

# Shaken Baby Syndrome or Scurvy?

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There has undoubtedly been a grave miscarriage of justice in the conviction of Alan Yurko of Orlando, Florida, who was accused of "shaken baby syndrome" and was sentenced to life imprisonment for murder. The error seems to have arisen because of fashionable adherence to a diagnosis now in vogue, and to a desire to blame one single preventable occurrence for an infant death. Everything is supposed to be preventable nowadays.

Surely Alan held his 10-week-old son by the heels and slapped him on the bottom after he began wheezing, spat up and stopped breathing, but he did not cause his son's death; he was trying to resuscitate him.

Actually the infant died from a concatenation of circumstances, having been born prematurely, weighing 5 lbs. 8 oz., of a malnourished mother with several medical problems. After becoming pregnant, she became sick and remained so during her pregnancy, often to the point of dehydration, going from her original weight of 130 lbs. down to 120 lbs. at one point and finally coming back to her original weight of 130 lbs. at the time of delivery. She said she was too sick to take her prenatal vitamins.

When one considers that the currently recommended weight gain for pregnancy is 25 to 30 lbs., it is clear that she was malnourished and so was her unborn child. The infant had several medical problems including respiratory distress syndrome, pneumonitis and also jaundice which was still evident four weeks after leaving hospital; his health was further impaired when he received six inoculations (for diphtheria, whooping cough, tetanus, influenza B, oral polio vaccine and hepatitis B) at eight weeks of age.

Actually, the autopsy findings of subdural hemorrhage, four broken ribs, severe

anemia and a few bruises, are characteristic of Barlow's disease or infantile scurvy, but that diagnosis went out of fashion many years ago, so no blood analysis for vitamin C or for histamine was conducted. The prosecutors suspected both parents, but Francine Yurko refused to implicate her husband and Alan Yurko refused to plead guilty to a lesser charge, because he knew he was innocent.

Undoubtedly many others have also been wrongly convicted on equally flimsy evidence, sometimes just because there were petechial hemorrhages in the retina at the back of the eye, or because the fatal event occurred more the usual 3 to 7 days after the inoculations.

Undoubtedly child abuse does occur and we are all alarmed when we hear about an infant with bruises and broken bones, but we must appreciate that there are genetic disorders such as osteogenesis imperfecta, fragilitas osseum (brittle bone disease) other metabolic disorders and also nutritional states like Barlow's disease, which can be mistaken for child abuse.

It is said that ignorance is bliss; this may be true for those who give evidence in our law courts with such conviction, following the standard teaching of the day. We should all keep an open mind and consider the possibility that the standard teaching may be wrong.

## Barlow's Disease

In the first half of the twentieth century many infants with bruises, broken bones and sores that would not heal, were correctly diagnosed as having infantile scurvy or Barlow's disease, and recovered quickly when treated with orange juice, but now people don't want to believe that malnutrition still occurs in the Western World, so one or other of the parents or a care giver has to be accused and possibly convicted of child abuse, without any blood analysis

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for vitamin C. Sores that will not heal are seen as cigarette burns and reported in newspapers. Barlow's disease used to occur even in the homes of the wealthy, sometimes due to the custom of boiling cow's milk to kill the germs of tuberculosis, sometimes due to feeding of a commercial "malt soup", whose alkalinity destroyed vitamin C and sometimes due to ignorance of the need to provide an orange juice supplement for bottle-fed infants.

There are even records of such an infant suffering a complete fracture across both femoral bones of the thigh in hospital, when a nurse lifted the heels in the gentle act of diapering a scorbutic infant. Luckily it did not occur at home, for even then someone would have been suspected of child abuse. Part of the problem now arises from the child abuse laws which require immediate reporting of any suspicion of child abuse, so that even the natural pigmentation of the "Mongol Spot," just above the natal cleft, was suspected as child abuse when a young mother brought her baby to our hospital for advice because it was not thriving. One of the nurses rushed to the phone to call the child abuse authorities. Before long the nurses were presenting the infant to each other, to social workers and to the doctors, as "this is the child abuse case". The physician who first sees the infant can have his or her opinion prejudiced by such hysteria, before making an examination.

