Heavier smoking

Heavier smoking may increase disease risk by 30 per cent: Study (The Tribune: 2020811)


Heavier smoking may increase disease risk by 30 per cent: Study
Photo for representational purpose only.

Each cigarette smoked a day by heavier smokers may increase the risk of contracting diseases such as respiratory disorders, cancers and cardiovascular ailments by more than 30 per cent, according to a study.

The study by researchers at the University of South Australia links heavier smoking with 28 separate health conditions, revealing a 17-fold increase in emphysema, eight-fold increase in atherosclerosis or clogged arteries and a 6.5-fold higher incidence of lung cancer.

Light smokers on average smoke less than 10 cigarettes a day, moderate smokers 10 to 19 cigarettes a day, and 20 or more cigarettes a day is classified as heavy smoking, they said.

The findings, published in the journal EClinicalMedicine, analysed hospital data and mortality statistics from more than 152,483 smokers in the UK Biobank to look how heavier smoking affects disease risks.

The risk of suffering respiratory diseases, cancers and cardiovascular diseases increased with each cigarette smoked per day, said the researchers.

The links between heavier smoking and emphysema, heart disease, pneumonia and respiratory cancers were particularly high.

However, the researchers also found associations with many other respiratory diseases, renal failure, septicaemia, eye disorders, and complications of surgery or medical procedures.
"Tobacco smoking is the leading preventable cause of death worldwide and smokers typically die 10 years earlier than non-smokers," said University of South Australia professor Elina Hypponen.

"Despite a global decline in smoking over the last 20 years, an estimated 20 per cent of the world's population aged over 15 years are still smoking tobacco," said Professor Hypponen.

Several known smoking outcomes, including stroke, were not identified in the study, which only counted cases above 200 for each health condition, said the researchers.

"We only looked at how heavier smoking further affects disease risks in a group of people who are all at least past smokers, so compared to never smokers, the health effects are going to be even more notable," said Professor Hypponen.

"Other factors, including when people start smoking or how long they have smoked, may also affect the health consequences arising from smoking." PTI

Severe Covid-19

Researchers to study inhaled sedatives for severe Covid-19(The Tribune: 2020811)

In a fight against the novel coronavirus, Canadian researchers will be looking at whether the inhaled sedatives can replace those that are delivered intravenously in infected patients requiring ventilation.

The multi-centre clinical trial aims to address a global shortage of intravenous (IV) sedatives while improving patient outcomes.

According to the researchers, when Covid-19 patients develop severe respiratory failure and need to be ventilated, they require sedation.

“While IV sedatives are currently used, there is concern about global drug shortages, particularly if there’s a second wave of COVID-19 in the fall,” said Marat Slessarev from the Lawson Health Research Institute in Canada.

“Even if we have enough ventilators, we won’t be able to ventilate patients without sedatives,” Slessarev added.

The clinical trial will study the replacement of IV sedatives with inhaled sedatives.
Inhaled sedatives, also called volatiles, are widely available due to their use in operating rooms to sedate patients during surgery.

While they have not been routinely used to sedate patients needing ventilation, early studies suggest they could be safe and even more effective than IV sedatives.

Preliminary studies in non-Covid patients with severe respiratory failure suggest that inhaled sedatives can reduce lung inflammation, shorten the duration of ventilation and potentially improve survival.

“Inhaled sedatives could, therefore, reduce the pandemic’s strain on ventilator capacity while improving patient outcomes,” Slessarev said.

According to the team, since these drugs are safe, cheap and readily available, they can easily be used to address IV sedative shortages if found effective.

The researchers will recruit approximately 800 patients from across Canada and the US including patients.

Each patient will be randomised to receive either IV sedatives or inhaled sedatives.

Patient outcomes such as survival and length of ventilation will be compared between the two groups to determine which method of sedation is most effective.

“This is the largest trial of its kind. If inhaled sedatives can shorten the length of ventilation or improve survival in patients with severe respiratory failure, this could cause a paradigm shift in the way we sedate patients in intensive care units (ICUs) around the world,” Slessarev noted.

**Corona Vaccine**

**Corona Vaccine – Where are we and how far? (The Tribune: 2020811)**


Development of a safe and effective new vaccine against a virus which was totally unknown a few months back is a challenging task.

Every day the number of coronavirus cases touches a new high. India has more than 1.8 million cases and is adding more than 50,000 new cases daily. Not only is the healthcare infrastructure stretched but almost every aspect of life is affected. Lakhs have lost their lives while millions have been stripped of their livelihoods across the world. The International Monetary Fund has warned of global economic recession.

Prominent candidate vaccines

No wonder there is an almost desperate need for a vaccine and the recent news about the success of initial vaccine trials was greeted with much relief. This brought a hope of resumption of normal life – that maybe we will be able to work and socialise like earlier without any inhibitions and fear. Development of a safe and effective new vaccine against a virus which
was totally unknown few months back is a challenging task. Let’s have a comprehensive look at the whole process.

How do vaccines work?

People who get infected with COVID-19 or any other virus, their immune system produces some antibodies against that disease-causing agent which are protective and prevent virus from entering cells. In vaccination, a part of the virus (COVID-19 in this case) or the weakened virus itself is put inside the human body to stimulate our immune system to generate a protective response without causing any disease, illness or side-effects. In addition, the vaccine may induce T-Cells, a type of white blood cells, that can kill the virus-infected cells.

