USING SCIENTIFIC PAPERS TO STIMULATE THE STUDY OF BIOCHEMISTRY AND THE UNDERSTANDING OF SCIENTIFIC KNOWLEDGE CONSTRUCTION: THE RESEARCH ON ADRENOLEUKODYSTROPHY Gaglianone, R.B.¹, Ribeiro, M. G. L.¹

¹Departamento de Biologia Celular e Molecular, Instituto de Biologia, Universidade Federal Fluminense, Niterói, Brazil

Introduction

The X-linked adrenoleukodystrophy (X-ALD) is characterized by mutations in very long chain fatty acids (VLCFA) peroxisome transporter, leading to VLCFA accumulation in myelin sheath. In the 70's and 80's it was hypothesized that X-ALD is caused by enzymatic deficits in FA-coenzyme A connection, VLCFA degradation or FA elongation. The latter enabled Lorenzo's oil (LO) treatment, which became famous by the homonym movie. The apparent initial therapy effectiveness lead to LO administration in many patients, although with biochemical knowledge progress its relevance has been questioned.

Objectives

Our aim was to discuss X-ALD researches in "Lipids Metabolism" classes during 2014 Biochemistry courses to Biology and Biomedicine undergraduate students at Fluminense Federal University to illustrate how scientific knowledge is constructed.

Materials and Methods

In order to contrast the recent scientific advances with the information spread to society through "Lorenzo's Oil", the movie in edited version was presented to students followed by a questionnaire with Likert scale to evaluate the perception of scientific knowledge exposed by the movie. Afterwards, a Guided Study containing a brief history and discursive questions based upon a paper (Wiesingner *et al.*, J. Biol. Chem. 288:19269, 2013) was applied in class.

Results and Discussion

From 58 students who filled in the questionnaire, 72,4% considered the movie shows that X-ALD biochemical knowledge has been achieved. This notion was confirmed since 84,5% agreed LO is an effective alternative treatment if X-ALD is early detected. The same percentage agreed that based on the movie the biochemical deficiency relies on an enzyme involved in VLCFA degradation. Although the movie transmits the idea that the cure has been found, 67,2% believed X-ALD biochemical mechanisms are not fully comprehended.

Conclusions

The Guided Study/movie application was very effective because allowed the understanding of mechanisms completely unknown by the time of LO development and also the comprehension of scientific knowledge construction through a playful and participative activity.

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Key words

Adrenoleukodystrophy; Biochemistry teaching; scientific knowledge