What has happened to the practice of medicine? Our duty as physicians is to make a well-considered diagnosis and to provide advice with compassion, not accusation and vilification. Soon parents will be afraid to take their children to the emergency room of a hospital after a fall for fear that some "expert" will find petechial hemorrhages in the eyes and label the parents as child abusers. The social workers are in an unenviable position, for they can be damned if they do and damned if they don't remove a child from parental custody. Even more perilous is the job of infant care

providers and pre-school teachers, who have so often been embroiled in totally unreasonable litigation, like the McMartin pre-school family, who endured a new version of the Salem Witchcraft Trials.

### **Popeye, A Case of Classical Adult Scurvy**

Ignorance is bliss. Not many people are aware that "Popeye the Sailor Man" was a well recognized character to be seen around any English seaport in the days of sail. The protrusion of one eye was due to a hemorrhage behind the eye ball (a retrobulbar hemorrhage) due to scurvy; this was only one of many hemorrhages beneath his skin and elsewhere; he should be recognized as a symbol of suffering who deserves our compassion and not a comic cartoon character for people to laugh at. He is a young man, who looks old beyond his years due to scurvy. He would have had foul breath due to his infected bleeding gums. His pipe juts up in front of his face because he has lost all his teeth to scurvy and he is holding his pipe between his upper and lower gums.

Clearly he has returned from a long sea voyage where he lived on food held in storage and maybe as many as half of his shipmates died of scurvy. We are told that his arch enemy "Bluto" has gone off with his woman "Olive Oil" and his child "Sweet Pea," but he does not have the strength to fight Bluto until he has been fortified with spinach. Of course it is vitamin C-rich fresh greens or fruit that he needs, not canned spinach that has lost its vitality, but his misery has been exploited and transformed into an advertising cartoon. In fact, we may conjecture that these poor men received little respect at the time, for the phrase "scurvy knave" persists in our literature.

It will be about a week before his bleeding gums are healed when he gets oranges, lemons, limes, tomatoes or lettuce, but it will be several weeks before his strength is restored. The bleeding gums, which are so characteristic of adult scurvy, are not seen in toothless infants, so the diagnosis is

easily missed. Infection causes local vitamin C deficiency and vitamin C deficiency predisposes to infection, so a vicious cycle develops. Clearly it is the bacteria in the crevice between the tooth and the gum that cause a local infection leading to the foul mouth and the swollen bleeding gums of adult scurvy. This does not occur in edentulous infants.

### Borderline Vitamin C Deficiency

There is a wide separation between frank scurvy and perfect health, and this is becoming more and more apparent as we learn about the underlying defects in vitamin C deficiency.

Bleeding from the smallest blood vessels, the capillaries and small venules is the principal manifestation of the disease; this is due to a weakness of the blood vessel wall and not the result of any defect in the blood coagulation system. Several tests have been used to measure capillary fragility, the strength or weakness of the small blood vessels, by counting the number of small pinpoint hemorrhages or petechiae produced by suction on the skin of the arm or by venous occlusion, but these tests for vitamin C depletion are rendered unreliable by the fact that so many other conditions such as thrombocytopenic purpura, measles and scarlet fever also cause capillary fragility and petechial hemorrhages. Only by chemical analysis can we tell for sure whether petechial hemorrhages are due to vitamin C deficiency or to something else. The word scurvy is used only for the almost complete absence of vitamin C from the blood and tissues, when fibroblasts and the related osteoblasts, chondroblasts and odontoblast cells can no longer manufacture collagen, the foundation matrix for connective tissue, bone, cartilage and tooth dentin respectively. But we now know that lesser degrees of vitamin C depletion cause the accumulation of histamine in the blood, and this causes weakness of the capillary blood vessels by separating the cells of the vascular intima from one another.

Histamine accumulation dissolves the intercellular cement; this increase in the blood histamine level begins as soon as the blood plasma vitamin C level begins to fall below the normal level of 1.0 mg/100 mL; frank scurvy does not occur until the vitamin C level falls to one tenth of that value.

The plasma vitamin C status of the general population is much poorer than is generally appreciated, being below 0.7 mg/100 mL in 34 per cent of ambulant people in Brooklyn, New York;<sup>1</sup> below 0.5 mg/100 mL in 30 per cent and below 0.2 mg/100 mL in 6 percent of people attending a Health Maintenance Organization (HMO) clinic in Tempe, Arizona.<sup>2</sup> Likewise the National Health and Nutrition Examination Survey<sup>3</sup> for the years 1988-94 revealed plasma vitamin C (or ascorbic acid) deficiency (<0.2 mg/100 mL) in 12 percent of Caucasians, 15 per cent of African Americans and 9 per cent of Mexican Americans. So we must not assume that small capillary hemorrhages in the retina are due to child abuse; they could be due to vitamin C depletion or to many other factors which increase the blood histamine level.

