

CORRESPONDENCE

Deaths Following Cholecystectomy and Herniotomy

by Ulrike Nimptsch, Prof. Dr. med. Thomas Mansky in issue 31–32/2015

Reservations Regarding the Suitability of the DRG System

In our opinion, the hospital discharge data (diagnosis related group [DRG] statistics) that provide the basis for the analysis (1) are not sufficiently suitable for assessing the actual morbidity and mortality after herniotomies. Most hernias are found in the catalogue of outpatient procedures according to §115b SGB [German Social Code Book] V. Outpatient hernia repairs account for about 20% of all hernia repairs in Germany (2). Similarly, the different surgical techniques with their completely different risk profiles were not taken into account. Primary hernias can differ enormously and are therefore difficult to represent in the DRG system (3). In some instances, more than 60 different surgical procedures are subsumed under one DRG, but in Europe, there are only three or four different ways of coding herniotomies in DRGs on average. This does not seem sufficient for generating relevant data (4).

The authors' conclusion that the preoperative identification of risk could be optimized is consequently only partly valid. In the DRG-based analysis, it is impossible to differentiate between elective procedures and emergency operations. A highly acute incarcerated hernia, which according to the literature presents itself in about 5% of all cases (2), requires immediate action and is associated with substantially higher fatality rate than an elective procedure, which allows for individual preoperative optimization, as suggested. However, in rare cases, so-called watchful waiting is associated with a higher risk for hernia patients, but results in a different DRG classification in inpatients, which is not taken into account in the presented data.

It is our view that the DRG system as a hospital reimbursement system that was introduced in the context of an economy drive in Germany's healthcare system (3) still does not allow valid conclusions about clinical procedures, despite many attempts to optimize it. In our opinion, hernia registries are a more appropriate instrument.

DOI: 10.3238/arztebl.2016.0250a

REFERENCES

1. Nimptsch U, Mansky T: Deaths following cholecystectomy and herniotomy—an analysis of nationwide German hospital discharge data from 2009 to 2013. *Dtsch Arztebl Int* 2015; 112: 535–43.
2. Lorenz R, Koch A, Köckerling F: Ambulante und stationäre Hernienchirurgie in Deutschland – aktueller Stand. *CHAZ* 2015; 5: 267–76.

3. Rudroff C, Schweins M, Heiss MM: The quality of patient care under the German DRG system using as example the inguinal hernia repair. *Zentralbl Chir* 2008; 133: 51–4.
4. Serdén L, O'Reilly J: Patient classification and hospital reimbursement for inguinal hernia repair: a comparison across 11 European countries. *Hernia*. 2014;18: 273–81.

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Conflict of interest statement

The authors declare that no conflict of interest exists.

Outpatient Procedure

In the United States, inguinal hernias and femoral hernias have been treated on an outpatient basis in most cases (92%) for decades now. Even in the former German Democratic Republic, the importance of outpatient surgery was recognized, and in the Veneto province in Italy, the proportion of outpatient operations has risen to comparable levels (1). Only in unified Germany, 66.78% of inguinal hernia repairs are undertaken as inpatient procedures and only 33% on an outpatient basis, according to Jähne (2). Nimptsch and Mansky (3) conclude that death rates for inpatient herniotomies could be lowered. Possible causes of death include complications (perforation, repeat laparotomies, suture failure) that have been described especially in the context of laparoscopic procedures. Recent national registry studies from Scandinavia (4) have confirmed that laparoscopic herniotomies have a higher risk for severe complications than open herniotomies: an extra-abdominal condition turns into an intra-abdominal condition. In view of the fact that in our neighboring countries (the Netherlands, United Kingdom, Denmark, Sweden) the frequency of laparoscopic operations is lower than in Germany, the question that arises is what distinguishes German patients from those of other countries? When taking into consideration the overall economic efficiency of our hospitals, of the complications, and of death rates—maybe less would be more?

DOI: 10.3238/arztebl.2016.0250b

REFERENCES

1. Saia M, et al.: Increased rate of day surgery use for inguinal and femoral hernia repair in a decade of hospital admissions in the Veneto Region (north-east Italy): a record linkage study. *BMC Health Services Research* 2013; 13: 349.
2. Jähne J: Chirurgie der Leistenhernie. *Der Chirurg* 2010; 72: 456–71.
3. Nimptsch U, Mansky T: Deaths following cholecystectomy and herniotomy—an analysis of nationwide German hospital discharge data from 2009 to 2013. *Dtsch Arztebl Int* 2015; 112: 535–43.

