Vaxinia, an oncolytic virus

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In news-The first clinical trials(human) of a modified pox virus called 'Vaxinia' that is aimed at killing cancerous cells

About Vaxinia-

- **It was developed by the US-based City of Hope Comprehensive Cancer Center**
- **It is an 'oncolytic virus'**, which has been **genetically modified to selectively infect and kill cancer cells**, **spare healthy cells,** and further **trains and trigger the immune system against cancerous cells, like a vaccine does.**
- **The oncolytic virus has been shown to shrink colon, lung, breast, ovarian and pancreatic cancer tumors** in preclinical laboratory and animal models.
- The Vaxinia's t**echnical name is CF33-hNIS.**
- **It works by entering cells, duplicating itself, and causing the infected cell to burst,** releasing thousands of new Vaxinia particles that **act as antigens and stimulate the immune system to attack nearby cancer cells**.
- It also stimulates the immune system to be more responsive to other immunotherapies, including checkpoint inhibitors.
- Meanwhile, earlier research in animal models has revealed that the drug can harness the immune system in this way to hunt and destroy cancer cells, but up until now, no testing has been done in humans.

How is Vaxinia promising?

- **Vaxinia is promising as this is not just expected to kill cancerous cells but is also expected to train the immune system** to kill cancerous cells. **It's like a crossover between a drug and a vaccine.**

- Moreover, when administered with other therapies, Vaxinia is expected to increase their effectiveness.
- Early research shows oncolytic viruses can prime a person’s immune system and increase the level of PD-L1 in tumors, making immunotherapy more effective against cancer.
- **Reportedly, if CF33-hNIS is successful, it stands to become only the second FDA-approved oncolytic virus** therapy for cancer, after Talimogene laherparepvec (T-VEC), a modified version of the herpes simplex virus, which is used in the treatment of melanoma.