### Vaccinations and Inoculations

We now know that vaccinations and inoculations cause increased blood histamine levels, as can many systemic infections and other illnesses, so an infant already low in vitamin C will have its blood histamine level further increased by any such insult. Undoubtedly this accounts for the fact that vitamin C supplementation markedly reduces the risk of death following immunization or vaccination in rats, mice, guinea pigs and human infants; vitamin C reduces the blood histamine level.

### Medical Prejudice

Physicians are just like other people: they believe only what they want to believe and they are spoon-fed by the major medical journals. It would seem that the editors of most medical journals do not want to publish any article discussing the risks of inocu-

lations. They would like to see a higher percentage of children being immunized and they are afraid that any talk of risks could frighten parents away. I submitted a review of the literature proving quite conclusively that vitamin C can be used to reduce the risk of death or brain damage following inoculations, both in animals and in human infants, but nine of the major English language medical journals refused to publish it. The reviewers must be unaware that vitamin C deficiency still occurs in the modern world. My article was eventually published the open-minded editors of *The Journal of Orthomolecular Medicine*, (Volume 14, no 3, pages 137-142) in 1999. Unfortunately this excellent journal has, as yet, a relatively small circulation, so the truth is not yet well known.

### Infant Nutrition

Bottle-fed infants need a vitamin C supplement with their milk diet and this can be readily provided by giving them a bottle of orange juice every day, as one hundred grams of fresh orange juice contains about 49 mg of vitamin C. Nowadays the fashion is to give them apple juice, instead of orange juice, but apple juice contains only 1 mg of vitamin C in the same volume of juice. So unless the parent knows to buy apple juice with added vitamin C, there can be a risk of vitamin C deficiency.

Another problem to be considered is that the white blood cell or leukocyte C level is halved within 24 hours after the development of a head cold, and even more during the healing of an injury. Moreover, heavy metals like mercury and even excesses of copper or iron can deplete vitamin C stores, so one has to wonder about the effect of the mercury-based, additive thimerosal used as an antiseptic in some pediatric inoculants. Suffice it to say that it is probably wise to postpone vaccinations and inoculations for any premature or sickly infant; moreover, a 500 mg vitamin C supplement should be given in orange juice before or at the time of an inoculation

to any healthy infant. Extensive studies have been conducted to ascertain the presence or absence of toxicity for each individual inoculant, but now that we recognize the toxic effects of elevated blood histamine levels resulting from inoculations, we must consider the additive toxic effect of all the inoculants taken together. So many inoculants are given together nowadays.

Moreover, the parents should not be held responsible for "Shaken Baby Syndrome" just because an infant convulses or dies with petechial hemorrhages in the retina within a week or two after receiving the usual inoculations. Even some American soldiers going to the Gulf War suffered grievous consequences following the battery of inoculations they received. Elevated tissue histamine levels cause asthma, hay fever, nettle rash or angioneurotic edema, but elevated blood histamine levels cause endothelial damage and capillary fragility throughout the body.

### Laboratory Analyses

Very few hospital laboratories routinely do blood plasma analyses for vitamin C and any spot analyses done by special order can be very unreliable. One of the reasons for their unreliability is that vitamin C (ascorbic acid) crystals or powder, is hygroscopic and can double its weight with moisture.

So when comparing test results with internal or external standards, it is essential that the ascorbic acid standard powder be dried over calcium chloride in a desiccator, for a week or so, without heating. Otherwise the results of analysis can give falsely high values.

### References

1. Clemetson, C. Alan, *Vitamin C*, CRC Press, Boca Raton, Florida, 1989.
2. Johnston, Thomson: Vitamin C Status of an Out-patient population. *J Am Coll Nutr*; 1998; 17(4): 366-70.
3. The Third National Health and Nutrition Examination Survey 1988-94 (NHANES III) <http://www.cehn.org/cehn/resourceguide/nhanes.html>