What are the different types of Covid-19 vaccines in development?

Work on the vaccine started at a breakneck speed when the complete genetic information and structure of COVID-19 virus was deciphered in January. COVID-19 virus has a genetic material in its core and an outer covering of lipids and proteins.

Some candidate vaccines are trying to use the virus’ genetic material (Genetic Vaccines) directly or using another virus to deliver the genetic material (Viral Vector Vaccines). Some are using the outer protein covering (Protein Vaccines) while others are using dead viruses (Inactivated Whole Virus Vaccine) – all with a common goal to get a protective immune response without illness or side-effects.

What are the various stages of vaccine development?

Before reaching a point where we can just go and get a protective shot – a vaccine goes through the following phases of development.

Preclinical testing – Testing in animals like monkeys or mice to see if it stimulates immune system for a protective response.

Phase I – Testing in a small number of humans to check for best dose and fewest side-effects.

Phase II – Testing in hundreds of people of different ages to confirm earlier findings.

Phase III – In this phase, effectiveness is confirmed and side-effects are monitored in thousands of people as compared to other treatments and placebo.

Approval - Once a vaccine successfully completes Phase III, it can get approval. The US premier regulatory authority Food and Drug Administration (FDA) has said that for a vaccine to gain approval, it must demonstrate that it is preventing a COVID-19 infection in at least 50% of people along with safety of recipients.

Clearly when it comes to developing the COVID-19 vaccine, many steps in the process are being fast-tracked, including combining some of the phases. The US government in its operation code-named “Warp Speed” has given billions of dollars in funding for the project. The authorities on the one hand are ready to give "emergency use" authorisations as have been seen with many drugs in COVID-19 treatment but at the same time are wary of a potential disaster with any unforeseen side-effects. The SALK Polio vaccine episode in 1953 where the
virus from a particular manufacturing facility was not weakened sufficiently and led to tens of thousands of children getting infected with polio, many getting paralysed and some dying due to vaccination is a stark reminder of things that may go wrong.

A leading global vaccine company Merck’s CEO Kenneth Frazier in an interview with Harvard Professor Neylor Fitzhugh said that a hurried approval process could be dangerous. Clearly experts are cautious that plenty can still go wrong and there is many a slip between the cup and the lip.

In the history of mankind, the quickest reliable vaccine to have been delivered was the mumps vaccine which took just under 5 years. It’s a mammoth task to generate a safe and effective vaccine within a year against a novel pathogen which was totally unknown sometime back and it will be a landmark success for humanity. There is a lot of hope but also cautious optimism as the last thing we want is an unsafe vaccine as that would be even worse than no vaccine. There is no margin for error and the stakes have never been higher really. Let’s keep our fingers crossed and hope for the best.

The writer is Endocrinologist, Fellow (University College of London). The views expressed are personal.

**Coronavirus disease (Covid-19)**

62% cases but only 13% fatalities among those below 45 years (Hindustan Times: 2020811)

https://epaper.hindustantimes.com/Home/ArticleView

COVID-19 : Young more susceptible, old more severely affected

New Delhi : Around six out of every 10 (62%) infections of the coronavirus disease (Covid-19) in India have been among people below the age of 45 years, but Covid-19 patients above 45 years of age account for nearly nine in 10 (87%) of all deaths, shows government data.

The findings about the age-wise distribution of infections and deaths in India appear to be in line with what scientists have observed about the global trends of the disease — it disproportionally infects younger people, while it severely affects those who are older. Officials, however, have not released new data about the break-up of cases based on gender and comorbidities.

The unreleased case data from the Union ministry of health and family welfare, accessed by HT, also shows that more than half (54%) of the people infected in India are between the ages of 18 and 44, while half (50%) the people who succumbed to the disease are above 60 years of age.
The data for age-wise breakup of cases pertains to the time when India had 1.7 million cases (July 31, according to HT’s dashboard), health department officials who did not wish to be identified said.

“The India data also corroborates what experts have found globally that the disease is relatively less common among children, and mostly affects the adult population. Older adults, and those with comorbidities, are at a higher risk of developing severe form of the disease, hence, need to be more careful,” said a health ministry official, who asked not to be named.

People between the ages of 26 and 44 years are the single largest group of people who have been infected with Sars-CoV-2 (40%). This is followed by people between 45 years and 60 years (26%). Meanwhile, with 8% infected, the under-17 age group has the least proportion of infections.

“What we need to understand about this virus is that it is highly contagious and everyone is equally exposed. In children, however, in terms of overall numbers the infections are less. It may seem like those who are more likely to be mobile are the ones most affected but we are seeing that even if one family member is infected and brings the infection home then all family members are likely to contract the infection. That’s the level of transmissibility we see,” said Sanjay Rai, professor, community medicine department, All India Institute of Medical Sciences, Delhi.

The government has not released data on breakup of cases based on age since April. But since then, they have released data on deaths split by age groups at least thrice — on May 1, June 2, and July 10, during the health ministry’s press briefings on Covid-19. Most deaths — 50% — are in the age group of 60 years and above, followed by 37% deaths among people between 45 years and 60 years in age. About 11% of people who succumbed to the disease were between 26 and 44 years of age and 1% each belonged to the 18 - 25 years and below 17 years cohorts. This set of data was released on August 4.

