Malaysian J Pathol 2010; 32(2) : 143

LETTER TO EDITOR

DNA damage and mutagenesis: is it an issue for swine flu?

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Dear Editor

In virology, many pathogenic viruses can induce DNA damage and can cause mutagenesis. Here, the author would like to discuss on swine flu virus, a novel H1N1 influenza virus that causes worldwide emerging viral infection at present.[1] As a viral infection, the induction of DNA damage might be expected in the case of swine flu. Indeed, several viruses can cause DNA damage and this might lead to cell death or cellular abnormalities. In the case of classical H1N1 influenza virus, there are some publications on its induction of DNA damage. Similar to other viral infections, the DNA damage in influenza infection is believed to be due to free radical species and nitric oxide (NO) or its derivatives.[2] The DNA damage due to influenza virus infection is believed to relate to apoptosis. However, the exact cellular pathways involved in influenza virus induced apoptosis are presently ill defined. Uchide *et al*. reported that typical apoptosis induced by influenza virus could be observed in human cell culture and was characterized by DNA ladder formation.[3] In addition, fragmentation of nuclei and chromatin condensation can be observed.[4] Recently, it was reported that this DNA ladder formation could be reduced by supplementation of antioxidative substances.[5] DNA damage and apoptosis caused by influenza virus seems to be controlled by the antioxidative system.

Focusing on the novel swine flu, there is no report on DNA damage. However, there is an interesting report on activation of the intrinsic mitochondrial apoptotic pathway in classical swine influenza virus.[6] Choi *et. al* noted that classical swine influenza infection increased the cellular levels of TAJ, an activator of the JNK- stressing pathway, and the c-Jun protein.[6] Thus, it might be assumed that classical swine influenza virus induce apoptosis via the mitochondrial pathway. Nevertheless, there is also no exact study to assess the mutagenesis property of swine flu virus. Indeed, mutant in influenza is widely mentioned however limited reports could be seen on its mutagenesis property.

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