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Nacional Re

Selección Vida

ICLAM 2019

The union between East and West

ICLAM 2019: THE UNION BETWEEN EAST AND WEST

With the motto “the union between East and West”, Mumbai was the venue for ICLAM 2019. The last time this meeting was held in an Asian city was in Tokyo (1986).

Throughout the 21st century, Western societies are facing major challenges: an increase in the prevalence of obesity and type 2 diabetes mellitus, environmental problems (pollution, damage caused by chemical products, etc.) and a greater presence of neurodegenerative and neoplastic diseases.

To meet these challenges, we have developed new technological tools: the emergence of 5G technology, automotive cyber security, telemedicine, advances in nanotechnology (detection, diagnosis and treatment of cancer), robotics (surgery, exoskeleton) and advances in disease monitoring (heart rate, blood pressure, oxygen therapy, weight and heart volume).

There are three questions we must answer:

- Would the study of the genome prolong human lifespan?
- Are we on the right track to better understand neurodegenerative diseases?
- Will we find, in the short term, a treatment to defeat neoplasms?

Below we will review some of the most relevant presentations that took place during the meeting.

BREAST CANCER

In the field of oncology, insurance medicine faces major problems:

- Tumor variability
- Tumor heterogeneity
- The risk of mortality and disability increases over time and conditions survival
- There may be minimally remnant disease and it is impossible to estimate the duration of the cancer in sleeping cells

Breast cancer is one of the neoplasms that pose a challenge in insurance medicine, due to its heterogeneity and complexity. There are currently more than three million women with breast cancer in the United States who have survived the disease through early detection. Mammography has helped to increase the

BREAST CANCER

It is a type of **malignant tumor that originates in breast tissue cells, ducts or lobules**.