“It is a new virus and there is lots that is not known about the disease; however, the evidence before us currently suggests that having co-morbidities such as diabetes, hypertension and also obesity is a key factor in determining whether a positive case will develop serious illness or not. It also contributes to overall deaths due to Covid-19, with a large number of those dying due to Covid-19 having found to be suffering from at least one of these health conditions. Comorbidities interfere in the recovery process,” said Dr Srikant Sharma, consultant, medicine department, Moolchand hospital.

Covid-19: What you need to know today

Covid-19: What you need to know today (Hindustan Times: 2020811)

According to a report by the American Academy of Pediatrics released over the weekend, the number of Covid-19 cases among children increased by 97,078 in the US between July 16 and July 20. This number, according to the report, is 29% of all cases among children reported since the start of the pandemic, and represents a 40% increase (there were 241,904 cases among children on July 16 and this went up to 338,982 by July 30). Overall, according to data from
worldometers.info, the US saw the addition of 22% of its total cases as on July 30 in the period between July 16 and July 30. Clearly, infections among children (albeit on a lower base), have grown faster than in the total population (including children) in this period. The report considered children to be those under the age of 17 or 19 (although two states set the ceiling at 14 and one considered young people till the age of 24).

The American Academy of Pediatrics report is relevant in that country given the debate over the reopening of schools. For that reason, it is relevant in India, too, where, as HT reported late last week, there has been a plan for school reopenings ready for at least a month, although there has been no decision on the timing of this (some reports have suggested that it could be September 1 for students in Classes 11 and 12).

Similar data for India isn’t available. Neither the Indian Council of Medical Research nor the Union health ministry release caseload data by age groups on a regular basis. They did so once in April, but since then, while they have released data on deaths by age groups at least thrice, they have not shared details of cases. According to people familiar with the data, though, the proportion of children (those under the age of 18) in the caseload was around 8% at the end of July, when India had around 1.7 million cases. In the absence of more granular details, it is difficult to assess whether this number has been rising in recent weeks. Still, while the information isn’t in the public domain, it is available, which means the government can analyse whether cases among children have been on the rise even as India’s overall caseload has soared – just the kind of input that should go into a decision on reopening schools. The data also shows that the majority of infections (till the end of July) were among people below the age of 45, but that the majority of deaths (till August 4), among those over the age of 45 (see front flap) – but that’s another story.

The issue of school openings is a controversial one around the world; it is also one that has vexed governments. Most governments believe (and justifiably so) that keeping schools closed disadvantages the already disadvantaged. UK Prime Minister Boris Johnson distilled these sentiments in an article published in the Mail on Sunday. He cited research that claimed that “the attainment gap between children from economically deprived households and their peers could widen by more than a third” and referred to UN secretary general Antonio Guterres’s comments last week about this being a “generational catastrophe that could waste untold human potential, undermine decades of progress, and exacerbate entrenched inequalities”. He added that keeping schools closed “a moment longer than absolutely necessary is socially intolerable, economically unsustainable and morally indefensible”.

All of Johnson’s observations are valid – and they are perhaps not out of place in a country that has seen a sharp fall in cases. According to the New York Times database, the seven-day average of daily new cases in the UK was 876 (on Sunday). That’s higher than the 500-level the average was at in early July, but far off peaks seen in April and May.

The reason why the issue has become as controversial as it has in the US is because the country is considering reopening amidst a clear second wave (which is just coming off its peak). India’s challenge is even tougher, and from both ends – the digital divide is real and affects many children who go to government schools and even most of those who study in private schools under the government’s Right To Education law; and the number of coronavirus disease cases in the country continues to rise. India ended Monday with 51,127 new cases, and a total of 2,263,864 cases thus far.
WHO

WHO says COVID-19 seems to lack seasonal pattern (The Times of India: 20200811)


The emergencies chief for the World Health Organization said that COVID-19 doesn't seem to follow the seasonal patterns that some viruses exhibit, making it harder to control. Unlike other respiratory viruses like influenza that spread mainly in the winter, the coronavirus pandemic is accelerating in the summer. That's despite earlier predictions from some scientists and politicians it would fade in the heat. "This virus has demonstrated no seasonal pattern as such," said Dr Michael Ryan at a press briefing on Monday. "What it has clearly demonstrated is that if you take the pressure off the virus, the virus bounces back," he said.

Ryan said the U.N. health agency continues to advise countries even where COVID-19 appears to be under control, such as those in Europe, to maintain measures to slow virus spread. He called for countries where transmission remains intense, such as Brazil, to adopt measures so that communities have the necessary support they need to implement strategies like social distancing, wearing masks, and self-isolating if they have symptoms.

Immune system

Scientists decode how immune system malfunctions in severe COVID-19 cases (The Times of India: 20200811)


Contrary to earlier studies, scientists have found that severe COVID-19 does not solely result in a hyperactive immune system, but instead the body's defense response is caught in a continuous loop of activation and inhibition, an advance that may help develop better therapeutics to combat the deadly disease. The researchers, including those from the German Center for Neurodegenerative Diseases (DZNE), assessed blood samples from a total of 53 men and women with COVID-19 from Berlin and Bonn in Germany, whose course of disease
was categorised as mild or severe according to the World Health Organization (WHO) classification. They used blood samples from patients with other viral respiratory tract infections as well as from healthy individuals as controls.

