



The Need of a Virtual Tumor Conference for Neurooncological Patients: Results of a Regional Survey in Bavaria, Germany

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Abstract

Purpose: In Germany and worldwide, a disproportional increase of cancerous diseases is predicted for the next decades. Interdisciplinary tumor conferences are essential and rapid communications of the board's recommendation is crucial for optimal patient care. Thus, we wanted to evaluate the need of a virtual neurooncological tumor (VNT) conference in the catchment area of 2.5 million people.

Methods: In this survey, we contacted all secondary care hospitals and outpatient practice clinics specialized in oncology within the catchment area of the University Hospital Augsburg, Bavaria. All potential participants were contacted via telephone, and a query consisting of 7 multiple choice questions (five 4-option close-ended questions and two 5-option questions) was sent either via email or facsimile.

Results: We identified 10 secondary care hospitals and 35 outpatient practice clinics. The survey response rate was 50% with 23/46 questionnaires being returned and completely answered. Most of the participating institutions (91%) care for <50 patients/year with primary or secondary central nervous system tumors of the neurocranium or spine. Neurooncological treatment is rated "highly satisfying" or "satisfying" in 35% and 52%, respectively. The majority (96%) considers a tumor board recommendation as "very important" or "important" for further patient treatment. Regarding availability, tumor conferences were rather difficult to access for 57%. The willingness to attend a VNT conference was high (91%). The majority of participants (73%) would not require any reimbursement.

Conclusion: In the catchment area of Swabia, Bavaria, there is a need for a virtual tumor board to directly exchange transmural information on a hospital and outpatient level.

Keywords

Tumor Board; Online Expert Panel; Central Nervous System; Brain; Spine

Introduction

In Germany, the incidence of cancerous diseases is estimated to increase by 10% by the year 2025, making tumor therapy even more challenging in the ambulatory, clinical and rehabilitation sectors [1]. Brain tumors are a heavy burden for patients, their treatment being a challenge for healthcare professionals and social environment alike [2]. To cope with complex diagnostic and treatment strategies, multidisciplinary specialist teams are needed. Neurosurgical participation in such networks ranges from spinal metastatic entities to brain tumors. The effectiveness of interdisciplinary tumor conferences directly converts into patient care and clinical outcome [3,4]. They are essential for cancer management and include all necessary disciplines and additional health care resources [5]. However, multidisciplinary specialist teams are available most often in tertiary or quaternary care hospitals. The patterns of

Article Information

DOI: 10.31021/jnn.20214155

Article Type: Research Article

Journal Type: Open Access

Volume: 4 **Issue:** 2

Manuscript ID: JNN-4-155

Publisher: Boffin Access Limited

Received Date: 22 September 2021

Accepted Date: 27 September 2021

Published Date: 29 September 2021

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Citation: Sommer B, Konietzko I, Hackanson B, Kahl KH, Stüben G, et al. The Need of a Virtual Tumor Conference for Neurooncological Patients: Results of a Regional Survey in Bavaria, Germany. 2021Sept;4(2):155.

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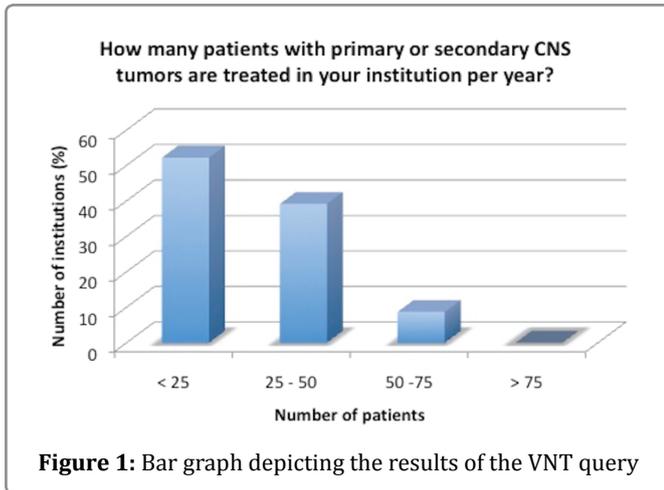


