

Incidence of Malignancy in the Future?

Sir,

The incidence of communicable disease is started decreasing in most of the developing and developed countries. Now, it is era for noncommunicable disease such as diabetes, hypertension, obesity, and malignancy. The development of malignancy is a multifactorial.^[1] It includes environmental factors, toxins, microbiological agents, and genetic mutation. As per Charles Darwin statement, any living tissue to maintain its sustainability, it has to undergo several modifications. We know our human race also acquired several anatomical and genetic changes before reaching current era.

Now, there are increased incidences of malignancy because of environmental factors or microbiological factors. These increased incidences may be due to high exposure of environmental toxins or detection of malignancy by available medical gadgets. However, in the future, there are changes that might happen in our own genome to maintain our human rare. The best example for this is the development of genetic mutation or alteration of proteins by microorganism against particular antibiotics. Before three decades, penicillin is a very good antibiotic with broad spectrum action to all organisms. Soon later, there are developmental modifications in the microorganism for antibiotics susceptibility. Now, we can see beta-lactamase-producing

bacteria, methicillin-resistant bacteria, and extended methicillin-resistant *Staphylococcus aureus*.^[2]

Above said was an example for genetic modification for sustaining life. Similar effect might happen in human genome also, that make our genome resistant against environmental toxins. Now, we see a lot of patients with malignancy at younger age group than older age group. It may be due to environmental factors or early detection.^[3] We know that in our genome, we have p53 which is called guardian of genome because it acts as a filter against the development of cancer cells. Similar to p53 genes, we have numerous genes which control the proliferation of cells.^[4] In due course, our genome also undergoes modification to evade genetic modification made by environmental factors. This can happen by several ways such as the development of alternative pathways, resistant to environment factors. In the future, our somatic cells will undergo genetic modification thereby it decreases the incidence of malignancy. However, it may not be permanent because modified gene can be susceptible to other factors which may not be risk factors now. It is important because we can anticipate less incidence of current malignancy and development of new malignancy. Second, currently available chemotherapeutic agent may not be efficient against new malignancy. For example, when we identified imatinib for chronic myeloid leukemia, it was very effective against cancer cells. But, very soon, there is the development of malignant cells which were resistant to imatinib and susceptible to sunitinib.^[5] In the future, there will be reports of sunitinib-resistant malignancy.

To conclude, genetic alterations are always mandatory to sustain the life of living organism. If that organism fails to undergo modification, that genome will be erased from life. Similar effect might happen in human genome also, against cancer cells by means of genetic alteration to tackle environmental stimuli. Hence, we need to develop new chemotherapeutic agent or genetic alteration that might tackle future incidence of malignancy.

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