In the study, published in the journal Cell, they analysed the gene activity and the amount of proteins on the level of individual immune cells circulating in the blood of these patients using very high resolution single-cell OMICs technologies. By applying bioinformatics methods on this extremely comprehensive data collection of the gene activity of each individual cell, we could gain a comprehensive insight of the ongoing processes in the white blood cells," explained Yang Li, a co-author of the study from the Centre for Individualised Infection Medicine (CiiM) in Germany. "In combination with the observation of important proteins on the surface of immune cells, we were able to decipher the changes in the immune system of patients with COVID-19," added Birgit Sawitzki, another co-author of the study.

The scientists found that in in severe cases of COVID-19 the immune cells called neutrophils and monocytes in these patients are only partially activated and they do not function properly. However, these immune cells were found to be ready to defend the patient against COVID-19 in the case of mild disease courses, explained Antoine-Emmanuel Saliba, another co-author of the study. "They are also programmed to activate the rest of the immune system. This ultimately leads to an effective immune response against the virus," Saliba said. But in severe COVID-19 cases, the scientists noted that there are considerably more immature neutrophils and monocytes that have a "rather inhibitory effect on the immune response."

This phenomenon, according to the scientists, can also be observed in other severe infections, although the reason for this is unclear. "Many indications suggest that the immune system stands in its own way during severe courses of COVID-19," said study co-author Leif Erik Sander. "This could possibly lead to an insufficient immune response against the coronavirus, with a simultaneous severe inflammation in the lung tissue," Sander added. According to the researchers, the current findings could lead to new therapeutic options. "Our data suggest that in severe cases of COVID-19, strategies should be considered that go beyond the treatment of other viral diseases," said study co-author Anna Aschenbrenner from the University of Bonn in Germany.

In the case of viral infections, suppressing the immune system may not be beneficial, according to the scientists. "If, however, there are too many dysfunctional immune cells, as our study shows, then one would very much like to suppress or reprogram such cells." Jacob Nattermann, another co-author of the study from the University Hospital Bonn.

"Drugs that act on the immune system might be able to help. But this is a delicate balancing act. After all, it's not a matter of shutting down the immune system completely, but only those cells that slow down themselves, so to speak," Nattermann said. He added that scientists could take a page out of cancer research in trying to understand ways to treat these immature cells. "Possibly we can learn from cancer research. There is experience with therapies that target these cells," he said.
707 new cases take tally to 1,46,134, death toll climbs to 4,131

Delhi defeating Covid, over 90% patients recovered: CM

71 corona cases reported in Noida, total count 6,016

Noida, Aug. 10: Uttar Pradesh’s Gautam Budh Nagar on Monday recorded 71 new coronavirus cases, pushing the district’s infection numbers to 6,016, official data showed.

So far, the district has reported 43 infection deaths with the mortality rate hovering around 0.71 per cent, according to official statistics.

The number of active cases stood at 932 as 68 more patients were discharged since Sunday, according to the data released by the UP Health Department for a 24-hour period.

Gautam Budh Nagar stands 11th on the list of districts in the state in terms of active cases.

The maximum active cases are in Lucknow (6,337) followed by Kanpur Nagar (4,600), Varanasi (2,347), Allahabad (1,966), Bareilly (1,733), Gorakhpur (1,695), Jaunpur (1,065), Aligarh (1,273), Ghaziabad (989) and Azamgarh (953), according to the data.

“Slowly and steadily the people of Delhi are defeating corona.”

The Delhi government claimed that despite opening up, the national capital has maintained its fight against corona.

“Delhi’s recovery rate is improving; positivity ratio is decreasing and deaths have reduced. Most positive patients are recovering in home isolation and those with severe symptoms are getting timely treatment. Delhi maintains high testing and bed availability,” it said.

The number of beds occupied in Delhi hospitals has been stable for a few weeks. Promoting home isolation has helped most people recover in the comfort of their homes, thereby reserving hospital beds only for patients with severe symptoms.

“The number of weekly Covid deaths in Delhi has consistently lessened. Since the beginning of July, weekly deaths have lessened by more than half as a result of timely diagnosis and treatment,” the Delhi government added.

According to the Delhi government, the city remains at the top in terms of testing per million. For every million people in Delhi, 58,963 samples were tested, which is significantly higher than last week’s 53,833.

“This is a strategy that has helped control corona globally and now in Delhi,” it said.

As per Monday’s health department bulletin, 12,323 tests were conducted in the last 24 hours.
Covid-19 facility fires offer safety lesson

Back-to-back early morning blazes in private Covid facilities, claiming eight and 11 lives respectively, should be seen as a much-needed wake-up call for state governments. Fire services are under the 12th Schedule of the Constitution and fall in the domain of urban local bodies. These have an abysmal performance record when it comes to enforcing fire safety guidelines.

After the tragedy, however, a fire safety check has been ordered on all hospitals in Andhra Pradesh. Several states and municipal corporations all over India have followed suit. It is likely to open a can of worms.

Already, the fire service department has reported that over 250 hospitals under the jurisdiction of the Greater Visakhapatnam Municipal Corporation have not obtained no-objection certificates. In Hyderabad, in neighbouring Telangana, 90 per cent of its 1,700 hospitals are not following fire safety guidelines.

Fire safety only remains on paper. Unplanned construction in densely populated areas remains the biggest threat. Only 30 per cent of cities have a fire master plan, which, in most cases, is outdated.