Figure 1: Bar graph depicting the results of the VNT query

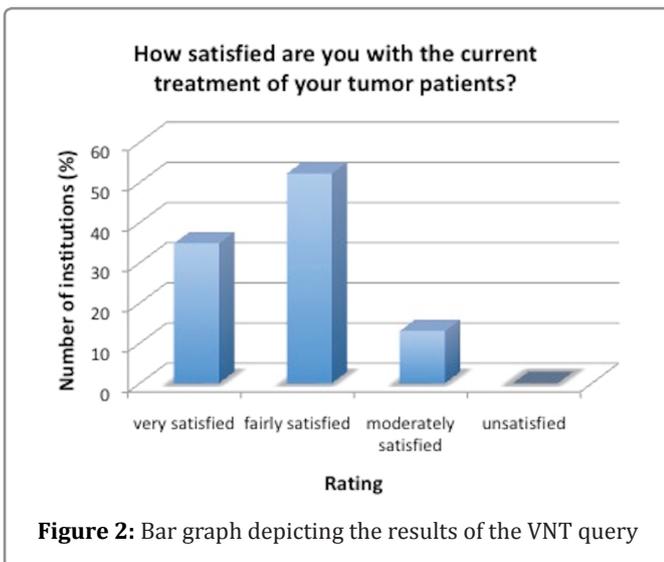


Figure 2: Bar graph depicting the results of the VNT query

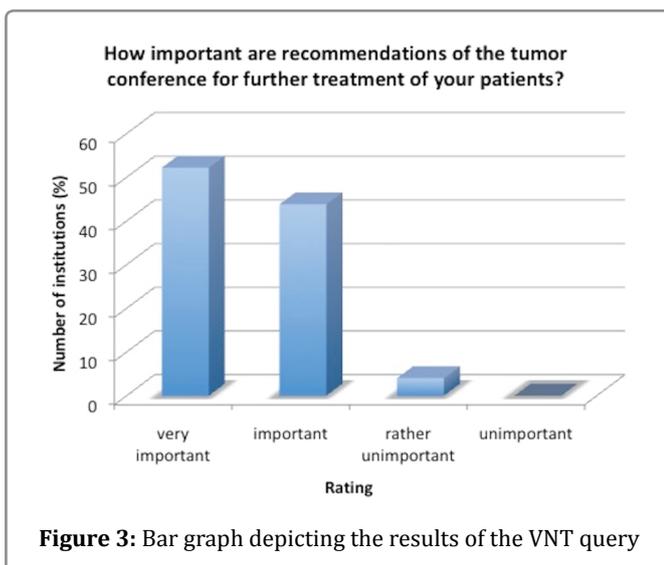


Figure 3: Bar graph depicting the results of the VNT query

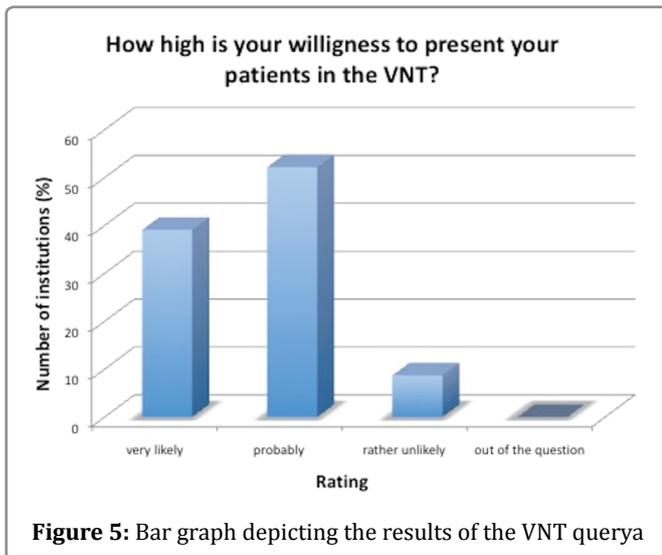
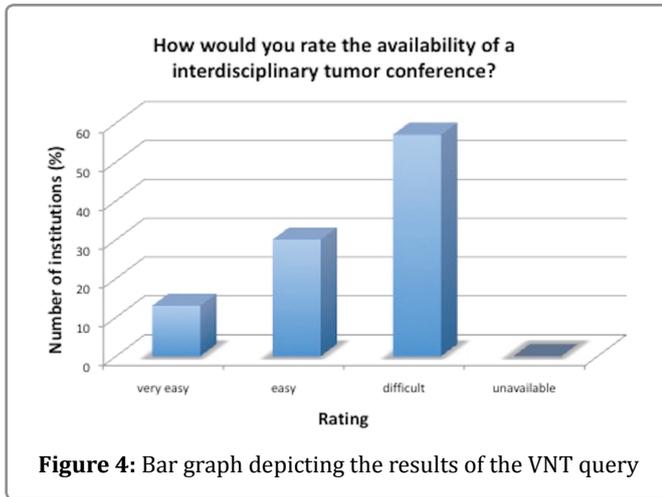
distribution of neuro-oncological tumor board patients and the referring institutions or ambulances are manifold. One key point is the delivery of the tumor board decision to the patient and his/her attending physician in time. Especially in ambulatory settings or primary to secondary referral hospitals, a delay in flow of information may lead to a delay in cancer treatment with all the associated negative effects. Over the last 20 years, telemedicine has evolved from the first evaluation of patients with stroke for

