Iloprost Therapy achieves good clinical and radiological outcome in patients with aseptic osteonecrosis (ARCO II) of the knee joint

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INTRODUCTION:
Spontaneous aseptic osteonecrosis of the knee joint (SONK) is a painful condition with a prevalence of 1.4-9.5%, varying by age and comorbidities. The etiology of AON is debated, microfractures due to reduced bone density as well as impaired microcirculation are discussed. As etiology is unknown, treatment guidelines for SONK are lacking, leading to varied therapeutic approaches based on edema size, the ratio of edema to condylar width, and disease stage. There is good evidence that Iloprost infusion therapy can be very effective in early stages I and II of aseptic femoral head necrosis. To date, however, hardly any data exist regarding the clinical and/or radiological evaluation of Iloprost therapy for SONK although these have been a clinical routine for about 7 years. Therefore, the aim of this study was the subjective, clinical, and MR tomographic evaluation of Iloprost infusion therapy for the treatment of SONK of the knee joint.
METHODS:
36 patients (age 57.3 ± 8.7 years, 38.9% women, 61.1% men) who received Iloprost infusion therapy between 2018-2021 due to SONK were included in this retrospective cohort study. Average time between Iloprost-infusion and follow-up MRI was 2.9 ± 1 [1.3-5.5] months. Average clinical follow-up between Iloprost infusion and last assessment was 27.2 ± 14.3 [2.4-54.1] months.
Outcome was evaluated by pre- and postinterventional pain (Numeric Rating Scale - NRS) as well as patient reported outcome (subjective knee value (SKV), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Oxford Knee Score (OKS)) at latest follow-up (2.9 months ± 1). Furthermore quantitative artificial intelligence assisted analysis of bone marrow edema (BME) in MRI before and after 3 months after iloprost infusion therapy was performed.
RESULTS:
The patients rated the overall satisfaction as 2.0 ± 1.3. Average pain level before Iloprost therapy was 4.8 ± 1.4 [3-9]. At clinical Follow-up average pain level at rest was 1.3 ± 1.7 [0-8] and 3.0 ± 2.4 [0-10] while activity which was both significant less intense (Wilcoxon < 0.01).
SKV was 83.3% ± 16.6 and NRS at follow-up was 1.3 ± 1.8. OKS reached 33.6 ± 12.0, WOMAC 9.3 ± 10.5 points.
Average volume of hyperintense area was 37.0 cm^3 ± 37.7 [2.5-157.3] before and 10.8 cm^3 ± 14.9 [0.0-70.4] after Iloprost therapy ($p<0.01$, Wilcoxon-test). Average reduction of hyperintensity was 70.7%. Interobserver reliability (ICC) was 0.98 [95% CI 0.966-0.989, $p<0.01$].
In one case, Iloprost therapy was finished after 3 days due to the side effect of dizziness.
DISCUSSION AND CONCLUSION: Clinical and radiological outcome parameters of the recent study demonstrated satisfising clinical short- and mid-term outcome, without any severe complications as well as average BME volume decrease of 70% within three months after Iloprost infusion therapy. Therefore, Iloprost treatment seems a safe and effective therapeutic option also in SONK.