



Elevated blood histamine caused by vaccinations and Vitamin C deficiency may mimic the shaken baby syndrome

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Summary The findings of subdural hematoma and retinal hemorrhages in infants, without any documented history of major trauma, do not always indicate child abuse. A combination of ascorbate depletion and the injection of foreign proteins can cause a very high blood histamine level, leading to capillary fragility and venular bleeding. This can be prevented by the administration of vitamin C.

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Introduction

Standard teachings in pediatric pathology contend that subdural hematoma and/or retinal hemorrhages, in the absence of a documented history of major trauma, should be considered as diagnostic of child abuse. This teaching has led to many parents and nannies in the United States, Britain, Canada, Australia – two in France and one man in Iceland – being convicted of child abuse and sentenced to long terms in prison, without any actual observation of abuse and without any genuine evidence of shaking.

We are indebted to Fung et al. [1] at The Chinese University of Hong Kong for having the insight and the integrity to question this conventional teaching. They found no history of shaking or physical abuse of the patient or in the infant's

family in any of the nine cases of subdural hematoma reviewed. These authors suggest that the pathognomonic association between subdural hematoma/retinal hemorrhages and child abuse may be a self-fulfilling prophecy. At last, someone has had the candor to say that the Emperor has no clothes.

Capillary fragility

If not child abuse, what then could have been the cause of the very serious hemorrhages leading to the four cases of spastic quadriplegia, convergent squint, epilepsy, delayed development, and other lesions in those children studied by Fung?

No blood coagulation defect was found in any of the infants, so one has to consider capillary fragility as a possible cause. As an obstetrician, I am reminded of the fact that cerebral and retinal hemorrhages sometimes occur in women with ex-

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cessive vomiting in pregnancy. Very severe cases of hyperemesis gravidarum led to Wernicke's hemorrhagic encephalopathy and death, until Lund and Kimble [2] of Madison, WI, in 1943, wrote:

Hyperemesis Gravidarum may lead to dangerously low levels of vitamin C. Clinical scurvy may appear. The retinal hemorrhages of severe hyperemesis gravidarum are a manifestation of vitamin C deficiency and are similar to petechial hemorrhages seen elsewhere. The hemorrhages cease after adequate therapy with vitamin C; henceforth they are not necessarily an indication for the use of therapeutic abortion.

Plasma ascorbic acid levels

In 1980, I had the privilege of reporting [3] that the whole blood histamine levels of human subjects are inversely proportional to their plasma vitamin C levels — Fig. 1. Even the 34% of people who had subnormal but not deficient ascorbic acid levels were found to have significantly increased blood histamine concentrations. The 2% of subjects who were markedly vitamin C depleted (<0.2 mg/100 mL or <11.4 $\mu\text{mol/L}$) had a four- to fivefold increase in their blood histamine concentrations. Frank scurvy does not occur until the blood hista-

mine concentration is increased more than tenfold. Nevertheless, the blood histamine concentration returns to normal very rapidly following the oral administration of ascorbic acid.

Histaminemia

Electron-microscopic studies by Gore et al. [4] in guinea pigs with scurvy have shown widening of the intercellular junction gaps in the vascular endothelium. Moreover, Majno and Palade [5] have observed similar widening of the endothelial junction gaps and leakage of tracer particles through endothelial gaps in rats following the injection of histamine.

There is no abnormality of the blood coagulation mechanism in scurvy, but there is a significant collagen defect. Nevertheless, there is hardly any collagen surrounding the capillaries and small venules from which scorbutic bleeding arises, so it seems that histaminemia is the crucial factor causing bleeding in scurvy and may be responsible for the fragility of the bridging veins and venules between the brain and the dura mater, as well as the retinal petechiae.

