Regional anaesthesia after total hip and knee replacement: Analysis of pain and treatment related side-effects from the Pain-out registry

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Background & Aims

Background:
Guidelines for the analgetic treatment of pain after surgery are usually based on Metaanalysis of randomized controlled trials with their selected patient population and may not necessarily reflect the majority of treated patients. In recent years, the analysis of registries has become a complementary tool in order to analyze treated patients.

Aims:
We set out to analyze data from a european research project (PAIN-OUT) in which data on postoperative pain in institutions across Europe were systematically retrieved. It currently contains over 30,000 patients. We analysed the influence of regional anesthesia (RA) on postoperative pain and treatment related side effects after total hip (THR, ICD 81.51) and knee (TKR, ICD 81.54) replacement surgery, respectively.

Materials & Methods

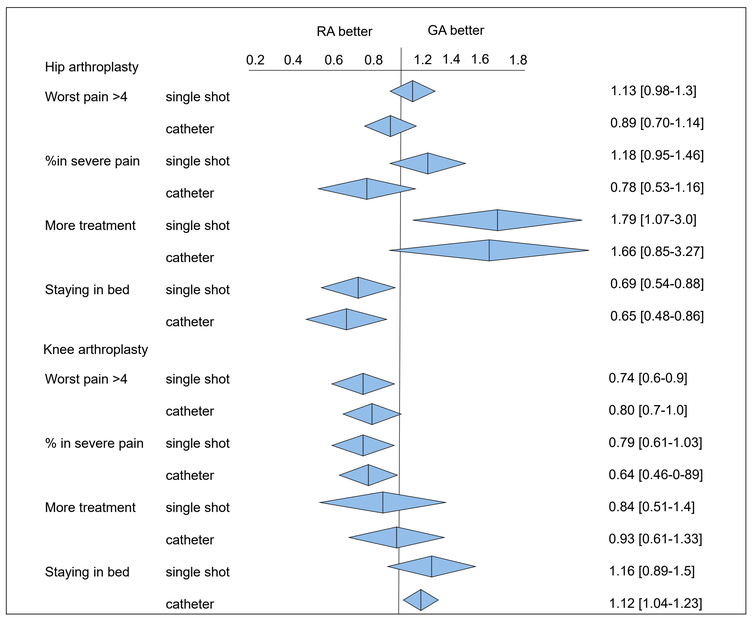
PAIN OUT is an international, European Commission (EU)-funded registry and research project aimed to improve postoperative pain management (http://www.pain-out.eu/). Data from a large number of patients from different geographies are collected in a consistent [1] and valid [2] manner. For the present analysis ICD-9 codes were used to identify THR and TKR. Data on least and worst pain, anxiety, helplessness, itching, dizziness, drowsiness, nausea, time in severe pain, interference with sleep, breathing and coughing, relief and satisfaction were analyzed.
To match three groups (general anesthesia, single shot, catheter) the following demographic and surgical variables were used: age, BMI, duration of surgery, gender, chronic pain, comorbidities cancer, alcohol use disorder, smoker, substance use, hypertension, coronary heart disease, liver disease, ulcer, bowel disease, asthma, sleep apnea, COPD, fibromyalgia, steroid use, renal disease, psychiatric disease.
SPSS (version 20) was used for all statistical analyses.

Table 1

	raw	Propensity matched cohort		
		general anesth.	single shot RA	catheter
Hip arthroplasty (n)	1774	316	106	52
Female gender (%)	55.3	21.2	23.6	25.0
Age (median)	65	70.5	71.0	67.5
BMI (median)	27.1	26.3	26.5	28.0
Knee arthroplasty (n)	1058	114	114	442
Female gender (%)	64	42	37	40
Age (median)	66.6	64.1	66	68
BMI (median)	30.2	30.4	30.5	30.2

Table 2

	Propensity matched cohort		
	general anesth.	single shot	catheter
Hip arthroplasty			
Worst pain (mean, SD)	5.4 (2.6)	5.9 (2.8)	5.1 (3.3)
% in severe pain (mean, SD)	30 (27)	32 (25)	23 (25)
Patients out of bed (%)	35	55	54
Pain interference with			
breathing (mean, SD)	1.1 (1.9)	0.9 (1.7)	0.9 (2.1)
sleep (mean, SD)	2.5 (2.7)	4.1 (3.2)	3.3 (3.3)
activity in bed (mean, SD)	4.4 (3.2)	5.9 (3.1)	4.8 (3.3)
activity out of bed (mean, SD)	4.9 (2.8)	5.1 (2.9)	5.2 (3.3)
Wish for more treatment (%)	11	19	18
Knee arthroplasty			
Worst pain (mean, SD)	7.0 (8)	5.4 (7)	6.4 (7)
% in severe pain (mean, SD)	44 (31)	32 (29)	29 (32)
Patients out of bed (%)	66	59	50
Pain interference with			
breathing (mean, SD)	1.3 (2.7)	0.6 (1.3)	0.8 (1.7)
sleep (mean, SD)	4.5 (3.5)	3.0 (3.0)	3.6 (3.2)
activity in bed (mean, SD)	6.1 (3.3)	4.6 (3.2)	5 (3.0)
activity out of bed (mean, SD)	6.4 (2.8)	4.0 (2.9)	4.7 (3.3)
Wish for more treatment (%)	22	18	17



Results

Hip arthroplasty:
A total of 1.647 patients underwent hip arthroplasty (Table 1) where regional or general anesthesia was identified correctly. Before matching, 74% used general anesthesia alone, 22% used a single shot regional anesthesia alone (neuraxial) and 4% used a catheter based regional anesthesia (lumbar plexus 6%, femoral 12%, epidural 83%). Direct pain related measures were not different whether regioanl anesthesia was used or not. RA patients had a lower risk of staying in bed but a higher risk of sleep interference and the wish for more pain treatment. Patients with regional anesthesia also had a higher risk for aggregated intensity scores for diziness, drowsiness, nausea, itching, feeling helpless and feeling anxious (single shot: 1.36 [1.13-1.65]; catheter: 1.52 [1.23-1.90]).

Knee arthroplasty:
Correct identification was possible for a total of 1.058 patients after knee arthroplasty. Before matching, 26% used general anesthesia alone, 28% used a single shot regional anesthesia alone (neuraxial) and 45% used a catheter based regional anesthesia (78% femoral, 7% epidural, 11% femoral+sciatic).
Direct pain measures were highest in patients having had general anesthesia. When catheters were used, the risk of staying in bed on the first postoperative day also was higher. Patients with regional anesthesia had a lower risk for aggregated intensity scores for diziness, drowsiness, nausea, itching, feeling helpless and feeling anxious (single shot: 0.75 [0.57-0.98]; catheter: 0.69 [0.48-0.94]).

Limitations:
Pain and pain associated items were only measured on the first postoperative day. Opioid consumption and sensitivity analysis (influence of country, centre) have not been calculated yet. Different use of catheter locations, types or mode of use (continuous/discontinuous, dosages) has not been take into account.

Conclusions

Our preliminary data indicate that patients after hip arthoplasties report lower pain levels than after knee arthroplasties. Patients after hip arthroplasties do not seem to benefit from catheter use. Regional anesthesia was associated with less pain in patients after knee arthroplasties at the cost of a higher risk of staying in bed on the first postoperative day.

[1] Eur J Pain 2012; 16: 430-8
[2] J Pain 2013, in Press

References and Sources

[1]...
[2]...