

Jean-Baptiste Charcot, the French Antarctic expedition and scurvy

Jean-Baptiste Charcot, expedição Antártica e escorbuto

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ABSTRACT

During the second expedition to the South Pole, Commander Jean-Baptiste Charcot and some members of the crew of “Pourquoi Pas?” developed symptoms suggestive of scurvy. The clinical picture was totally reversed after dietary changes.

Keywords: scurvy, vitamin C, maritime explorer.

RESUMO

Durante a segunda expedição polar do sul, o comandante Charcot e alguns membros da tripulação do “Porquoi Pas?” desenvolveram sintomas sugestivos de escorbuto. O quadro clínico foi totalmente reversível após modificações da dieta.

Palavras-chave: escorbuto, vitamina C, explorador marítimo.

Jean-Baptiste Charcot (1867-1936), Professor Jean-Martin Charcot's son and a former neurologist who became a world-renowned maritime explorer known as Commander Charcot, took part in several French Antarctic expeditions¹. During the second and last expedition to the South Pole, Jean-Baptiste Charcot and some members of the crew developed symptoms suggestive of scurvy². The aim of this paper is to review the original description of this problem in the journal of the second French expedition to the South Pole between 1908 and 1910 (Voyage of the *Pourquoi Pas?*).

THE FRENCH EXPEDITION TO THE SOUTH POLE

The first Antarctic expedition took place between 1903 and 1905, and the second between 1908 and 1910. After the first expedition, which sailed on the ship *Français*, Jean-Baptiste Charcot became very famous and became known as Commander Charcot^{1,2}. Following the second expedition, he published the report entitled *The Voyage of the Pourquoi Pas?*, which gained widespread renown and was considered the journal of the expedition^{1,2} (Figure). In August 1909, Charcot, who was head of the expedition and commander of the *Pourquoi Pas?*, became very anxious because part of his crew was developing symptoms of

intense weakness and foot edema, symptoms which he also developed after a few days².

COMMANDER CHARCOT, THE CREW OF *POURQUOI PAS?* AND SCURVY

In June 1909, during the winter, some crew members of the *Pourquoi Pas?* began to complain of muscle pains, which were considered to be rheumatic due to the extreme weather conditions². Then Godfroy, the sub-lieutenant, and Dr. Liouville, the assistant doctor of the expedition, became very pale and asthenic, with violent muscle pains and severe swelling of the legs. Charcot also began to suffer from shortness of breath, intense fatigue, pains and swollen legs, and diagnoses of “polar anemia”, “polar myocarditis” and even scurvy were considered². When his condition deteriorated, Charcot decided that he was suffering from pronounced myocarditis and abandoned the idea of scurvy because there were none of the classical symptoms of the disease. The condition of those affected worsened significantly in the following three months, and Godfroy and Charcot developed hand ulcerations, intense muscle weakness, severe pains, palpitations, cardiac arrhythmia, pulse irregularities and finally purpura. No gum lesions were described². Charcot came to

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Extracted from reference 2

Figure. The French Expedition to the South Pole: Commander Charcot and his crew.

the conclusion that they were suffering from scurvy or, more precisely, preserved-food sickness. He therefore decided to remove all preserved meat from their diet and to eat only seal, penguin, garlic, sauerkraut and jam. The crew members were also taking considerable quantities of citric acid and looking for seals, penguins and other birds². By the end of September their clinical condition improved, and Charcot felt that what they had been suffering from for more than three months was preserved-food sickness². His conclusion was that the so-called polar anemias were in fact nothing more than maladies associated with scurvy². He stated that,

In the past, when crews lived almost entirely on salt meat they were attacked by the well-known variety of scurvy, with large black spots, ulceration of the gums, etc. But everything changes, even diseases, and with the modern preserved food the classical scurvy has been replaced by the curious kind from which we suffered, characterized especially by oedema of the lower limbs and myocarditis, without anything wrong with the gums. Something of the kind, moreover, showed itself in our Army during the Crimean War. Seals, fortunately, are again abundant and we can kill

more than we require for our food supply. On board the *Discovery* there was also a serious outbreak of scurvy, much more classical in its nature than ours, which was rapidly and completely got rid of by using the flesh of these animals².

On October 8, Charcot wrote in his diary that the disease had been completely cured by eliminating preserved foods and adding fresh meat to their diet². Interestingly, Charcot did not mention in his diary the seminal paper published in 1753 by Sir James Lind, a Scottish naval surgeon, describing the effective treatment of scurvy with citrus fruits³. The British Navy used this approach to prevent and cure scurvy, and the incidence of the disease declined during the 18th century³. Nevertheless, it was only later that the relationship between scurvy and vitamin C deficiency was proved. Although scurvy was traditionally considered “a plague of the sailor”, the condition also affects soldiers (on military rations), the chronically ill, the elderly, smokers, alcoholics and patients with sepsis in intensive care units^{4,5,6}. Schleicher et al. published an interesting study in 2009 on serum vitamin C and the prevalence of vitamin C deficiency in the USA, in which they showed that 7.1% of healthy middle-class participants were vitamin C-deficient and 13.7% vitamin C-depleted⁷. Similar results were obtained in the UK by Mosdol et al., who reported in a study in 2008 that 25% of men and 16% of women from the UK’s low-income population were vitamin C-deficient⁸. More recently, arginine and other amino acids were found to have a synergistic role, complementing the effect of vitamin C in the treatment of critically ill sailors with scurvy⁹.

CONCLUSION

During the second French expedition to the South Pole, Jean-Baptiste Charcot and some members of his crew developed symptoms suggestive of scurvy. The clinical picture was totally reversible after dietary modifications.

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