P3-5

MESENCHYMAL STEM CELLS: A PROMISING THERAPY FOR DENTAL IMPLANTS OSSEOINTEGRATION IN DIABETICS MODEL

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BACKGROUND

Diabetics can leads to lack and delayed osseointegration in dental implant due to hyperglycemic. Thus, it has always been a challenge for prosthodontist as there is still no therapy for these conditions. Human umbilical cord mesenchymal stem cells (hUCMSCs) was a very well developed stem cells among researchers around the world because of its ability in improving bone microenvironment and its osteogenic potentials.

OBJECTIVE

To examine the effect of hUCMSCs on dental implant osseointegration in hyperglicemic condition.

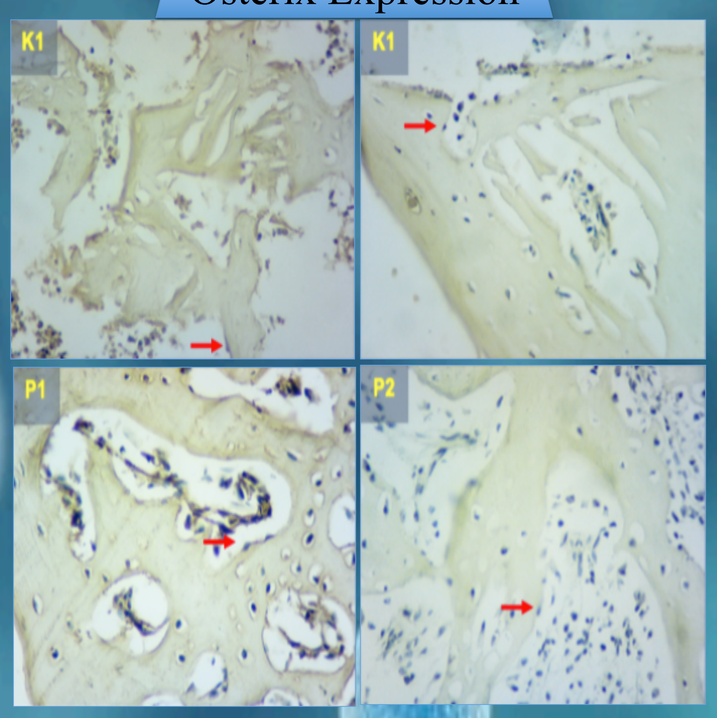
MATERIALS AND METHOD

28 Wistar rats were injected intraperitoneally with Streptozotocin 20mg/kg BW 5 days in a row to make diabetic model. The treatment was carried out after fasting blood sugar levels > 300 mg/dl and waiting 5 days for the glycation period. The source of stem cells is human umbilical cord which has been isolated and cultured until passage 6. The experimental animals were divided into 4 groups, namely the 2-week implant group (K1), the 4-week implant group (K2), the 2-week implant + hUCMSCs group (P1) and the 4-week implant + hUCMSCs group (P2). The variables examined were osterix expression, BIC, and BIV (Bone Implant Volume). The data were analyzed statistically using ANOVA and Mann-Whitney Test.

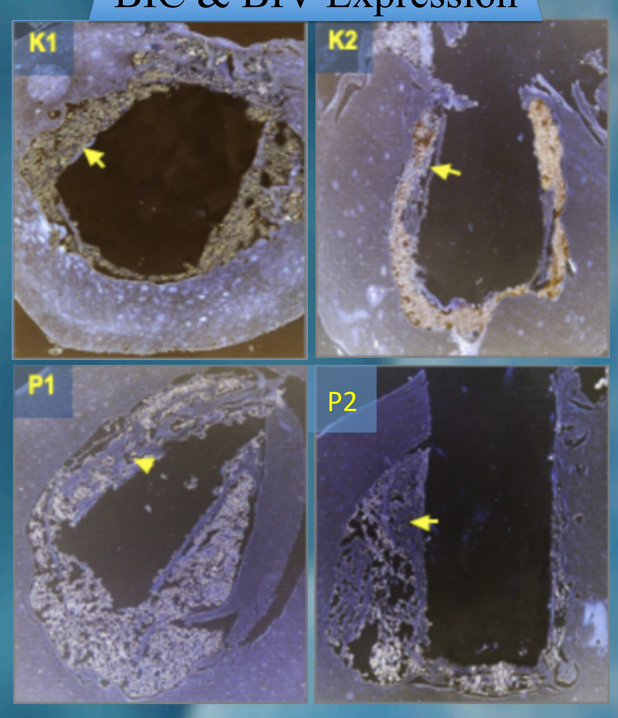
RESULT AND DISCUSSION

There were significant differences in Osterix, BIC, and BIV level in treatment groups compared with control groups. BIC and BIV level in treatment groups continue to increases significantly to maintain osseointegration. While Osterix, an essential marker for bone maturation, is decreasing as homeostasis occured.

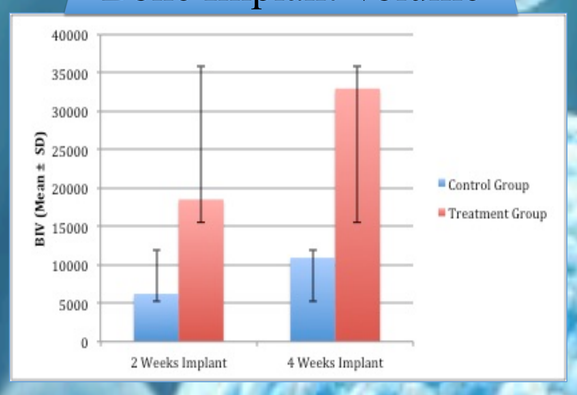
Osterix Expression



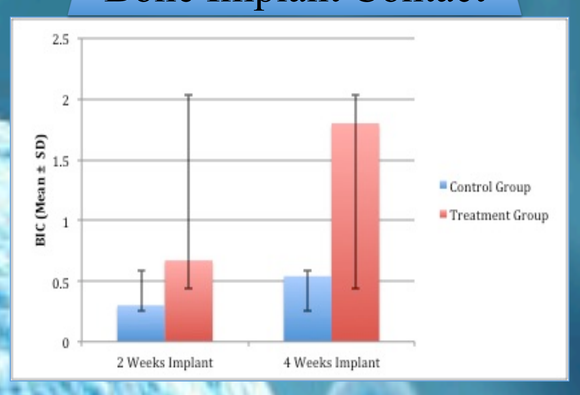
BIC & BIV Expression



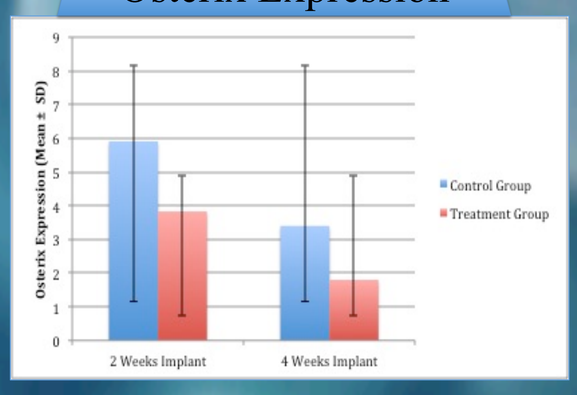
Bone Implant Volume



Bone Implant Contact



Osterix Expression



CONCLUSION

hUCMSCs accelerate and increase dental implant osseointegaration in diabetics model.

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