

Abstract

Purpose:

The aim of the study is to demonstrate the success of early detection and the efficacy of early hip dysplasia treatment within neonatal hip screening in the Czech Republic. Measures are proposed to optimize follow-up and maintain long-term sustainability of the newborn care.

Materials and Methods:

316 children with various degrees of hip involvement were detected by "triple sieve" orthopedic screening system. Diagnosis and treatment were monitored by clinical and sonographic examinations (according to Graf). The risk factors, their influence on the treatment course, the effectiveness of outpatient treatment using abduction devices, timing and duration of treatment and participation in follow-up were evaluated. Furthermore, data analysis on national hip arthroplasty register was performed in patients treated for sequels of hip dysplasia. These data were correlated (in order to assess their efficacy) with methods of dysplasia detection at the time these patients were born.

Results:

Conservative treatment was successful in 98.7 % of 316 treated children. Only 31 % of children had a positive clinical finding. Positive family history showed no significance either for detection or treatment course. The breech position correlated significantly with the incidence of hip dysplasia - OR = 2.80 (99% CI 1.88;4.175) and with the more severe grades of sonographic pathology (after Graf) ($p=0.013$; OR 1.66; 95% CI 1.169;2.365). There were 148 children (47%) without any risk factor or clinical pathology. The length of treatment grew with the severity of sonographic pathology; in 92.5% infants treatment terminated before the age of 8 months. During the treatment some patients failed to complete the follow-up; the loading of Pavlík's harness resulted in statistically significant non-compliance with treatment ($p=0.0279$; OR 2.7; 95% CI 1.07; 8.5). After the treatment termination, 36% and 65% of patients did not attend scheduled 1-year and 3-years follow-up visits, respectively. Low counts of arthroplasties for high hip dislocations are recorded in the national endoprosthesis registry. The number of hips replaced for postdysplastic degeneration decreased over periods 2005–2007 and 2015–2017 significantly from 9.44% to 7.11%, respectively ($p<0.001$). Of the 174,515 hip arthroplasties, only 35 joints belong to the patients systematically screened by the mandatory universal "triple sieve" system (i.e., patients were born after 1977).

Conclusion:

The active monitoring of hip dysplasia in the Czech Republic allows early detection and treatment of the disease. The available devices allow effective treatment of the diagnosed pathology. During follow-up, the portion of children participating in further scheduled visits decreases significantly. The endoprosthesis registry documents the positive effect of the established screening system. Loss of legislative support, absence of central monitoring of the treatment outcomes and of quality of the care does not create sufficient conditions for long-term sustainability of high level of orthopedic care in the Czech Republic.