The National Building Code of India, 2016, stipulates regulations required for fire prevention and life safety for buildings. These regulations relate to design and construction; building materials; occupancy features necessary to minimise danger to life; smoke, equipment and installations and guidelines for fire drills and evacuations. Also, according to the Model Building Bylaws, 2003, building plans have to be referred to the chief fire officer.

However, like road safety, fire safety continues to stay on paper. Unplanned construction in densely populated areas remains the biggest threat. Only 30 per cent of cities have a fire master plan, which, in most cases, is outdated.

Those who lost their lives in the fire at Vijayawada’s five-storey Swarna Palace hotel, taken on lease by Ramesh Hospital, are more than mere statistics. Among them was Sathish Abraham, a pastor who had recently recovered from the disease but who stayed back to be with his wife, Raja Kumari. Raja Kumari, too, died in the disaster. Another patient, C. Pawan Sai Kisan, was the one to call up the police upon discovering the fire. The hotel’s fire alarm had not been working.

In both cases, a short circuit was the event that led to the blaze. In the Swarna Palace blaze, the hotel as well as the hospital knew of the presence of defects in the air-conditioning system and wiring but had not bothered to carry out repairs. The hotel did not have a fire safety certificate. As was the case with Ahmedabad’s Shrey Hospital, which is owned by Bharat Mahant, who defected to the BJP last year.

A common refrain is that private hospitals are capitalising on people’s reluctance to avail care at government hospitals during this crisis and are charging exorbitant fees. Ramesh Hospital, for instance, was charging its Swarna Palace patients a daily package of Rs 5,000 in addition to treatment and other charges. However, governments are reluctant to rein them in as yet.
**Disordered proteins in COVID-19**


Researchers from the Indian Institute of Technology Mandi (IIT-Mandi), Virginia Commonwealth University and the University of South Florida, US, have recently used computational tools to understand an important part of the viral proteome called Intrinsically Disordered Protein Regions (IDPRs).

Various research groups are racing against time to decode the COVID-19 virus for a cure.

The research team is headed by Rajanish Giri, Assistant Professor, School of Basic Sciences, IIT Mandi.

The results have recently been published in the journal 'Cellular and Molecular Life Sciences'.

The COVID-19 virus essentially consists of the genetic molecule, RNA, enclosed in an envelope made of lipid and proteins.

Once in the host, the virus surpasses the host's defence mechanisms and inserts its RNA into the host cells.

Then the virus hijacks the host cell machinery to use the viral RNA for production of viral proteins in a process called 'translation', and the infected cell starts generating toxic viral proteins, which leads to various conditions and symptoms.

It is known that proteins provide both structural and functional characteristics to living things and extraneous (viral) proteins can take over the functions of human cells.

"In COVID-19, the RNA is translated first into proteins which perform a wide range of functions. Since protein functions depend both on ordered and disordered regions, it is important to understand the whole proteome considering both ordered and disordered proteins", explains Giri.

The set of proteins or proteome comprises both ordered regions and disordered regions in proteins.

Giri said, "Intrinsically Disordered Proteins (IDPs), and Intrinsically Disordered Protein Regions (IDPRs) are gaining attention in recent times because they have been discovered to play vital roles in various biological processes."

The IDPs and IDPRs have been strongly correlated with the virulence of viruses, and understanding their structure and functions in COVID-19 can help in finding ways to mitigate the effects of the infection.
Both the protein structure and non-structure are fundamental things and their knowledge is paramount to understand the virus pathogenesis.

Using computational tools it is possible to investigate the propensities of the proteins and regions that may or may not form the structure.

"We have investigated the disordered side of SARS-CoV-2 proteome using a complementary set of computational approaches to check the prevalence of IDPRs in its proteins and to shed some light on their disorder-related functions and also their disorder-based binding motifs, known as molecular recognition features", says Giri.

Speaking of the implication of their finding, Giri added, "Since many IDPs/IDPRs undergo structural changes upon association with their physiological partners, our study generates important grounds for better understanding of the functionality of these proteins, their interactions with other viral proteins, as well as interaction with host proteins in different physiological conditions."

**Prion diseases**

**Researchers find new potential treatment for prion diseases (New Kerala: 2020811)**


A possible effective treatment strategy for patients suffering from prion disease, has been suggested by a novel study published by the Oxford University Press.

The result of the new study was published in the journal Nucleic Acids Research. Prion disease is a rapidly fatal and currently untreatable neurodegenerative disease. While prion disease is quite rare, it typically causes rapid neurodegeneration. About 300 cases of prion diseases are reported each year in the United States.

The most common form of prion disease that affects humans is Creutzfeldt-Jakob disease. Bovine spongiform encephalopathy, popularly known as Mad Cow Disease, is another prion disease. Prion diseases are caused by disrupting the structure of a normal human prion protein, producing toxic clumps in the brain. Because prion protein is central to disease, reducing levels of prion protein in patients is a promising therapeutic approach.

