Reviewer's Comment concerning MS-no: ESJ-06-0340.R1 entitled "Asymmetric evolution of anterior chest wall blood supply in female adolescents with progressive right-convex thoracic idiopathic scoliosis" by P. Iliopoulos et al.

Panayot Tanchev

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The purpose of this study is to analyze the evolution of anterior chest wall blood supply in female adolescents with right-convex thoracic idiopathic scoliosis. Thus the study suggests investigations and results concerning the pathogenesis and not the etiology of AIS.

In my opinion, the study is well-designed and executed, having the elements of a prospective and controlled trial. The findings regarding the evolution of the blood supply of anterior chest wall seem to be relevant, especially the observed anatomic and hemodynamic changes of the internal mammary artery (IMA) in both scoliotic patients and controls. The decrease in some parameters registered could be accepted as a physiologic process in adolescence, which was not known before. The maintenance of left flow volume of IMA during the 2-year period of bracing in patients with right-convex thoracic AIS is also very interesting. Unfortunately, the limitations of this study, mentioned by the authors themselves, impede accepting the etiologic implications presented in the discussion section of the paper.

The asymmetrical development of thorax, lungs, breast, etc. is generally acknowledged to be a secondary effect of the spinal deformity. In this respect, the finding of asymmetrical evolution of anterior chest wall blood supply may also be a consequence and not a cause for AIS. The more so as the effect of bracing in the scoliotic group is not taken into account. Relevant and evidence-based data are needed to differentiate between primary and secondary changes in AIS, and this turns out to be a difficult task in numerous studies conducted so far.

I do not believe that this study alone gives enough and well-substantiated evidence for accepting a new theory for the etiology of AIS. It is a good contribution to the subject, but still a hypothesis to be proved.

I would encourage the authors to carry out the further planned studies (see last paragraph) focusing on investigations of the blood flow asymmetry as a *primum movens* or as one of a group of factors responsible for the etiology of AIS. For example, it seems to me a good idea to study the effects of one-sided ligation or embolization of IMA in an animal experiment.

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P. Tanchev (✉)
Spine Surgery Department,
Gorna Bania University Hospital of Orthopaedics,
Medical University of Sofia, 56 N. Petkov Boulevard,
1614 Sofia, Bulgaria
e-mail: ptanchev@abv.bg