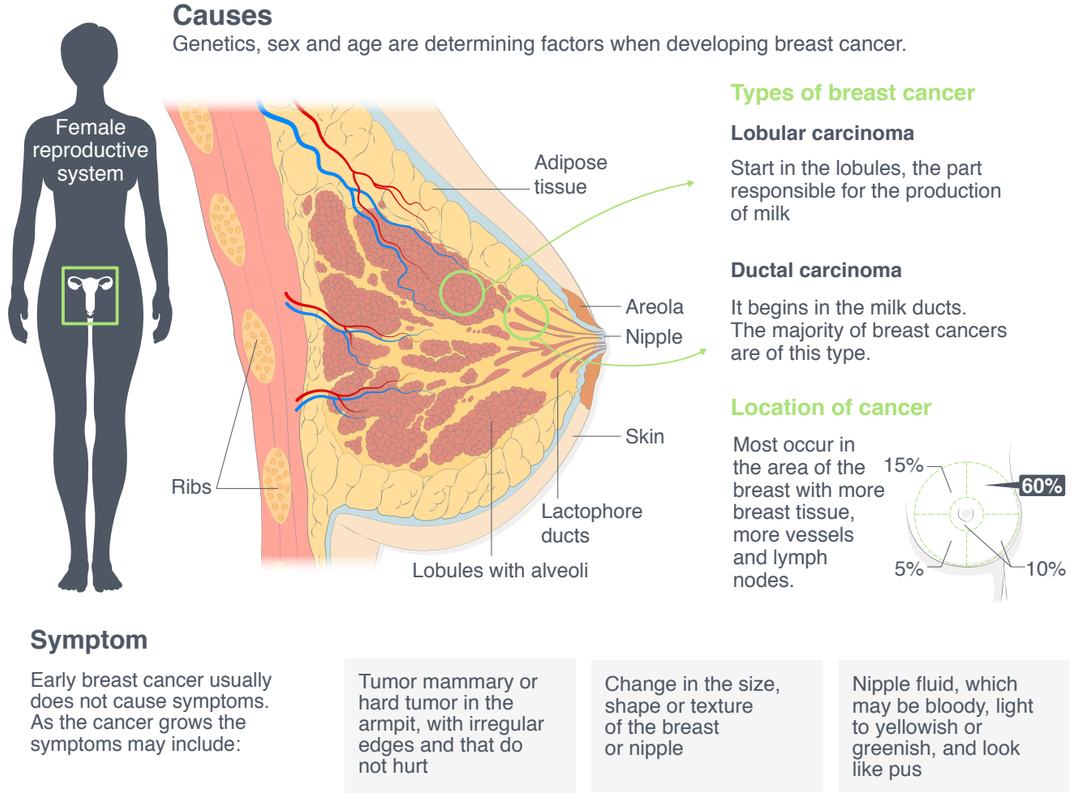


TABLE 1. Prognostic factors in breast cancer

Pathology: ductal, lobular, acinar
Age
Grade (I, II, III)
Hormone receptors
Time from diagnosis
Tumor size (T1-T4)
Lymph nodes (N0, N1, N2, N3)
Metastases (M0, M1)

detection of this neoplasm to 30% in recent years and at the same time to decrease the mortality by 10%. In addition, over the last 15 years, therapeutic advances have reduced mortality by 15%.

Table 1 shows the main parameters involved in the prognosis of this tumor. Multifactorial algorithms that estimate the risk based on these predictive factors would need to be developed in order to cope with such complexity.

An important aspect in this type of neoplasia is the genetic study, the BRCA mutation. It has been observed the incidence of breast cancer is 5-14% in general population, and this figure may rise to 70% if the BRCA mutation exists. If bilateral mastectomy and oophorectomy is performed in this selected population, the risk is reduced to 2.7-5%

GENETIC TESTING

Genetic testing is one of the fields in which insurance medicine needs more legislation and regulation. There is no regulation in this subject in most countries in the world at present time, so it is not possible to discriminate against a candidate according to genetic testing, and no anti-selection can be made from the family history.

Clearly, genetic information requires a different treatment from other medical information, but it may also have some advantages for the candidates:

- A full genome analysis could lead to a reduction in the price of the insurance.
- Also, a genetic study could correct a possible overestimation of the risks.

Monogenic diseases **(Table 2)** would benefit most from genetic testing, since in the case of an autosomal dominant inheritance only one affected parent is required to have the genetic mutation.

TABLE 2. Most frequent monogenic diseasesa

Huntington's Corea
Marfan's disease
Cystic Fibrosis
Tay-Sachs disease
Sickle cell disease

DIGITAL INSURANCE

Digital technology has made it possible to speed up the insurance sector. Applicants send their health questionnaires and their complementary tests (blood and urine tests, electrocardiogram...) in digital format, speeding up the work of the underwriters. Years ago, it would have taken forty-five minutes to rate a diabetic patient and now five minutes are enough.

With the risk calculators we are able to define the problem, analyze it through the database information, build a model, develop a proposal and monitor it. In addition, it allows us to reduce fraud and to categorize the risk.

On the other hand, digitalization allows any authorized member of the company to access the database, increasing production with less effort and optimizing time.

Intelligence automation processes applied to the health insurance business are capable of segmenting risks-predicting and are also able to make a decision (to reject, to investigate, to accept), based on them.

DIABETES MELLITUS

Diabetes mellitus is a chronic, progressive disease characterized by high concentrations of plasma glucose. In the last twenty years we have seen the emergence of several families of oral antidiabetics and new types of insulins, but despite these therapeutic innovations we have not managed to properly control the disease.

In industrialized countries, diabetes mellitus is involved in six of the seven leading causes of death and one third of deaths in people under 60. Likewise, diabetes mellitus mortality is higher than that of HIV, tuberculosis and malaria together. An increase in the prevalence and in the estimated incidence for the coming years must be added to these data **(Table 3)**. It is estimated that every twenty-one seconds a new diagnosis of diabetes mellitus is made in the United States, and that 52% of adults have a state of pre-diabetes or type 2 diabetes mellitus.

The control of diabetes mellitus requires efforts to modify lifestyle and to reduce body weight. One study showed that a reduction of more than 10 kilograms of weight maintained for 24 months leads to remission of type 2 diabetes mellitus.