Senior author Sonia Vallabh learned that she carried a mutant form of the prion protein gene prior to switching careers to become a patient-scientist and advocate for treatment. She and her coworkers had previously observed that antisense oligonucleotides that reduce levels of the prion protein can extend the survival of animals infected with misfolded prions. While these initial data were promising, many critical questions remained before therapeutic development could be possible.
Research teams led by Vallabh at the Broad Institute of Harvard and MIT, Holly Kordasiewicz at Ionis Pharmaceuticals, and Deb Cabin at McLaughlin Research Institute, report the results of preclinical studies of an antisense therapy against prion disease. In this new work, using an expanded set of prion protein -targeting antisense oligonucleotides, the authors have laid the basis for full-scale clinical development. This research shows that, across multiple treatment paradigms, reducing levels of prion protein in prion-infected lab animals significantly extend their survival.

Researchers here showed that reducing levels of the prion protein can triple the survival of prion-infected animals. Even reducing prion protein levels by a small amount, which should be easier to achieve clinically, resulted in significant survival benefits.

Reduction of prion protein is effective across prion strains and across a battery of different treatment time points. The researchers show that reducing prion protein is effective before any symptoms are seen. They also demonstrate, for the first time, that a single dose of a prion protein -lowering treatment can reverse markers of disease even after toxic clumps have formed in the brain.

"While there are still many steps ahead," said Vallabh, "these data give us optimism that by aiming straight at the genetic heart of prion disease, genetically targeted drugs designed to lower prion protein levels in the brain may prove effective in the clinic."

Anxiety

Anxiety can harshly impact your skin, hair (New Kerala: 2020811)


The lockdown has resulted in stress for a lot of people - stress of being cooped inside for weeks together; the uncertainty looming large has taken a toll on peoples mental well being. Stress cannot be hidden; it is seen right on your face. The first tell-tale signs of stress are reflected on your face as pale skin and mild eruptions.

Stress causes hormonal imbalance which leads to acne, rashes, hair thinning and fall, and various other skin break-outs. It is imperative that people follow good skin care hygiene while they're locked indoors. Staying inside does not necessarily mean you can forego or overlook skin and hair care. These are prone to more damage owing to stress, Dr Geetanjali Shetty, Consultant Dermatologist and Cosmetologist, Cetaphil India tells IANSlife. "Hence we encourage people to follow a strict, if not elaborate, skincare routine, which involves cleansing, toning and moisturizing."

She adds "Similarly, nourish your hair with basic steps - oil your hair regularly, brush iamp; comb hair - staying at home isn't a license to not comb your hair, shampoo and condition your hair at least thrice a week. These are simple steps that can help you take your mind of the current situation and at the same time it will help maintain the health of your skin and hair."

Most important of all, keep yourself hydrated with water and lots of liquid, she says.
The expert lists down the impact of stress on skin, how to keep skin and hair healthy and the role of diet in it.

Side effects of Stress - Oily Skin and Acne

Acne and oily skin are the most common side effects of stress. When our body is stressed it releases cortisol which is our fight or flight hormone. The cortisol (stress hormone) weakens the skin's immune system, leading to oxidative (free radicals) stress, which manifests itself as wrinkles, lines and lacklustre skin. It also increases inflammation in the body and conditions like eczema, rosacea and psoriasis can flare up.

Keeping your hair and skin health

Hair is non-essential to physical survival and so it will always be the first part of you to suffer when something is off-balance in your body. But maintaining it is equally important. Using a warm, natural hair oil can do wonders for hair health and texture, while it aids repairing damaged hair, it also helps nourish your scalp. You should ideally warm around 100 ml of your chosen hair oil and then gently apply it on your hair every alternate day.

While for skin, the stress is quite evident in various forms like redness of skin, acne, etc. If there are skin breakouts and eruptions - it is advised to avoid exfoliation and stick to cleansing your face thrice daily. Similarly, those who are on the drier side should aim to wash their face only twice a day with a foaming cleanser. Should your skin need a little boost, indulging into Vitamin C will help combat the loss.

So if you know you're about to enter a stressful period, try to build in time for the activities that will help you to feel calm and rested - your skin will thank you.

Role of Diet!

Yes, it is highly imperative that one pays heed to what they're eating. The lockdown can result in redundancy, as your physical activities will be down by notches - this can cause your digestive system to slow down leading to poor digestion; the effect of which can be seen in multiple ways including your face - oily skin, acne, skin eruptions etc. It is highly recommended that people eat a nutritious and balanced meal to ensure the overall well being. Important that we stay away from fried and spicy food. Vitamin E is the superfood of the skin - you can apply it on the skin topically or you can chose to consume it through Vitamin E rich foods like almonds, corn oil, cod-liver oil, hazelnuts, lobster, peanut butter, safflower oil, salmon steak, and sunflower seeds. The most essential thing to bear in mind is to keep you hydrated - drinks lots of water, juices and liquids.

Finally, keep up your skincare routine - cleansing, exfoliating, and moisturizing. Keep a sunscreen handy for the times that you may have to make quick (only necessary) dash to the grocers. Even if you're not wearing makeup, your face still gathers sweat, sebum and dirt build up throughout the day.
Artificial vision

Researchers find clue to improve artificial vision for patients with retinitis pigmentosa (New Kerala: 2020811)


Important findings that could potentially improve the performance of retinal prostheses creating an artificial vision for blind individuals have been reported by a team of Korean researchers.

The Korea Institute of Science and Technology (KIST) announced that a research team led by Dr Maesoon Im of the Center for BioMicrosystems, Brain Science Institute had found retinal neural signals arising from electric stimulation are altered depending on disease progression in mice affected by outer retinal degeneration. This research was done in collaboration with the lab of Professor Shelley Fried at Harvard Medical School, Massachusetts General Hospital.

