Association between 25-hydroxyvitamin D levels and Diabetes

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\textbf{Introduction}: A significant body of literature supports that 25(OH)\textit{vitD} deficiency is associated with insulin resistance. We studied the prevalence of 25(OH)\textit{vitD} deficiency across the spectrum of glucose metabolism.

\textbf{Design}: The study participants (441 total, 362 females (82.1\%) and 79 males (17.9\%)) had a mean age (±SD) of 64.59 (±9.44) years, range: 32 - 92 years. The study population was divided into 2 groups: Individuals with Diabetes (n=184, 33 males), and controls with normal glucose levels (n = 257, 46 males).

\textbf{Results}: The mean 25(OH)\textit{vitD} values for males and females patients was 22.9±11.6 and 21.6 ±11.9 ng/mL respectively, p=0.815. The mean 25(OH)\textit{vitD}±SD levels were significantly lower in subjects with diabetes (18.6±10.6 ng/mL) compared to normal subjects (24.2±12.2 ng/mL), p=0.035. There was no difference in the mean age of patients and sex distribution between the two groups. 25(OH)\textit{vitD} deficiency was observed in 49.7\% of the entire study population and was significantly more frequent in patients with diabetes compared to controls (60.9 vs 41.6\% respectively). Only 26 out of 184 (14.1\%) of patients with diabetes had 25(OH)\textit{vitD} deficiency and levels above 30ng/mL, compared to 74 out 257 (28.8\%) of individuals with normal glucose (p<0.001).

\textbf{Conclusions}: This study illustrates the higher prevalence of 25(OH)\textit{vitD} deficiency among patients with diabetes. From a clinical standpoint, specific advice needs to be provided especially to people with diabetes. Vitamin D supplements on a regular basis over the year and adequate sun exposure could be also recommended in order to achieve sufficient levels of 25(OH)\textit{vitD}.

\begin{table}
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\begin{tabular}{|c|c|c|c|c|}
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 & \textbf{Male (N/\%)} & \textbf{Age in years} & \textbf{25(OH)\textit{vitD}} (ng/mL) & \textbf{Glu (mg/dl)} & \textbf{HbA1c (\%)} \\
\hline
\textbf{Diabetes} & 33 & 64.48 & 18.6 & 165.9 & 7.81 \\
& n=184 & /17.9\% & (±10.83) & (±60) & (±1.35) \\
\hline
\textbf{Normal} & 46 / & 64.66 & 24.2 & 91.2 & 5.38 \\
n=257 & 17.9\% & (±8.32) & (±12.2) & (±8.6) & (±0.2) \\
\hline
\textbf{p-values} & & & & & \\
\hline
\end{tabular}
\caption{Mean values ± SD of 25(OH)\textit{vitD}, age, plasma glucose levels and HbA1c in the two groups of patients.}
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 & \textbf{vitD deficiency} & \textbf{vitD Insufficiency} & \textbf{vitD Sufficiency} \\
\hline
\textbf{Patients with DM (n=184)} & 112 (60.9 \%) & 46 (25\%) & 26 (14.1\%) \\
\textbf{Patients without DM (n=257)} & 107 (41.6 \%) & 76 (29.6\%) & 74 (28.8\%) \\
\hline
\end{tabular}
\caption{Counts and percentages of subjects with 25(OH)\textit{vitD} deficiency(<20 ng/mL), insufficiency(20–30 ng/mL) and sufficiency(≥30 ng/mL) in each group of patients}
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\textbf{References}: