

The report that reduced micronutrient intake may lead to nutritional deficiency lends credence to osmotic fragility of red blood cells observed in the HIV positive subjects. Anorexia, nausea, vomiting, and diarrhea are conditions that can result in reduced nutrient intake, which leads to malnutrition. These secondary symptoms have been observed and reported in acute and late stage HIV disease.

It may seem surprising that patients who are undergoing antiretroviral therapy, and are showing significant improvement in health, should also be significantly susceptible to osmotic stress. These patients may have osmotically fragile cells also as a result of micronutrient deficiency. Stephensen et al⁵ and Jordao et al⁶ reported that deficiency might occur in HIV/AIDS as a result of increased urinary excretion. Antiretroviral therapy involves a cocktail of drugs taken under a strict regimen. In an attempt to detoxify or metabolize, or both, these drugs the liver increases their water solubility. Ultimately, there is an increase in urine production and a depletory loss of vital water-soluble nutrients like the metallic ions may occur. The patients may therefore suffer from conditions like anemia. Zidovudine (AZT) therapy has been reported to be the most frequent cause of anemia in HIV-infected persons. This supports our findings of a possibility of anemia in patients on antiretroviral therapy. Whereas previous works have attributed this condition to marrow erythroid hypoplasia, aplasia, and megaloblastic maturation, we believe that from the present data and cited literature, osmotic fragility resulting from a micronutrient deficiency is critical to the development of anemia in antiretroviral therapy patients. Sodium⁺-potassium⁺ adenosine triphosphatase activities of the erythrocytes were found to be increased in non-ARV and ARV HIV positive patients compared to HIV negative patients, though they were not statistically significant in the present study. The increased activities may be a consequence of the osmotic fragility of the plasma membrane of the erythrocytes discussed above. The Na⁺-K⁺ ATPase pump is the primary mechanism by which the cell prevents lysis from osmotic stress. The activity of the pump increases when the cell is threatened with plasmolysis. The pump performs a continual surveillance role in maintaining normal cell volume. The Na⁺-K⁺ ATPase activities increased with the degree of severity of the disease as measured by the CD4⁺ counts. For both the ARV and non-ARV groups the average Na⁺-K⁺ ATPase activity of those with CD4⁺ counts of less than 200 cells/ μ l of blood was higher than those with CD4⁺ counts of between 200-499 cells. Further, the activities of the ATPase in the 2 CD4⁺ count classifications (200-499 and less than 200 cells/ μ l) were higher for the untreated HIV/AIDS subjects than the treated subjects (the non-ARV and ARV subjects).

Data shows that the Na⁺-K⁺ ATPase activity of HIV/AIDS persons was slightly elevated with

increased severity of the disease. This corroborates the preceding finding that the erythrocytes of HIV/AIDS persons are highly susceptible to osmotic stress and greater so when the disease is left untreated. The plasma membrane becomes highly porous to trans-membrane cationic movement. Cations like Na⁺ and K⁺ move down their concentration gradients. In an attempt to reverse the resultant hypernatraemia of the intracellular fluid the Na⁺-K⁺ ATPase activity is increased.

In conclusion, data obtained from the present study indicate that osmotic fragility of erythrocytes is significantly increased in HIV disease. The Na⁺-K⁺ ATPase activity of the erythrocytes is only marginally increased in an attempt by the cells to reverse the deleterious effects of osmotic fragility in HIV/AIDS disease.

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Tonsillectomy blood splash

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Hepatitis B virus and human immunodeficiency virus (HIV) can be transmitted via certain routes including conjunctiva.¹ Tracheostomy, air drilling, local anesthetic infiltration and beside other numerous surgical procedures, tonsillectomy puts otolaryngologist

at risk of acquiring these dreadful diseases. A telephonic survey was carried out of major medical centers in the Kingdom of Saudi Arabia (KSA) to inquire if otolaryngologist use protective eye cover during tonsillectomy; none of the surgeons took precaution to prevent blood splash.

A prospective study was carried out at the North West Armed Forces Hospital in Tabuk, from February through to September 2002 of 100 patients who underwent tonsillectomy with or without adenoidectomy. Five Surgeons, grade Senior Registrar/Consultant, were involved. The method of surgery was the classical dissection and electrocautery. All involved surgeons wore protective eye cover or spectacles, which were examined before and after surgery for blood contamination.

A total of 100 patients were included in the study, 63 males and 37 females, of these 74 were pediatric and 26 were adults. Only one pediatric case that had adenotonsillectomy was noted to have caused blood splash. There were 3 blood spots on the left lens of the spectacle ranging in size from 0.2-0.5mm. The surgeon was aware of the splash. Method of surgery, patient's age and type of surgery did not affect the outcome. The danger of transmission of blood-borne viral infection, hepatitis B, C and HIV, during surgery is on the rise, with the increase of infected cases. In the KSA, according to an official report, there are 1,238 HIV² carriers. Sexual contact, blood transfusion, skin prick and transconjunctival are known routes of transmission of these infections; nevertheless, the latter is underestimated. It is worth noting here, medics and paramedics in KSA, who may get infected in line of duty, are compensated, as stated in the civil service regulations in vague terms³ and there are no rehabilitation programs.

It is assumed that senior surgeons may be exempted from using protective eye cover during tonsillectomy. Their experience may well prevent splattering of blood as of their tidy surgery, in contrast to junior doctors. However, experience of the surgeon may decrease the risk, but does not eliminate it, as seen here in our study

(1%), which was the least in comparison to other studies 46% and 23.7%.^{4,5} In either case, the center for disease control (CDC) recommends goggle use during any procedure that may result in eye splash by bodily fluids. Fluid shield mask that covers nearly all of the face was used by one surgeon, but proved to be cumbersome, especially when using a headlight. The second eye cover used, could sit comfortably with the headlight, was a plastic goggle. Two surgeons used spectacles as eye cover, which provided partial protection.

They were the most comfortable. Age of the patient as previously reported⁴ did not affect the result and the method of surgery had no impact on the outcome. It would be interesting to compare these and other results with laser surgery, as the set up is completely different where the use of eye cover is mandatory and bleeding is minimal.

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