Sixth International Congress of Arthroplasty Registries (ISAR)
May 20th-22nd, 2017, San Francisco, USA

The Annual Meeting was attended by 150 arthroplasty registry specialists from Academia, Health Authorities and Industry from 14 countries. The meeting gave them the opportunity to discuss about registry datasets, the refinement of statistical methods, international coordination and collaboration. The latter includes the harmonization of registries to provide a single international registry which should allow fast identification of worse than normal performing implants and the establishment of a single benchmarking system for prostheses.

In the scientific studies presented, the most important topics were cancer risk analysis, periprosthetic joint infection (PJI), obesity and dislocation.

Cancer
Both the Norwegian and the Australian (AOA NJRR) arthroplasty registries linked their data with the national cancer registries to quantify the risk of cancer after total hip replacement (THR) surgery.

The Australian registry compared 127,245 patients who underwent a THR procedure for osteoarthritis between September 1st, 1999 and December 31st, 2009 to the general Australian population. They found that the overall incidence of cancer was a significant 6% higher for THR patients. The authors did not find a significant difference in all-site cancer rates between metal-on-metal (MoM) and other bearings. Nevertheless, the incidence of Hodgkin's Lymphoma was 117% higher with MoM. A limitation of the study was caused by the incompleteness of the cancer registry.

The Norwegian Arthroplasty Register evaluated the risk for cancer related to THR fixation. Cancer beyond 10 years after surgery was the primary outcome measurement. The patients (41,402; age: < 75 years, osteoarthritis) in the arthroplasty registry during 1987 and 2009 were linked with the national cancer registry. The analysis was adjusted for age, gender and THR surgery for cemented, uncemented and hybrid fixations. It showed that the cancer risk for THR patients with uncemented fixation increased by 28% compared with cemented prostheses after 10 years follow-up. Hybrid prostheses did not significantly increase the risk for cancer in comparison with cemented THR.

PJI
A series of talks dedicated to PJI confirmed a general increase of the infection burden, higher revision costs for PJI, higher risk of mortality after PJI and an influence of the bearing material.

An international registry collaboration of six registries confirmed the increase in infection burden, defined as the number of TJA revisions performed for PJI divided by all revision and primary THR over the period of 2000-2015. PJI remains one of the most frequent reasons for failure in THR worldwide according to the authors.

Daniel Berry from the Mayo Clinic showed the hospital cost associated with two-stage management of PJI to be up to 2.5-fold higher than aseptic revision procedures. For the study, the hospital and components costs of patients who underwent two-stage joint reconstruction for PJI of the hip and the knee (212 and 305, respectively) over a 7 year-time period were compared with those of revision for aseptic loosening. The mean overall hospital cost per THR for a two-stage treatment was US$ 55,530, which was significantly higher than the mean overall cost for a revision for aseptic loosening of US$ 21,925. An average two-stage total knee replacement (TKR) revision for PJI costs US$ 54,300, thus significantly more than the US$ 23,640 revision for aseptic loosening TKR.
The Danish Registry presented a study recently published in CORR, in which the authors examined if revision of early PJI following primary THA was associated with an increased risk of mortality. The primary THR dataset of the Danish Hip Arthroplasty Register from 2005 to 2014 was linked to the National Registry of Patients and the Civil Registration System. A total of 68,504 primary THR were linked, of which 445 underwent revision for PJI and 1,350 had aseptic revision. The remaining 66,709 were not revised. The relative mortality risk (adjusted for age, sex and Charlson Comorbidity Index Score) for THR with revision for PJI was 2.18 compared to the non-revised patients. It was 1.87 when adjusted for age, sex and Charlson Comorbidity Index Score, duration of surgery and the number of secondary THR revisions for PJI compared with THR revised for aseptic revisions. If the THR was revised for enterococci-infection the mortality risk was 2.89 times higher than for those induced by other bacteria. In conclusion, revision for PJI within one year following primary THR increased the mortality risk.

The British National Joint Registry (NJR) dataset was analysed by Lenguerrand et al. to identify the patient, perioperative and healthcare system risk factors for PJI following primary THR. 85% of primary procedures from 2003 to 2013 were linked to the Hospital Episode Statistics for England and Wales. The study showed an increased risk of revision for PJI in males, patients with high BMI, diabetes, rheumatoid arthritis, chronic pulmonary disease, smoking and liver disease. The authors also identified an influence of dementia, fractured neck of femur, previous history of infection and lateral surgical approach. There was no evidence of association with the presence of a consultant (none, assisting, operating), grade of operating surgeon (consultant, other) and place of surgery (England, Wales). Ceramic bearings showed a protective effect against PJI.

Svensson et al. of the Swedish Hip Arthroplasty Registry analyzed their data specifically for infection and found no difference in the risk of re-revision between one- and two-stage revisions. Nevertheless, the authors concluded that prospective randomized studies are needed to validate these findings. Bloemheuvel et al. of the Dutch Arthroplasty Registry presented their analysis on the beneficial effect of dual mobility cup THR in terms of decreased risk for dislocation in comparison with conventional cups. But they pointed to the increased risk of infection. The cumulative incidence of revision was 40% higher in comparison to conventional cups.

Periprosthetic fracture
Several registries have noticed an increased risk of periprosthetic fracture. In the discussion, there was a consensus that the effect might be related to the difficulty of positioning a cementless stem (Dale et al., Norwegian Arthroplasty registry). Additionally, the risk for revision for aseptic loosening and lysis decreased due to the usage of Ceramic bearings as shown by Steiger et al., AOA NJRR. Consequently, the relative risk for periprosthetic fracture has increased. According to Steiger et al., in case of first revision for periprosthetic fracture the most common reason for a second revision was infection, followed by loosening, lysis, prosthesis dislocation and re-fracture.

By Alessandro Alan Porporati