The research was published in the journal IEEE Transactions on Neural Systems and Rehabilitation Engineering.

Retinal degenerative diseases, such as retinitis pigmentosa and age-related macular degeneration, primarily destroy photoreceptor cells, which convert light into electrochemical signals, leading to profound vision loss. Currently, there is no available cure for these diseases.

Fortunately, retinal ganglion cells are known to survive those conditions, making "artificial vision" available. An array of microelectrodes can be implanted at the back of the eyeball so that electric pulses applied by those microelectrodes can stimulate ganglion cells to transmit visual neural signals to the brain again. This is the basic working principle of retinal prosthetic devices. Although several retinal prostheses have been commercialized, one of the problems preventing broad application has been a huge performance variation across patients due to unidentified reason.

The KIST research team had delved into the potential source of the performance variation and has found the level of disease progression may be critical. They designed a longitudinal study and performed experiments using mice at various stages of retinal degeneration. Those mice lost their vision gradually due to a genetic mutation which is similar to people with retinitis pigmentosa.

The researchers recorded electrically-evoked neural activities of retinal ganglion cells from animals at varying ages and tried to correlate those artificial vision signals to the disease progression. They uncovered that both the magnitude and the consistency of the electrically-evoked responses diminished as retinal degeneration advanced.

The response consistency is particularly important for retinal prostheses because they periodically refresh artificial visual percepts using repetitive electrical stimuli. For example,
when a retinal prostheses user stares at a letter "K" repeating electrical stimuli need to create neural signals representing "K."

Otherwise, i.e. if the response consistency is too low, the electrical stimuli might transmit neural signals meaning different letters such as "L," "R," or "S," thus making the prosthetic user difficult to correctly interpret what he or she is seeing. The KIST study suggests it is likely to be the case in severely degenerated retinas.

Throughout a series of experiments to assess the degree of similarities across different neural signals arising from repeated electrical stimuli of the same condition, they found that the response consistency considerably declined with the progressing retinal degeneration while normal retinas showed high consistencies.

Dr Young-Jun Yoon and Dr Jae-Ik Lee, the lead authors of the study, said, "Even if a user fixes his/her gaze, their degenerate retina is likely to keep transmitting considerably different neural signals to the brain across repeats of electric stimuli. Probably, it may have caused the poor perception of electrically-evoked artificial vision."

"Retinal degenerative diseases exhibit different patterns of progression across patients. Our results suggest that it is crucial to carefully select candidate patients of retinal implants by thorough examinations assessing the progression level of each patient's retinal degeneration," said Dr Maesoon Im. "We are studying hardware and software approaches for the improved quality of artificial vision for patients at the late-stage degeneration."

Researchers find clue to improve artificial vision for patients with retinitis pigmentosa

Testicular cancer patients

Study suggests standardised care likely to help equalise health outcomes among testicular cancer patients (New Kerala: 2020811)

Although sociodemographic factors have been associated with poor outcomes for patients treated for testicular cancer, guideline-directed, expert care can help to address this issue, suggest the findings of recent research.

The findings are published early online in CANCER, a peer-reviewed journal of the American Cancer Society (ACS).

Numerous barriers to optimal treatment for testicular cancer exist in underserved populations, such as individuals from ethnic minorities and lower socioeconomic strata. A team led by Aditya Bagrodia, MD, of the University of Texas Southwestern Medical Center in Dallas, examined whether standardised care may help to overcome these barriers and lead to better health outcomes.
At the investigators’ institution, the same group of diverse physicians takes care of patients with testicular cancer at two separate hospitals with different patient populations. One hospital is a safety net hospital for the people of Dallas County (Parkland Memorial Hospital) and the second (UT Southwestern Medical Center's Harold C. Simmons Comprehensive Cancer Center) is an academic tertiary care centre and National Cancer Institute-designated Comprehensive Cancer Center that sees mostly patients with private insurance or Medicare.

For the study, the medical records of all patients undergoing treatment for testicular cancer from 2006 to 2018 were analysed from both the safety net hospital and the academic centre. A total of 106 patients received care at the safety net hospital, and 95 were treated at the academic centre. The researchers noted differences between the two groups regarding insurance status, cancer stage at the time of diagnosis, and other factors, but cancer recurrence and mortality rates were similar.

"Despite stark differences in patient demographics that are usually associated with worse clinical outcomes—including lack of health insurance, delayed presentation, lack of primary care physicians, and minority ethnicity status—we found that standardized care with a multidisciplinary team led to no differences in the way patients were managed and equivalent clinical outcomes," said Dr. Bagrodia. "This study illustrates that standardised, expert care can overcome factors generally associated with worse clinical outcomes."

Study suggests standardised care likely to help equalise health outcomes among testicular cancer patients

**Type 1 diabetes**

**New test better predicts which babies will develop type 1 diabetes (New Kerala: 2020811)**


Scientists developed a method of combining multiple factors that could influence whether a child is likely to develop type 1 diabetes. The combined risk score approach incorporates genetics, clinical factors such as the family history of diabetes, and their count of islet autoantibodies -- biomarkers known to be implicated in type 1 diabetes.