thrombolysis candidacy to the treatment of epilepsy, neurotrauma and chronic pain [6]. In this survey, we assessed the need for a virtual neuro-oncological tumor board (VNT), which should provide health care givers of the administrative district around the city of Augsburg, Bavaria, Germany with the opportunity to present their patients.

Methods

The concept of a VNT includes identification of intracranial lesions by the ambulant health care giver (general practitioner, neurologist, neurosurgeon, and oncologist). After written informed consent, radiological data is uploaded to a secure server of the University Hospital Augsburg. Appointments for the digital tumor conference are scheduled, in which the practitioner can present all relevant clinical, social and radiological data to the expert panel. The final board recommendation will be given in the same meeting and documented electronically. If the patient has received treatment (e.g. surgery, radiation, chemotherapy), histopathological, radiological and clinical results will be provided using the same server platform. Security of data

- How many patients with primary or secondary CNS tumors are treated in your institution per year?
 - < 25
 - 25 - 50
 - 50- 75
 - > 75
- Please name institutions where you currently refer your CNS and spine tumor patients to obtain further information and treatment recommendations.
 - Universitätsklinikum Augsburg
 - Universitätsklinikum in München
 - Universitätsklinikum Ulm/Günzburg
 - Universitätsklinikum Regensburg
 - Other: _____
- How satisfied are you with the current treatment of your tumor patients?
 - very satisfied
 - fairly satisfied
 - moderately satisfied
 - unsatisfied
- How important are recommendations of the tumor conference for further treatment of your patients?
 - very important
 - important
 - rather unimportant
 - unimportant
- How would you rate the availability of a interdisciplinary tumor conference?
 - very easy
 - easy
 - difficult
 - unavailable
- How high is your willingness to present your patients in the VNT?
 - very likely
 - probably
 - rather unlikely
 - out of the question
- How high should the compensation for expenses related to the patient's VNT presentation be?
 - € 100
 - € 75
 - € 50
 - € 25
 - no compensation



(transmission, viewing, storage) will be provided using a high-level (128 bit) encryption (SSL/TSL) with a public key procedure. In this survey, we identified 10 secondary care hospitals and 35 outpatient practice centers specialized in oncology within the catchment area with 2.5 million inhabitants of the University Hospital Augsburg, Bavaria. All potential participants were contacted via telephone, and a query consisting of 7 multiple choice questions (see appendix) was sent either via email or facsimile. Questions were designed as five 4-option close-ended questions and two 5-option questions. The ongoing study started in July 2020 and was initiated by the Comprehensive Cancer Center Augsburg (CCCA). Since the survey was initiated without any patient data, the responsible local ethics committee of the Ludwig-Maximilians-University Munich had no ethical concerns regarding this study (written request on March, 15th 2021, personal communication).