4. Kouhia S, Vironen J, Hakala T, Paajanen H: Open mesh repair for inguinal hernia is safer than laparoscopic repair or open non-mesh repair: a nationwide registry study of complications. *World J Surg* 2015; 39: 1878–84.

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Conflict of interest statement
The author declares that no conflict of interest exists.

Postmortem Examination in Case of Death

During my career, deaths following cholecystectomy and herniotomy were rare in the 10 hospitals that I supervised. However, an unwritten law among surgeons was that any such deaths had to be investigated, and postmortem examinations had to be conducted. Until 2006, this showed in double-digit proportions substantial deviations from the diagnoses made when patients were alive. This was then the subject of regular discussion.

In the article by Nimptsch and Mansky (1), I read that in 2957 (1316) patients who died, postmortem examinations were documented for only 13 (7). The autopsy rate was 0.4% (0.5%). Which conclusions should we draw for a total of 4273 deaths, of which only 20 were closely investigated? It seems rather a long shot to me to use statistics to draw robust conclusions from this. My conclusion would be to conduct a careful postmortem examination on each of those patients who died from such a small procedure and to discuss the findings with colleagues. This would yield robust material and, in my opinion, better statistics for our patients' benefit.

DOI: 10.3238/arztebl.2016.0251a

REFERENCES

1. Nimptsch U, Mansky T: Deaths following cholecystectomy and herniotomy—an analysis of nationwide German hospital discharge data from 2009 to 2013. *Dtsch Arztebl Int* 2015; 112: 535–43.

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Conflict of interest statement
The author declares that no conflict of interest exists.

Administrative Data Should Be Questioned

Hospital discharge data (=administrative data) have been used for some time in order to measure the quality of hospital treatments. In this context, Mansky in a recently published review article pointed out the good validity of administrative data. By contrast, a systematic qualitative review found that the sensitivity of quality indicators—drawn from administrative data—is usually poor (1). This is also the case for risk scores, which take into account a number of comorbidities.

On this background, Nimptsch and Mansky (2) write that national hospital discharge data in Germany provide an opportunity—because of their completeness—

for analyzing even rare events, such as deaths after cholecystectomies and herniotomies. The authors conclude that death rates after such procedures could be reduced.

The clinical epidemiologist Richard Lilford was one of the first to point out how poorly suited deaths are as a measure for assessing the quality of hospitals. Hogan et al. concluded (3) that “any metric based on mortality is unlikely to reflect the quality of a hospital.” This prompted *The BMJ* to publish an editorial alongside the research, entitled: “The death of death rates?” In our opinion, the list of suggestions made by Nimptsch and Mansky is lacking one crucial item: adequate staffing levels (4).

DOI: 10.3238/arztebl.2016.0251b

REFERENCES

1. Hanisch E, Weigel TF, Buia A, Bruch HP: The validity of routine data on quality assurance—a qualitative systematic review. *Chirurg* 2016; 87: 56–61.
2. Nimptsch U, Mansky T: Deaths following cholecystectomy and herniotomy—an analysis of nationwide German hospital discharge data from 2009 to 2013. *Dtsch Arztebl Int* 2015; 112: 535–43.
3. Hogan H, Zipfel R, Neuberger J, Hutchings A, Darzi A, Black N: Avoidability of hospital deaths and association with hospital-wide mortality ratios: retrospective case record review and regression analysis. *BMJ* 2015; 351: h3239.
4. Aiken LH, Sloane DM, Bruyneel L, et al.: Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *Lancet* 2014; 383: 1824–30.

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Conflict of interest statement
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In Reply:

Witzel and Lorenz point out an often encountered misunderstanding relating to the data used. The so-called DRG data include for each discharged case not only the diagnosis related group but all diagnosis and procedural codes. In our evaluation we did not refer to DRG groups, but we analyzed the treated cases on the basis of coded procedures and diagnoses, as shown in eTable 1 (1). The argument that hernia procedures are difficult to capture, as a DRG subsumes more than 60 different surgical procedures, does therefore not apply to our article. Incarcerated hernias, as mentioned by Witzel and Lorenz, were indirectly accounted for, since herniotomy patients in whom a bowel operation had been coded for the same inpatient stay were excluded from our analysis.

