court has directed the Centre to notify the list of SEBCs for each State and Union territory, and until it is done, the present State Lists may continue to be in use.
- The Union government argued that it was never its intention to deprive State governments of their power to identify SEBCs.

102nd Amendment Act, 2018

- It established a five-member National Commission for Backward Classes by adding Article 338B to the Constitution.
- The Commission was tasked with monitoring safeguards provided for SEBCs, giving advice on their socio-economic development, inquiring into complaints and making recommendations, among other functions.
- Significantly, it was laid down that the Centre and the States shall consult the Commission on all policy matters concerning the SEBCs.
- The Amendment also added Article 342A, under which the President shall notify a list of SEBCs in relation to each State and Union Territory, in consultation with Governors of the respective States.
- Once this 'Central List' is notified, only Parliament could make inclusions or exclusions in the list by law.
- This provision is drafted in exactly the same word as the one concerning the lists of Scheduled Castes and Scheduled Tribes.
- Further, it defines 'SEBCs' as such backward classes as are so deemed under Article 342A for the purposes of this Constitution.

Waiving TRIPS

- The U.S. decided to support waiving the Trade-Related aspects of Intellectual Property Rights (TRIPS) for producing COVID-19 vaccines.
- The decision is a breakthrough in India and South Africa's proposals to get World Trade Organisation (WTO) member countries to agree to such a waiver to fight the pandemic equitably.
- If the proposal is passed by the WTO with the support of the European Union (EU), it could dramatically alter how pharmaceutical companies access proprietary trade know-how for the production of vaccines.
- To know more about the issue, click here.

Trade-Related aspects of Intellectual Property Rights (TRIPS)

- The WTO's Agreement on TRIPS is the most comprehensive multilateral trading agreement on **Intellectual Property (IP) Rules**.
- It was negotiated during the 1986-94 Uruguay Round of the WTO.

- It sets the minimum standards of protection for copyrights and related rights, trademarks, geographical indications (GIs), industrial designs, patents, integrated circuit layout designs, and undisclosed information.
- It plays a central role in facilitating trade in knowledge and creativity, in resolving trade disputes over IP, and in assuring WTO members the latitude to achieve their domestic policy objectives.
- It frames the IP system in terms of innovation, technology transfer and public welfare.
- The Agreement is a **legal recognition** of the significance of links between IP and trade and the need for a balanced IP system.

Source: The Hindu, The Indian Express, National Geographic

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