

# Scurvy – Not just a pirate’s disease

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## INTRODUCTION

In the modern industrialized world, diseases of malnutrition are seen far less frequently and can create diagnostic confusion when they do appear

## CASE

A 44-year-old woman with history of reported mast cell activation syndrome on high dose steroids, idiopathic intracranial hypertension presented with altered mental status, was found to have acute liver injury, septic shock and diffuse petechial rash.

- Notably on total parenteral nutrition (TPN) due to intolerance of enteral nutrition. The exact composition of her TPN was not known, but spouse reported that it lacked several vitamins due to patient intolerance.

### Objective:

- Vitals: T 97.7, BP 91/58, HR 110, 96% on room air, RR 45
- Physical Exam - Inability to follow commands and responding only to name. Decreased breath sounds over the right middle lobe. Abdomen was diffusely tender to palpation. Petechial rash over right face, trunk and extremities.
- CBC - WBC 8.89, platelets of 49, INR 2.65,
- CMP - AST 542, ALT 1099, alkaline phosphatase 92, total bilirubin 2.4
- Notable - lactate 9.6, multiple vitamin deficiencies including Vitamin C < 5 µmol/L (LLN 23 µmol/L )
- Rash Biopsy - follicular hyperkeratosis with corkscrew hair shaft and perifollicular hemorrhage, consistent with scurvy.
- Microbiology – + MSSA BCx, +MSSA Sputum Cx, +pneumocystis stain

### Hospital Course:

- Treated for septic shock secondary to PJP pneumonia, MSSA bacteremia, MSSA pneumonia
- Started on tube feeds and nutritional supplements, including vitamin C, which she tolerated well, ultimately transitioning to oral intake.
- Course complicated by acute hypoxemic respiratory failure requiring intubation and PEA arrest secondary to hypoxia.
- She ultimately discharged to a nursing facility neurologically intact.

## DISCUSSION

Scurvy is largely due to impaired collagen synthesis and disordered connective tissue.

Features include:

- Fatigue, arthralgias, petechiae, corkscrew hairs, gum bleeding, and anemia.<sup>1,2</sup> Sudden death has also been reported.<sup>3</sup>
- Can result in iron and folate deficiency (via depletion of the metabolically active form of folate).<sup>2,3</sup>



## DISCUSSION (continued)

Biochemistry of ascorbic acid:

- Reducing agent (electron donor), which is important to maintain the activity of several enzymes, including iron and copper
- Stabilizes other compounds, including vitamin E and folic acid
- Cofactor for reduction of folate to dihydro-and-tetrahydrofolate
- Involved in fatty acid transport, collagen synthesis, neurotransmitter synthesis, prostaglandin metabolism, nitric oxide synthesis.

Scurvy is thought to be rare in the industrialized world.<sup>2</sup> However, a 2008 study found that among low-income individuals in the UK, 25% of men and 16% of women were deficient in vitamin C, and a 2003-4 study in the US found 7.1% of middle-class individuals were vitamin C deficient.<sup>2</sup>

Occurs in:

- Those who struggle to access food – such as elderly, low-income, and mentally ill
- Individuals who have replaced food with other substances such as alcohol or recreational drug, and those who restrict or limit food consumption whether due to allergies and intolerances or eating disorders.<sup>1,2</sup>

Treatment of scurvy is vitamin C repletion, which usually rapidly improves symptoms.<sup>1,2</sup> Recommended doses of vitamin C vary according to age, sex, pregnancy status, and smoking status.

This case illustrates an occurrence of scurvy along with other nutritional deficiencies in a patient on an unusual formulation of TPN with rapid improvement in skin rash with optimization of nutrition, including vitamin C supplementation. This emphasizes the importance of checking nutritional labs on patients receiving TPN and ensuring supplementation of all necessary vitamins and minerals.

### REFERENCES:

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