Serum concentration rise of 25-hydroxy vitamin D in response to Intramuscular Cholecalciferol versus Oral ergocalciferol and effect of diabetes on response.

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Introduction
A number of controversies exist regarding appropriate treatment strategy for Vitamin D deficiency.

Objective:
To estimate the increase in serum 25-hydroxyvitamin D levels in adults in response to either Intramuscular Cholecalciferol or Oral Ergocalciferol and to assess if presence of diabetes influences the response to vitamin D treatment.

Settings and Design
Single Institution Retrospective Analytical study

Methods
This study enrolled 120 adults with Vitamin D deficiency into 2 arms. The oral ergocalciferol group (n = 60) received oral ergocalciferol 50,000 IU weekly for average of 6 weeks while the IM cholecalciferol group (n = 60) received a single injection of cholecalciferol 300,000 IU. The main outcome measure was to compare the serum rise of 25-hydroxyvitamin D (25OHD) between two groups. 29 out of 120 adults had Type 2 diabetes mellitus and the secondary outcome was to assess if presence of diabetes influences the response to vitamin D treatment. To compare the difference between two groups statistically, Wilcoxon rank sum test was used to analyze the results as data was not normally distributed.

Results
Intramuscular Cholecalciferol was associated with a mean increase of 36.37 nmol/l (95% CI, 31.26-41.47) while Oral ergocalciferol group was associated with a mean increase of 28.5 nmol/l (95% CI, 22.88-34.16). The mean increase in diabetic ergocalciferol group (n=16) was 36.9 nmol/l (95% CI, 20.1-53.7) while the mean increase in diabetic IM cholecalciferol group (n=13) was 37.9 nmol/l (95% CI, 29.6-46.2). The mean increase in non-diabetic ergocalciferol group (n=44) was 25.46 nmol/l (95% CI, 20.3-30.5), while the mean increase in non-diabetic IM cholecalciferol group (n=47) was 35.9 nmol/l (95% CI, 29.6-42.2).

Conclusion
The administration of IM Cholecalciferol was more effective in raising serum Vitamin D level compared to Oral ergocalciferol. Diabetic patients in ergocalciferol group had more serum increase than non-diabetics while the serum rise in diabetic patients in IM cholecalciferol was not significant compared with non-diabetic patients.