Lumbar disc surgery: is it only a sentinel event of spinal disease?

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To cite this version:
Natacha Fouquet, E Francart, Aline Ramond-Roquin, E. Chazelle, Audrey Petit, et al.. Lumbar disc surgery: is it only a sentinel event of spinal disease?. PREMUS 2019, Sep 2019, Bologne, Italy. hal-02483197

HAL Id: hal-02483197
https://hal.univ-angers.fr/hal-02483197
Submitted on 18 Feb 2020

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Lumbar disc surgery: is it only a sentinel event of spinal disease?

BACKGROUND

Lumbar disc-related disorders are a major cause of work-related osteo-articular morbidity. Lumbar disc surgery (LDS) was chosen as the sentinel event to implement a system for the epidemiological surveillance of these disorders. The aim of this study was to describe the variations in the incidence of LDS and the influence of socioeconomic factors and of factors related to healthcare provision on this incidence.

METHODS

LDS was identified in the hospital database of the Pays-de-la-Loire region. A total of 16,267 LDS cases was detected from 7 codes for surgical acts between 2007 and 2010. The mean annual incidence rates of LDS were calculated by considering the French National Institute of Statistics and Economic Studies (INSEE) census of 2008 for each of the 137 regional areas (RAs) in the region. In order to determine classes of RAs, a main component analysis, followed by a hierarchical bottom-up classification, was carried out on the basis of socioeconomic factors (1) and of factors related to healthcare provision (2):

1. proportions of the population aged 60 and over and 25 to 59, median income per unit of consumption, unemployment and employment rates, precarious employment rate, proportions of professionals, technicians, associate professionals and blue-collar workers, proportions of employment in construction and agriculture;
2. Local Potential Accessibilities (LPA) to general practitioners (GPs) and physiotherapists, density of rheumatologists, travel time to the nearest center for spinal surgery, hospitalization rates in surgery and medicine services.

RESULTS

The mean incidence rate of LDS was 1.6% (standard deviation = 0.3) and varied widely according to RA. There were three types of RA (Table and figure).

The first category of RAs (in gray in the figure) encompassed the large regional cities and coastal RAs, with a rich supply of healthcare, a high proportion of managers and higher intellectual professions, but also a higher unemployment rate, coupled with a high incidence of LDS.

The RAs located around the large cities constituted the second category (in orange in the figure), with a smaller proportion of people over 60, and higher employment rates, associated with a low incidence of LDS.

DISCUSSION/CONCLUSION

This study suggests a link between the incidence of LDS and criteria other than strictly medical. Thus, the LDS indicator may be a health tracer that may also reflect the provision of healthcare and the socio-economic fabric that could be useful for the implementation of policies to tackle social and territorial health inequalities.

Table | Description of classes of regional areas according to the annual incidence of lumbar disc surgery, socioeconomic factors and of factors related to healthcare provision

| Category | Total population (French census of 2008) | Annual incidence of lumbar disc surgery (for 1,000 inhabitants) | Proportion of population aged 60 or over (%) | Proportion of population aged 25–59 (%) | Median income per unit of consumption (in €/per year) | Unemployment rate in population aged 15–64 (%) | Employment rate in population aged 15–64 (%) | Precarious employment rate (%) | Proportion of professionals and technicians, associate professionals (%) | Proportion of blue-collar workers (%) | Proportion of employed in construction (%) | Proportion of employed in agriculture (%) | LPA to private general practitioners (in full-time number for 100,000 inhabitants) | LPA to private physiotherapists (in full-time number for 100,000 inhabitants) | Density of rheumatologists (for 100,000 inhabitants) | Hospitalization rates in surgery services (for 1,000 inhabitants) | Hospitalization rates in medicine services (for 1,000 inhabitants) | Travel time to the nearest center for spinal surgery (in minutes) |
|----------|----------------------------------------|---------------------------------------------------------------|---------------------------------------------|----------------------------------------|-------------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| Category 1 | 42,625                                  | 1.3                                                           | 27.1                                        | 44.3                                   | 18,436                                          | 11.0                                         | 61.7                                         | 13.9                                         | 10.0                                         | 26.3                                         | 8.7                                          | 3.9                                          | 73.8                                         | 45.3                                         | 2.0                                          | 10.7                                         | 122.4                                        | 31.5                                         |
| Category 2 | 11,088                                  | 0.8                                                           | 18.6                                        | 68.4                                   | 17,616                                          | 6.4                                          | 71.8                                         | 12.7                                         | 8.9                                          | 31.3                                         | 10.2                                         | 8.2                                          | 61.7                                         | 54.6                                         | 0.0                                          | 69.2                                         | 59.7                                         | 27.3                                         |
| Category 3 | 8,032                                   | 1.1                                                           | 25.8                                        | 44.6                                   | 16,046                                          | 8.9                                          | 68.8                                         | 13.5                                         | 5.9                                          | 26.5                                         | 9.6                                          | 12.5                                         | 58.1                                         | 38.0                                         | 0.0                                          | 84.2                                         | 100.4                                        | 38.0                                         |

*p value*