



# Effect of obesity on fragility fractures, BMD and vitamin D levels in postmenopausal women. Influence of type 2 diabetes mellitus

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Mr. Editor:

We would like to thank Rushan and Kumar for their interest in our article published in your magazine, and for sending us their considerations, which we greatly appreciate. We would like to clarify or make appropriate comments on the questions that have arisen from reading the article.

The main objective of our study was to observe the effect of obesity on the production of fragility fractures and, secondarily, whether comorbidity with type 2 diabetes mellitus (DM2) influenced this effect. That is why we did not consider seeing what happened with non-obese women with DM2, whose percentage, moreover, was very small (9.9%): as is well known, obesity and type 2 diabetes mellitus (DM2) are associated in a high percentage of patients, so finding a sufficient number of non-obese women with DM2 in a random population sample of postmenopausal women is very difficult. Therefore, this patient subgroup was not considered for the study. Of course, it would be interesting to do a study in which the main objective would be to assess the effect of DM2 per se on bone metabolism, but to do so it should focus on patients suffering from this pathology without other comorbidity.

It is also true that the risk of falls increases with age and due to multiple circumstances. We studied the number of falls in the last year, and adjusted for age, so that, independently of the cause of the falls, we were able to consider

this variable in the appearance of fractures. Of course, the pathologies that favor falls could have been considered, but it seemed to us that this would be too many variables that could have served more to confuse than to clarify according to the objective of the study, and therefore the number of falls in the last year itself was considered as a surrogate or consequent variable of all of them. As can be seen in Tables 1 and 3, the variable "falls" showed no significant differences between the groups analyzed when adjusting for age, which is already indicative that it did not affect the presence of fractures in the patients studied. In fact, in the multivariate logistic regression analysis based on the Akaike Information Criterion (AIC) model, it was not selected.

As for the treatment of DM2, all the patients in the study were treated with oral antidiabetics, and none with insulin. It is true that it would have been interesting to study the variables related to treatment, but, first, this was far from the objective of our study, and second, we do not believe that the number of patients with DM2 would have allowed us to obtain conclusive results in this regard. Nevertheless, we reiterate that we find it very interesting to assess the effect of treatment on fractures, and we encourage researchers to carry out studies in this direction.

Taking all this into account (first, that the objective of the study was the effect of the obesity-DM2 association on the production of fractures and not that of DM2 alone; second, the adjustment of falls for age, having thus been excluded from the logistic regression analysis; and third, the dispersion that would have involved including variables related to the treatment of DM2), we believe that our results can be considered conclusive, and, moreover, they open the door to new studies that delve deeper into those aspects that Ruchan and Kumar refer to.

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Managed by Antonio Secchi.

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