COGNITIVE FUNCTION IN CHRONIC NON-MALIGNANT PAIN PATIENTS TREATED WITH EXTENDED-RELEASE MORPHINE SULFATE (AVINZA®)
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OBJECTIVES: To examine the association between extended-release, once-daily morphine sulfate (Avinza®, A-MSER) and cognitive function (CF) while controlling for pain intensity (PI), pain-related emotions (PE), pain-related behaviors (PB), and benzodiazepine dose (BD).

METHODS: Chronic non-malignant pain patients whose pain was not adequately controlled with short-acting narcotic analgesics and eligible for treatment with A-MSER were enrolled. Patients completed the following assessments at baseline and 4 weeks after stabilization of the A-MSER dose: PI, PE, PB and CF tests measuring short-term memory (digit span test—DST), information processing (paced auditory serial addition test—PASAT), and motor skills (digit symbol test—DSYT). Self-reports of average narcotic dose and BD in the week prior to the assessment were recorded at baseline and follow-up. Three structural equation models were developed; each CF test serving as the dependent variable and other assessments serving as predictor variables.

RESULTS: Paired sample t-tests showed statistically significant (p < 0.05) improvements in PI, PE, PB, and CF test scores. Chi-square fit statistics showed that the three models with DST (chi-square = 147.79, p = 0.76), DSYT (chi-square = 128.06, p = 0.5), and PASAT (chi-square = 160.39, p = 0.85) fit the data well. In each model, the association between narcotic dose and CF test scores was not statistically significant (p > 0.05) at baseline and follow-up. A statistically significant (p < 0.05) inverse association between BD (1% dose increase) and DSYT scores (0.05% decline) and PASAT scores (0.06% decline) were observed at baseline; the direction of the association persisted but was not significant at follow-up.

CONCLUSION: Narcotic therapy does not contribute to cognitive impairment in this sample of chronic pain patients; however, evidence of an inverse dose-dependent association between BD and tests assessing information processing and motor skills was observed.

PAIN—Cost Studies

ESTIMATED COSTS ASSOCIATED WITH DIFFERENT FRACTURE RISKS RELATED TO OPIOID TREATMENT IN GERMANY
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OBJECTIVES: Strong opioids are widely used for many chronic pain conditions. In a Danish nationwide register-based case-control study an increased risk for osteoporotic fractures was shown for opioid users and explained by falls due to central nervous system side effects, such as dizziness. Odds ratios were calculated for osteoporotic patients on treatment for at least 10 days with tramadol, morphine, fentanyl, oxycodone, and buprenorphine, being lowest with buprenorphine. The purpose of this study was to evaluate the costs related with an increased risk of hip, forearm or spine fractures in patients on tramadol, morphine, fentanyl, oxycodone, and buprenorphine treatment in Germany.

METHODS: Treatment costs for fractures were obtained from published sources for the year 2006, including direct costs within the first year after fracture, i.e. in- and outpatient treatment, rehabilitation and long-term care (the latter only for social security perspective). Information on patients with osteoporosis in Germany was derived from published data. Perspectives were those from German social security (GSS) and statutory health insurance (SHI). RESULTS: Mean costs per patient due to the treatment of fractures from the GSS/SHI perspective were €833/€430 for tramadol, €408/€214 for morphine, €645/€341 for fentanyl, €465/€242 for oxycodone, and €307/€171 for buprenorphine, respectively. Taking into consideration the estimated number of patients with osteoporosis treated with tramadol, morphine, fentanyl or oxycodone of 2.6 million in Germany, additional annual costs for the treatment of fractures that could be saved with buprenorphine were calculated to €1.0 and €0.5 billion (GSS and SHI, respectively). Sensitivity analyses on costs and fracture rates showed the robustness of model’s results.

CONCLUSION: An increased fracture risk associated with tramadol, morphine, fentanyl and oxycodone results in a considerable economic burden for the social system which can be reduced by using opioids associated with lower fracture risks, such as buprenorphine.

ECONOMICS OF MORPHINE EQUIVALENT DAILY DOSES (MEDD)
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OBJECTIVES: Since the Palliative Care Service started at MD Anderson Cancer Center in 1999, there has been an increased usage of methadone within the institution. This study was designed to assess the effect of increased methadone usage on the overall cost of opioid utilization.

METHODS: We evaluated the inpatient usage patterns for methadone (oral, SQ, and IV), transdermal fentanyl (TDF), and sustained release oxycodone (SRO) and morphine (SRM). Using the pharmacy database, for the month of October in each year from 1999–2004, the following data were collected: total milligrams used per day by product, conversion to morphine equivalent daily dose (MEDD) used by product, average wholesale price (AWP), number of unique patients by product, total days of product use, and total number of inpatient days (INPD). A total of 12,625 unique drug doses were included in the final database.

RESULTS: The number of unique patients receiving opioids increased for all study drugs. The usage of methadone in MEDD increased 400% from 1999 to 2004. Using AWP per patient day treated, TDF was $9.43, SRO was $3.63, methadone was $2.38, and SRM was $1.24. In total usage, methadone provided the largest MEDD (mg/day) coverage, up to 9 times the amount of TDF. Since 2000, methadone has contributed more MEDD as a percentage than the other 3 agents combined, while the methadone MEDD cost contribution has never been more than 10%. The mean for the cost of 1 mg of MEDD per patient day was $0.02 for methadone, $0.02 for SRO, $0.11 for SRM, and $0.216 for TDF.

CONCLUSION: Usage of methadone has increased. The MEDD contribution of methadone surpasses other long acting opioids in our inpatient population. The non-annualized total cost per MEDD mg for all products combined has remained stable at $0.05, but cost per patient treated increased by $0.77 per INPD. Analysis continues.