Scientists find someone new to target in periodontitis fight

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SAN DIEGO, CA, USA: Researchers at the School of Dentistry at the University of California, Los Angeles (UCLA) in cooperation with the University of Michigan and the University of California, San Diego have identified a potential new focus of treatment for osteoporosis, periodontitis and similar diseases.

Dr Cun-Yu Wang, who holds UCLA’s Dr No-Hee Park Endowed Chair in Dentistry No-Hee Park Endowed Chair in the dental school’s Division of Oral Biology and Medicine, and his team suggested that inhibiting nuclear factor-κB (NF-κB), a master protein that controls the genes associated with inflammation and immunity, can prevent disabling bone loss by maintaining bone formation.

The NF-κB protein, a culprit in inflammatory and immune disorders, plays a major role in both osteoporosis and periodontitis, disrupting the healthy balance of bone destruction and formation. “Most studies focus on the part that NF-κB plays in the regulation of osteoclasts—bone-resorbing cells. For the past five years, we looked closely at the effect of NF-κB on osteoblasts—bone-forming cells,” said Dr Wang.

“We know that NF-κB promoted resorption. What we discovered in our in vitro and in vivo studies is that this protein also inhibits new bone formation, giving us a fuller picture of its role in inflammation and immune responses.”

The findings could offer new hope to millions who fight osteoporosis and periodontitis each year. The US National Institutes of Health estimates that in the US alone more than ten million people have osteoporosis, and many more have low bone mass, putting them at risk for the disease, as well as broken bones. According to the American Academy of Periodontology, mild to moderate periodontitis affects the majority of adults, while between 5 and 20 per cent of the population suffers from advanced periodontitis.

Many available treatments work to prevent further bone loss but are not able to increase bone mass. Dr Wang’s research results support the idea that a new drug that prevents the action of NF-κB in cells may represent a major therapeutic advance.

(Edited by Claudia Salwiczek, DTI)

Gum disease and myocardial infarction may share genetic predisposition

The link between periodontitis and myocardial infarction likely has a genetic cause. German and Dutch scientists recently presented the first evidence of a shared genetic variant of both conditions on chromosome 9, at the annual conference of the European Society of Human Genetics in Vienna in Austria. The chromosome, which represents approximately 4.5 per cent of the total DNA in cells, has been found to be associated with other health disorders, such as bladder cancer and leukemias.

A mutual epidemiological relationship between aggressive periodontitis and myocardial infarction has been shown in the past, but researchers were not certain of it. “We have examined the aggressive form of periodontitis, the most extreme form of periodontitis which is characterised by an early age of onset. The genetic variation associated with this clinical picture is identical to that of patients who suffer from cardiovascular disease and have already had a myocardial infarction,” said Dr Arne Schaefer from the Institute of Clinical Molecular Biology at Kiel University in Germany, one of the lead authors of the study.

Periodontitis affects over 90 per cent of adults over 60 and is the major cause of tooth loss in adults over 40. Because it has to be assumed that there is a causal connection between periodontitis and myocardial infarction, the condition should be taken seriously by dentists and thus diagnosed and treated at an early stage.

“Aggressive periodontitis has shown itself to be associated not only with the same risk factors such as smoking, but it shares, at least in parts, the same genetic predisposition with an illness that is the leading cause of death worldwide,” warned Dr Schaefer. He added that knowledge of the risk of heart attacks could also induce patients with periodontitis to keep the risk factors in check and take preventive measures.

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Leukaemia drug helpful in treating head and neck cancer

According to a press note treating head and neck cancer, revealed promising results for in New York City in the US, has Medicine of Yeshiva University Einstein College of anti-leukaemia compound, currently being studied at the Albert Einstein College of Medicine of Yeshiva University in New York City in the US, has revealed promising results for treating head and neck cancer. According to a press note released by the university last week, the new class of chemotherapy agents, known as histone deacetylase inhibitors (HDAC), succeeded in killing tumour cells that had been removed from head and neck cancer patients and grown in the laboratory. Head and neck cancer refers to tumours originating from the upper aerodigestive tract, including the lips, oral and nasal cavity, as well as paranasal sinuses, pharynx, and larynx. It is the sixth most frequent cancer worldwide, comprising almost 50 per cent of all malignancies in some developing nations, such as India. In the US alone, approximately 50,000 new cases and 8,000 deaths are reported each year.

Until now, the common form of treatment has been radiation therapy, and in some cases also surgery or targeted therapy, which uses drugs or other substances to identify and attack specific cancer cells without harming normal cells. HDAC inhibitors, such as LBH589 tested at Einstein, appear to combat cancer by restoring the expression of key regulatory genes that control cell growth and survival to normal levels.

In addition, the researchers identified a set of genes whose expression changes in response to the HDAC inhibitors, which could help doctors identify the patients most likely to respond to the drug. Plans call for testing LBH589 on head and neck tumour cells from more patients, so that the set of genes that respond to the drug can be more firmly established.