Witzel and Lorenz further point out that we analyzed only inpatient procedures in our study. If outpatient herniotomies were to be included into the denominator, total mortality—assuming that outpatient procedures would incur zero mortality—would be lower (assuming

20% outpatient procedures, an estimated 0.11% instead of 0.13% would result), but this would not have changed our conclusion, that preoperatively detectable risk factors exist in patients who had inpatient surgery. In principle, it is possible to distinguish between different surgical techniques on the basis of the procedural codes within the used data, but this was not the subject of our study. We think that analyses using the hospital discharge data used in this study provide valuable additions to separate data collections. Compared with collected data, they offer the advantage that they are complete, especially with regard to cases that took an unfavorable course (2). Such datasets are internationally often used for analyzing healthcare services (3, 4).

Holzheimer adds several aspects with regard to hernia surgery, which were, however, not the subject of our study. We aimed to identify in the procedures under study possible leverage points for improving patient safety. We wish to add that this does not only apply for surgical complications but also for the preoperative identification of comorbidities. Holzheimer furthermore points out possible risk differences depending on different operative techniques, something for which different results exist (3). The surgical techniques also could be studied using DRG data, but this was not part of our research question.

Von Hinüber correctly mentions autopsy rates, which according to the respective procedural code were low. We assume that this is due to underdocumentation, as this procedure is not relevant for billing purposes. We agree with his request for routine postmortem examinations in deceased patients after procedures with a low risk of death, and we also agree that insights gained from this may contribute to improving healthcare quality. Apart from that, we wish to point out that the differences between deceased patients and surviving patients can be statistically well described on the basis of the data used in our study for the procedures under study, and that suggestions for improvements of treatment might be deduced accordingly.

Hanisch criticized the use of administrative data for hospital-related quality assurance and evaluation. The usability of medical information from administrative data in quality assurance has been confirmed multiple times, as explained in other publications from our working group (5, 6). However, assessment of individual hospitals was not the subject of the study under discussion here, and so any discussion thereof would mean missing the point.

Minimizing risks for patients—especially avoiding death—is undoubtedly a concern for doctors (7). This generally applies for all procedures and certainly for operations that are not expected to entail any risk of death for the patient, which is an undesirable outcome from a medical perspective in any case. Our study intended to identify whether and at which point options existed for lowering death rates and improve patient safety. From our perspective, the results provide a number of indications. The mean risk of dying—for

example, in association with cholecystectomy—is 1 death in every 250 procedures, and, as we have shown, much higher for certain patient groups. A further reduction on mortality is highly desirable, especially as this can be achieved only by improving perioperative management, so that the effect may be expected to exceed mere mortality.

Although critical discussion of the underlying data is needed, we would be pleased if the suggestions that can be derived from our study (1) would be considered as clues for improvement.

DOI: 10.3238/arztebl.2016.0251c

REFERENCES

1. Nimptsch U, Mansky T: Deaths following cholecystectomy and herniotomy—an analysis of nationwide German hospital discharge data from 2009 to 2013. *Dtsch Arztebl Int* 2015; 112: 535–43.
2. Maass C, Schleiz W, Weyermann M, Drösler SE: Krankenhaus-Routinedaten zur externen Qualitätssicherung? Vergleich von Qualitätsindikatoren anhand der Daten der gesetzlichen externen Qualitätssicherung (BQS) und Routinedaten. *Dtsch Med Wochenschr* 2011; 136: 409–14.
3. Colavita PD, Tsirlina VB, Walters AL, Lincourt AE, Belyansky I, Heniford BT: Laparoscopic versus open hernia repair: outcomes and sociodemographic utilization results from the nationwide inpatient sample. *Surg Endosc* 2013; 27: 109–17.
4. Harrison EM, O'Neill S, Meurs TS, et al.: Hospital volume and patient outcomes after cholecystectomy in Scotland: retrospective, national population based study. *BMJ* 2012; 344: e3330.
5. Mansky T, Nimptsch U: Medizinische Qualitätsmessung im Krankenhaus – Worauf kommt es an? *Z Evid Fortbild Qual Gesundhwes* 2014; 108: 487–94.
6. Mansky T, Völzke T, Nimptsch U: [Improving outcomes using German Inpatient Quality Indicators in conjunction with peer review procedures]. *Z Evid Fortbild Qual Gesundhwes* 2015; 109: 662–70.
7. Wells TS: Some causes of excessive mortality after surgical operations. *BMJ* 1864; 2: 384–8.

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Conflict of interest statement

The Department of Structural Advancement and Quality Management in Health Care, for which the authors work, is an endowed professorship of Helios Kliniken GmbH.