Results

The response rate of fully answered questionnaires was 50% (23/46). Most of the participating institutions (91%) care for 25-50 patients/year with primary or secondary central nervous system tumors of the neurocranium or spine (Figure 1). Except two survey participants, all of the remaining responders are also choosing our institution for treatment evaluation. In 15/20 (75%) of all cases, however, institutions are consulting other tertiary hospitals, as well. Currently, 35% are “highly satisfied” and 52% are “satisfied” with the tumor board recommendations (Figure 2). Almost all participating centers (96%) consider a

multidisciplinary tumor board recommendations to be “very important” or “important” (Figure 3). for further counsel and treatment of their patients. Regarding availability, tumor conferences were rather difficult to access for 57%, although the readiness to participate in a VNT was high (91%, Figures 4 & 5). The majority of participants (73%) did not want to be compensated for expenses related to the patient’s VNT presentation.

Discussion

Over the next decade, increasing rates of oncological diseases lead to greater demand of human and technological resources. An expert committee is essential to meet the requirements of health care in these complex cases becoming a model of care worldwide [7]. Here, the institution of a tumor board plays a crucial role, because multidisciplinary expert opinions are readily available at the same time. The knowledge and expertise is canalized into a treatment plan, which is a benefit for the patient, relatives and attending physicians. In our survey, the catchment area of the district of swabia includes 2.5 Million inhabitants. The health care of oncological patients in rural regions is most often demanding and difficult. Especially in neuro-oncology, patients most often have neurological deficits that could lead to immobilization, regardless the fact that patients living in rural areas have limited access to healthcare specialists. Studies report on waiting periods over months until first specialist contact, resulting in an unnecessary delay [8]. Patients with immunosuppression, external exposure should be minimized to avoid an infection. Avoidance of travelling long distances and availability of the internet are other advantages of a VNT [9]. Telemedicine is an emerging technology that has been evolved over the past 25 years. As software, hardware, data security and data transfer improved a smooth presentation of patients and their diagnostic is possible. Timely access to these electronic consultations is the key to adequate patient specialist care [10]. In Germany, telemedicine is mostly used by neurologists in the context of ischemic stroke treatment, which comes even more apparent during the ongoing COVID-19 pandemic [11]. In the setting of social distancing and restriction of clinical visits, virtual networking has taken a major role in disease management [12,13]. Telehealth care visits have been established in neurosurgery and are upgraded continuously [14]. Still, telemedicine in this field is scarce with only two published reports [15,16].

Referral to a specialized cancer center meets the demands of patients with oncologic diseases, as ambulatory settings or regional hospitals are lacking the resources and expertise to treat this patient group. Multidisciplinary online expert panels have been established successfully in a cohort with colorectal cancer liver metastases [17]. Over 3 years, 108 Dutch patients were discussed, leading to a higher eligibility for these patients’ regarding local treatment strategies, efficient time keeping by avoiding needless referrals and triage, and generating a high level of compliance in both attendance in these panels and treatment advice. In our survey, participants underlined their readiness to participate in a VNT, although short communication via telephone revealed uncertainty regarding the hardware/software setup and the stability of internet connection. Crucial for a successfully running telemedicine platform is the availability and performance of technical hardware and software. Patient and health care practitioner’s informed consent must be acquired to start the transmission of personalized data. Prior to the induction of such a platform, participants are advised to undergo a training program in e.g. video conferencing, data processing, board administration and meeting coordination [7]. Besides time pressure to achieve a general consensus, physical absence of online meetings and implementation of this concept into daily clinical activities remain challenging.

Barriers of a multidisciplinary board is an inconclusive decision after initial presentation, most often due to the lack of complete histopathological and/or radiological data [7,18,19]. Even though most of the participants of our survey declined financial compensation, online expert networking requires adequate personnel and monetary resources. Reimbursement such as in second opinion consultation for healthcare insurances could be one key to make oncological panels lasting even in a future of medical big data. Cost-effective analyses and models are essential for implementation of such an online expert panel [8,10].

Key points of this study

- a) Interdisciplinary tumor conferences raise the quality of treatment of cancer patients.
- b) A virtual neurooncological tumor board could overcome physical distances and deliver important information in a timely fashion to the health care practitioners.
- c) There is a need for a virtual tumor board for a direct transmutal exchange of information on a hospital and outpatient level.

Conclusion

Despite a small sample of representative ambulatory and primary care centers, our survey revealed a need for a virtual neuro-oncological tumor panel in the catchment area of Swabia, Bavaria. To establish this, sufficient data safety in submission and storage, fluent electronical communication and a stable virtual communication platform are required to ensure timely and accurate transfer of information.

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