The study led by scientists at the University of Exeter and the Pacific Northwest Research Institute in Seattle used the TEDDY data. Scientists at seven international sites have followed 7,798 children at high risk of developing type 1 diabetes from birth, over nine years, in The Environmental Determinants of Diabetes in the Young (TEDDY) Study. The TEDDY Study is a large international study funded primarily by the US National Institutes of Health and U.S. Centers for Disease Control, as well as by the charity JDRF.

In research published in Nature Medicine, the research team found that the new combined approach dramatically improved prediction of which children would develop type 1 diabetes,
potentially allowing better diabetes risk counselling of families. Most importantly, the new approach doubled the efficiency of programmes to screen newborns to prevent the potentially deadly condition of ketoacidosis, a consequence of type 1 diabetes in which insulin deficiency causes the blood to become too acidic. Identifying which children are at the highest risk will also benefit clinical trials on drugs that are showing promise in preventing the condition.

Dr Lauric Ferrat at the University of Exeter Medical School said "At the moment, 40 per cent of children who are diagnosed with type 1 diabetes have the severe complication of ketoacidosis. For the very young this is life-threatening, resulting in long intensive hospitalizations and in some cases even paralysis or death. Using our new combined approach to identify which babies will develop diabetes can prevent these tragedies, and ensure children are on the right treatment pathway earlier in life, meaning better health."

Professor William Hagopian of the Pacific Northwest Research Institute, said "We're really excited by these findings. They suggest that the routine heel prick testing of babies done at birth could go a long way towards preventing early sickness as well as predicting which children will get type 1 diabetes years later. We're now putting this to the test in a trial in Washington State. We hope it will ultimately be used internationally to identify the condition as early as possible, and to power efforts to prevent the disease."

Researchers believe the combined approach can also be rolled out to predict the onset of other diseases with a strong genetic component that is identifiable in childhood, such as celiac disease.

Sanjoy Dutta, JDRF Vice President of Research, said" We know that while genetics have a strong correlation as a risk factor for family members to develop T1D, most newly diagnosed individuals do not have a known family history. JDRF has been exploring the non-genetic, environmental risk factors that trigger T1D to help develop treatments to forestall or prevent disease onset."

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**Knee osteoarthritis**

**Study finds bone drug may be beneficial for knee osteoarthritis (New Kerala: 2020811)**

Bisphosphonates -- the drugs that prevent the loss of bone density and used to treat osteoporosis and similar diseases appear to be safe and beneficial for osteoarthritis patients, in a recent study.

Osteoarthritis (OA) is the most common form of arthritis and a leading cause of disability worldwide with more than 300 million sufferings with the condition, yet there are no effective treatments to stop the disease or its progression.

One of the lesions in OA that causes pain and progression of the structural pathology of the disease is bone marrow lesions.
Researchers believe bisphosphonates may alter bone marrow lesions, and thereby could improve pain in OA and halt its progression. Alternatively, they could also alter the mechanical properties of bone, thereby potentially contributing to detrimental effects.

Using data from the Osteoarthritis Initiative, a longitudinal cohort of people with or at risk for knee OA, the researchers identified women who started bisphosphonates and matched them to women who weren't on the drug.

Measurements in bone marrow lesion volume were taken when they first started on bisphosphonate and then a year later. Changes in bone marrow lesion volume between the two groups were then compared.

"When we looked at those who had bone marrow lesions at baseline, we found that the women who started bisphosphonates had had more bone marrow lesions that decreased in size than the women who did not start bisphosphonates," said corresponding author Tuhina Neogi, MD, Ph.D., professor of medicine and epidemiology at Boston University Schools of Medicine and Public Health.

"These results suggest that bisphosphonates do not appear to be harmful, at least over one year, and perhaps may even help decrease bone marrow lesions in those that have them," added Neogi.

According to the researchers, effective treatments for osteoarthritis are desperately needed.

"By examining existing data for potential signals of efficacy and safety, we can identify potentially promising therapies that should be further tested in trials with the aim to ameliorate the pain of osteoarthritis and improve the quality of life for the millions of people worldwide that have this disease," added Neogi, chief of rheumatology at Boston Medical Center.

Coronavirus (Hindustan: 2020811)

https://epaper.livehindustan.com/imageview_245523_80873108_4_1_11-08-2020_3_i_1_sf.html
Ignoring Coronavirus: कोरोना संक्रमण के बीच लंदन में समुद्र तट पर लोगों का ह्रास दे रहा है खतरे को दाकित (Dainik Gagaran: 2020811)

जानें, क्यों इस झरना के नीचे हमेशा जलती रहती है आग और क्या है इससे अनसुलझे रहतय
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यह भी पढ़े
इन सब के बीच ब्रिटेन में कोविड-19 का संक्रमण एक बार फिर से बढ़ता जा रहा है। ऐसे में सरकार दोबारा से लॉकडाउन लगाने पर भी विचार कर रही है। स्थानीय निकायों ने हर हाल में सोशल डिस्टेंसिंग का पालन करने को कहा है। इसके बावजूद लंदन के ब्रेकफैस, मुडफोर्ड, हाईलफ और डुल चीने में सूचना शांत खबराखबरी है और लोगों को तिल रखने तक की जरूरत नहीं है। इंट सॉसेस्टर में सोशल डिस्टेंसिंग का पालन करने को कहा है। उन्होंने सबसे देर इलेक्ट्रॉनिक डेटार ब्रोडकास्ट किया है।

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