SUMMARY AND CONCLUSION

The aim of our study is to evaluate angiogenesis using power Doppler ultrasonography and serum vascular endothelial growth factor measurement in RA and correlate these findings with clinical and laboratory parameters of disease activity.

Thirty patients presenting with RA from the attendants of the outpatient clinic and the rheumatology and rehabilitation department of Benha university hospitals were included in this study. Their mean age was 41.3 ± 13.3 years, Twenty five patients were females and five patients were males and the mean duration of illness was 5.67 ± 4.74 years.

Another 15 patients with OA and diagnosed according to ACR criteria and 15 healthy controls were also included in this study.

RA patients were subjected to the following:

- Full history taking.
- Full clinical examination.
- Clinical assessment of the knee using local knee score.
- Clinical assessment of RA disease activity using Mallya and Mace Score.
- Laboratory investigations
  - ESR, CRP and complete blood picture.
  - Liver and kidney functions.
  - Rheumatoid factor latex agglutination slide test.

All groups were subjected to the following investigations to evaluate angiogenesis:

I) VEGF serum and synovial levels using ELISA

II) Musculoskeletal ultrasound examination:

Examination includes measurement of synovial thickness, effusion(size of suprapatellar bursa and Power Doppler grading.

The findings of this study were as follow:

- The mean serum VEGF in RA patients showed a highly significant increase ($P < 0.001$) as compared to OA group and healthy subject.
- VEGF level in the synovial fluid showed a statistical significant increase ($P<0.05$) as compared to its level in the serum in RA patients.
- There was a statistically significant difference ($p<0.05$) as regard VEGF serum and synovial levels in RA patients graded according to their clinical knee score.
- There was a statistically significant difference ($p<0.05$) as regard VEGF serum and synovial levels in RA patients graded according to their disease activity.
- VEGF serum level showed insignificant difference ($p>0.05$) in RA patients graded according to type of their medication.

- VEGF serum levels showed insignificant difference ($p>0.05$) in RA patients graded according to their Sharp score grades.
- The mean synovial thickness in RA patients showed a highly significant increase ($P < 0.001$) as compared to OA group and healthy subjects.
- There was a statistically significant difference ($p<0.05$) as regard VEGF serum and synovial levels in RA patients graded according to their synovial thickness grades.
- There were statistically significant differences ($p<0.05$) as regard MGDA scores in RA patients graded according to their power Doppler.
- There were highly statistically significant differences ($p<0.001$) as regard synovial thickness and diameter of suprapatellar bursa (effusion) in RA patients graded according to their power Doppler.

- There was a statistically significant difference ($p<0.05$) as regard VEGF serum and synovial levels in RA patients graded according to their power Doppler.

- There was a statistically insignificant difference ($p>0.05$) as regard VEGF serum and synovial levels in RA patients graded according to their diameter of suprapatellar bursa.

- VEGF serum and synovial levels showed insignificant difference ($p>0.05$) in RA patients graded according to their functional capacity.

- A positive significant correlation was found between serum VEGF level and articular index ($P<0.05$), ESR ($P<0.05$), CRP ($P<0.05$) and synovial thickness ($P < 0.05$).

- A negative significant correlation was found between HB concentration and both serum and synovial VEGF ($P < 0.05$).

CONCLUSION

VEGF levels are elevated in RA patients compared to healthy individuals and OA patients

Power Doppler is a sensitive, non-invasive method for visualizing RA synovial vascularization that is emerging as a clinically important tool for the assessment of disease activity and holds promise as a novel means of evaluating the response of patients to therapy.

Serum vascular markers and power Doppler imaging may also have the potential to predict those patients most at risk of accelerated joint destruction and therefore to inform treatment decisions with respect to early introduction of more aggressive treatment.

RECOMMENDATIONS

Power Doppler could become an essential tool for RA joint monitoring in routine practice in view of its sensitivity in the detection of synovitis, feasibility in the outpatient clinic, and low cost, allowing early management decisions.

Further studies should be done to evaluate the effect of inhibition of angiogenesis as this may be an effective therapeutic adjunct for the treatment of RA as no major human clinical trials of angiostatic agents in rheumatology have yet been done, in contrast to several studies in oncology and ophthalmology.