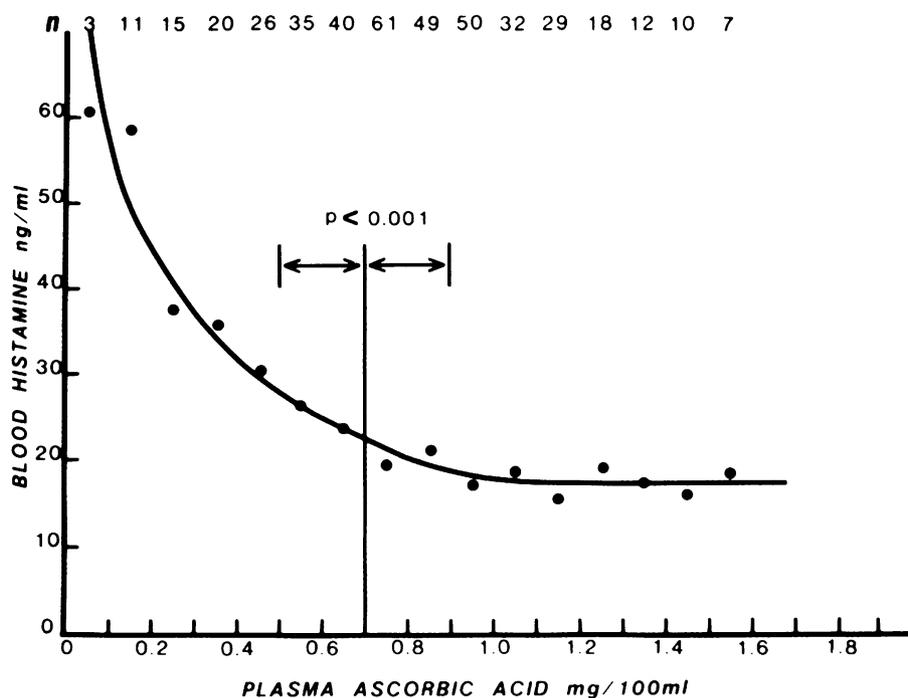


Figure 1 Results of plasma ascorbic acid (reduced form) and whole blood histamine concentrations in the same blood samples from 437 human volunteers in Brooklyn, NY (1980). A highly significant increase in the blood histamine level was evident when the plasma ascorbic acid level fell below 0.7 mg/100 mL. This comprised 150 of the 437, or 34%, of the men and women. From Clemetson, C.A.B., p. 6, Vol. III. In *Vitamin C* (1989), reproduced with permission from CRC Press.

The reason for the inverse relationship between histamine and ascorbic acid, is that L-ascorbic acid is essential for the detoxification of histamine by conversion to hydantoin-5-acetic acid and on to aspartic acid *in vivo*, as shown by Chatterjee et al. [6]. Other so-called antihistamines used for the treatment of maladies such as hay fever and asthma, or for gastric acidity, act by blocking H₁ or H₂ receptors, respectively. They do not remove histamine from the blood; they only block its effect at specific sites.

Since histamine is well recognized as a cause of capillary fragility and may well be involved in the association between retinal petechiae and subdural hemorrhage in infants, we must consider any other causes of histaminemia besides vitamin C deficiency. Heat, cold, sleep-lack, infection, and other stresses must be considered.

Inoculations

The injection of foreign proteins springs to mind and is particularly pertinent, as many infant deaths occur within 13 days after multiple inoculations. Some years ago, infants received only one or two inoculants at a time, but now many infants receive as many as six different inoculants all at one time, at eight weeks of age. We must recognize that mild histaminemia due to moderate ascorbate depletion can be turned into severe histaminemia following the injection of too many toxins, just as mild histaminemia is converted into severe histaminemia by sleep-lack in adults [7].

Protective effect of ascorbic acid

The protective effect of ascorbic acid is very pertinent because Kalokerinos [8], working in Australia, observed many deaths in Aborigine children following their usual inoculations and eventually discovered that the deaths ceased completely when they received ascorbic acid supplements. This observation in humans is consistent with the highly significant, protective effect of ascorbic acid in reducing the morbidity and mortality of guinea pigs following the injection of diphtheria toxin, as shown by King and Menten [9] in 1935, soon after the discovery of the chemical structure of vitamin C by King and Waugh 1932 [10].