TABLE 3. Estimate of diabetics in the forthcoming years

Year 2020: More than 300 million
Year 2025: More than 350 million

TABLE 4. Factors involved in the etiopathogenesis

Diet
Sleep
Medication
Microbiota
Genetic susceptibility
Appendectomy
Vitamin D
Tobacco
Hygiene
Physical Activity
Stress

INFLAMMATORY BOWEL DISEASE

Inflammatory bowel disease is an autoimmune disease affecting several segments of the gastrointestinal tract with multiple factors involved in its pathogenesis. A genetic susceptibility has been proven, and there are over sixty genes involved with an enormous heterogeneity.

Table 4 shows some of the factors that are most commonly involved in the onset of this disease. Among them, the microbiota deserves an additional comment. It has been seen a high heterogeneity in its composition between healthy individuals and those with inflammatory bowel disease. Dysbiosis seems to be both a cause and a consequence of inflammation of the intestinal lumen. It is a curious fact that after migrating to another country, the incidence of inflammatory bowel disease of the receiving country is adopted, being more marked this change the earlier the migration takes place.

Inflammatory bowel disease is an important disease because it affects people early in life, causes severe damage to the intestine over time, and it carries a greater risk for colon cancer.

In recent decades, as with most of autoimmune diseases, we have seen an increase in incidence and prevalence, which has been associated with an increase in morbidity but not in mortality.

The treatment for this disease (corticosteroids and immunosuppressants) is adapted to both its severity and its phenotypes. It has been observed that a proper control of the disease is associated with a lesser need for surgery, fewer complications and a decrease in the number of hospital admissions. In recent years, new approaches to the disease are being analyzed, such as intestinal microbiota transplantation.

MENTAL ILLNESS

It is estimated that one in seven people worldwide suffer from a mental illness (depression, anxiety, bipolar disorder, schizophrenia, drug abuse, alcoholism...). Nowadays, anxiety and depression are the most common of all these disorders.

The World Health Organization defines health as a complete state of well-being that includes physical, mental and social well-being. According to this, if we cover physical diseases, shouldn't we do the same with mental pathology?

A paradigm shift in mental illness is expected in the coming years, based on:

- Defining the lines of work in the diagnosis of mental illness.
- Evaluating the diagnosis, treatment and costs of the illness.
- Avoiding anti-selection.
- Increasing coverage.
- Understanding the needs of patients and their families.
- Avoiding prejudices towards mental illness.

To achieve these objectives, we need to improve underwriting, to measure the anti-selection of the applicants, to approach the disease as an opportunity rather than a risk, and to define mental illness related products based on the needs of the candidates.

To conclude, I would like to remember what Dr. Mishanshu, member of the organizing committee, said: "a single nation can make noise... but all of them together are able to play music".

CHRONIC DISEASES

In the prevention and implementation of health care, we need the involvement of many social and health actors: schools, hospitals, wellness centers, workplaces... In addition, to achieve a correct approach to chronic diseases, it is necessary to have the active participation of institutions (FDA, EMA), and their recommendations should be homogeneous and move in the same direction.

The more information we have, the more useful our actions will be in order to achieve a better health status. Table 5 shows some of the actions that should be considered to improve the state of health of the general population..

In addition to all this, a roadmap needs to be established setting out three actions:

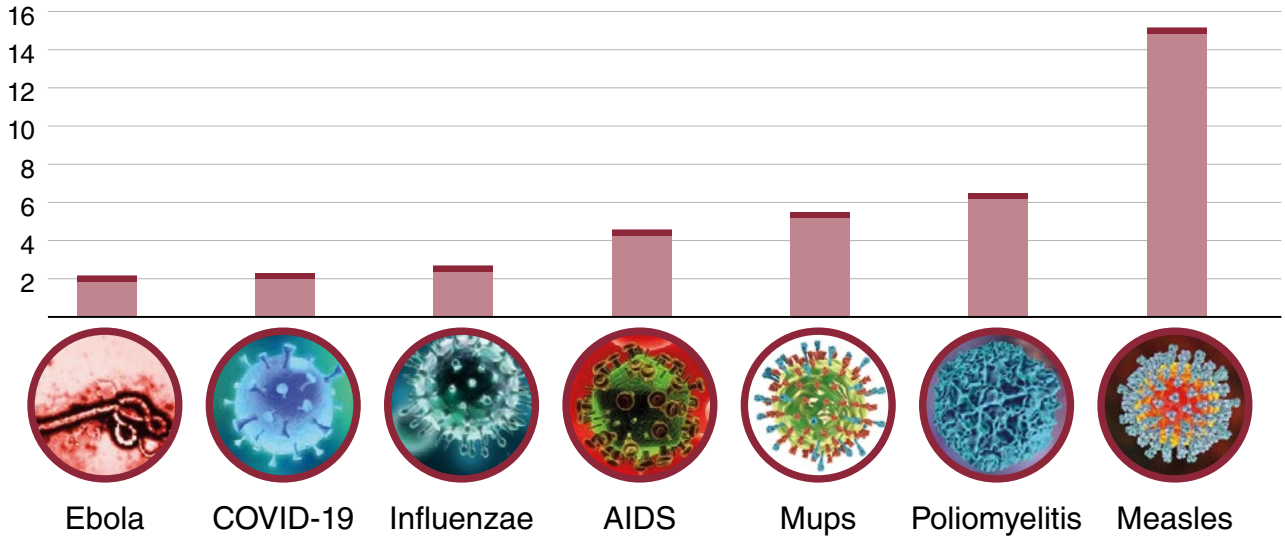
1. Standardizing parameter values.
2. Setting targets.
3. To evaluate data obtained from the previous ones.

TABLA 5. Actions to improve health

PARAMETERS TO BE CONTROLLED	LIFESTYLE	OTHER
Glucose	Number of steps per day	Diet
HbA1C	Body Mass Index	Level of activity
Blood pressure	Daily hours of sleep	Travels
Heart rate	Caloric intake	Medical checkups

Ro in different infectious diseases

Estimation of how a person would infect others by coming into contact with a fully susceptible community



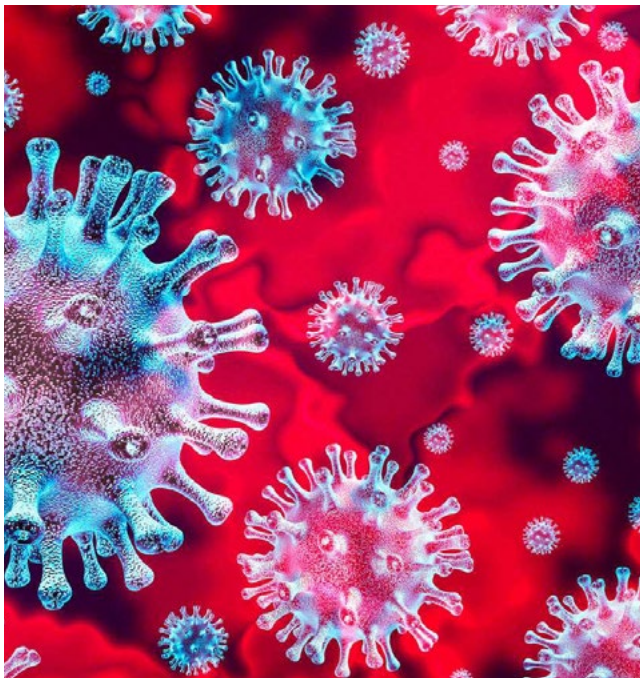
COVID-19

The current outbreak of COVID-19 originated in the Chinese city of Wuhan in late 2019, for the third time so far this century, due to a zoonotic leap - between different species.

As for the species involved, it is still unknown, at first it was pointed to pangoli, but weeks later the scientific community denied this statement.

The speed with which an infectious disease spreads depends on several factors, on the one hand the epidemic potential of the microorganism, that is, on an estimated calculation of how a person would infect others, when coming into contact with a totally susceptible community. This epidemic potential is called Ro. If one person infects two, Ro is said to be 2.

For us to get a more precise idea let's go with a comparative calculation. The Ro of measles usually ranges between 12 and 18, which means that it is a highly contagious disease, while for the influenza virus it remains between 2 and 3 (Graph 1). On the assumption that Ro equals zero, the epidemic has ended.



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