It was the work of Parrot and Richet [11] in guinea pigs which revealed that ascorbate depletion increases histamine sensitivity. They found that the dose of histamine causing death in half the

animals (LD50) was reduced from 8 to 2.5 mg/kg after 5 days on a vitamin C-deficient diet.

Search of the World literature [12] reveals that supplementation with vitamin C protects against the morbidity and mortality from typhoid, diphtheria, tetanus, and four varieties of gas gangrene toxins in animals. Even rats, mice, and rabbits – which make their own ascorbic acid in the liver – have been found to be protected by supplementary vitamin C. Although they make their own ascorbic acid, it is evident that they do not always make enough of it to protect themselves from a major assault by foreign proteins.

Clearly, the ascorbic acid is not so much protecting the animals from the direct effect of the toxins themselves, as it is from the histaminemia resulting from the toxins.

Every inoculant licensed for marketing has been found to be safe on its own, but the administration of six inoculants at one time is quite another matter. Moreover, vaccinations or inoculations which are safe for mature infants in good health, may be too much of a challenge for premature, growth-retarded, or sick infants.

Detailed summary of hypothesis

- Subdural hematoma and retinal petechiae in an infant do not always indicate child abuse.
- Even minor ascorbic acid depletion is associated with an exponential increase in the blood histamine level (Fig. 1).
- This is because ascorbic acid is essential for the removal of histamine from the blood by converting it to hydantoin-5-acetic acid and on to aspartic acid *in vivo*.
- The histaminemia of moderate ascorbic acid depletion is compounded by any histaminemia resulting from the injection of foreign proteins.
- Such enhanced histaminemia causes capillary and venular fragility and can lead to retinal petechiae and bleeding from the bridging veins between the brain and the dura.
- Now that infants receive as many as five or six inoculants together at eight weeks of age, we are witnessing an increased number of severe vaccination reactions and the development of a Barlow's Disease Variant, with bleeding phenomena similar to infantile scurvy.
- Extravascular hemorrhage can lead to hemolysis and jaundice, and the hemolysis can destroy any residual ascorbic acid.
- Further ascorbic acid depletion causes defective collagen formation, leading to bone fragility

shown as multiple rib fractures, epiphyseal separations, and sub-periosteal hemorrhages in the long bones, simulating child abuse.

- Infant deaths occurring within three or four days after inoculation are usually considered as vaccine-related, but deaths due to Barlow's Disease Variant described herein may occur up to two weeks after inoculation.
- Review of the World literature [12] reveals that vitamin C reduces the morbidity and mortality following vaccinations, both in animals and in man.

Conclusions

1. Vaccinations or inoculations should be postponed for any infant with an upper respiratory infection or other malady.
2. Consideration should be given to reducing the number of inoculants given at one time.
3. Every infant to be inoculated should receive 500 mg of L-ascorbic acid crystals or powder dissolved in fruit juice to drink beforehand.
4. Any infant showing untoward reactions, such as a high-pitched cry, high fever or convulsions following an inoculation, should receive additional L-ascorbic acid by injection.

Proposed research

At 80 years of age, I am unable to continue this work; but plasma ascorbic acid (reduced form) and whole blood histamine levels in the same blood samples need to be analyzed, both before and at set intervals after single or multiple inoculations.

In order to obtain duplicate ascorbic acid and duplicate histamine analyses, we have in the past

used 20 mL blood samples. Such studies would therefore be better conducted on soldiers, sailors, airmen, and marine volunteers being posted overseas, rather than babies. It will then be possible to establish which inoculants cause the most histaminemia, and when it peaks. Undoubtedly, those with low ascorbic acid levels will show the greatest histaminemia.

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