

# Limits to Neurosurgical Care for an Undocumented Immigrant in the United States: A Case Report

Myles R. Keener <sup>a</sup> Rebecca Sturges <sup>a</sup> Kathryn N. Becker <sup>a</sup> Connor S. Gifford <sup>a</sup> Christopher D. Alexander <sup>a</sup> Jason L. Schroeder <sup>a, b</sup> Saksith Smithason <sup>b, c</sup>

Corresponding author(s): [kathryn.becker@rockets.utoledo.edu](mailto:kathryn.becker@rockets.utoledo.edu)



<sup>a</sup>University of Toledo College of Medicine and Life Sciences Toledo, OH, 43614, USA, <sup>b</sup>Promedica Physicians Neurosurgery Toledo, OH, and <sup>c</sup>Department of Neurosurgery, Southeastern Regional Medical Center Lumberton, NC

**Documentation status is a well-recognized social determinant of health in the immigrant population of the United States. Lack of financial means and fear of legal repercussions can delay medical attention, limit treatment options, and decrease patient follow-up. This is reinforced by current government policies that limit financial assistance in emergency situations and deny coverage of preventative or follow-up care. Here we report a case of an otherwise healthy 24-year-old undocumented immigrant who presented to a rural United States emergency room with new-onset seizure, blurry vision, and headache. The patient was admitted to the neurosurgical service where he was diagnosed and treated for a symptomatic arachnoid cyst. Here we review current healthcare legislation that restricts access to preventative and follow-up healthcare in the United States. This case highlights the ways in which the undocumented immigrant patient population remains negatively impacted by these policies, often leading to late presentation and limited neurosurgical treatment options.**

Intracranial arachnoid cyst | neurosurgery | health services accessibility | social determinants of health | undocumented immigrant

The United States spends 17.1% of its gross domestic product on health care { far more than any other high-income nation and nearly 50% more than second highest health care spender, worldwide (1). Still, US health outcomes (measured in terms of mortality, the safety of care, and patient satisfaction) are not meaningfully improved by this spending, and indeed are inferior to many high-income nations (1). To address these concerns, the Patient Protection and Affordable Care Act (PPACA, ACA, or "Obamacare"), enacted in 2010, greatly expanded coverage to many Americans. Through this act, Medicaid eligibility and access to resources such

as the Children's Health Insurance Program (CHIP) and subsidized exchanges also expanded (2). Despite these efforts, the issue of healthcare access for undocumented immigrants living in the United States remains unaddressed.

There are currently more than 11 million undocumented immigrants living in the United States (3). Undocumented immigrants indirectly contribute over \$1.5 billion to Medicare and \$7-15 billion to Social Security each year (4). While ACA expanded healthcare coverage for many Americans, it made a social security number prerequisite to accessing this expansion, thereby preventing UI eligibility (5). Furthermore, ACA goes so far as to explicitly prohibits UIs from purchasing health insurance outright (6). Correspondingly, UIs report worse access to health care as well as poorer health outcomes compared with other populations in the US (7). Without legal access to health insurance, accessing health care in the US requires that undocumented immigrants personally absorb the costs of care or pursue free healthcare through either the emergency department or a free private clinic (3, 8). To provide care for undocumented immigrants, it is estimated to cost \$10 billion per year, which accounts for 1.5% of total U.S. medical cost (3, 4). Thus, it is necessary for the United States healthcare systems to collectively evaluate the way UIs access and receive care.

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In this case report, we detail this necessity through the experience of an undocumented immigrant requiring emergency neurosurgical care for a symptomatic intracranial arachnoid cyst at a US medical center.

Arachnoid cysts are fluid-filled space-occupying lesions that develop within the arachnoid membrane of the meninges (9). These cysts are histopathologically benign, but they can cause dangerous increases in intracranial pressure that often requires neurosurgical management to resolve (10). Although this patient complied with federal guidelines, his neurosurgical care remained impacted by his inability to obtain health insurance and the threat of legal consequences related to his immigration status.

## Case Report

### Patient Information

Age: 24 years old, gender: Male, ethnicity: Hispanic, related Medical Problems: Symptomatic intracranial arachnoid cyst, seizure, elevated intracranial pressure.

### Objective for Case Reporting

This report seeks to exemplify and highlight the challenges associated with access to healthcare overall, and neurosurgical care specifically within the undocumented immigrant patient population in the United States. We further aim to educate patients, students, and physicians about this specific social determinant of health by reviewing the current US healthcare legislation and policies governing access to care in the undocumented immigrant population.

### Case

A 24-year-old non-english-speaking male with undocumented immigration status presented to the emergency department of a rural North Carolina hospital with a new-onset seizure, blurry vision, and headache. Upon clinical evaluation, the patient was awake, alert, and otherwise neurologically intact. Computer tomography (CT) of the head displayed a 6x4 cm right temporal-frontal non-enhancing cystic mass, clinically consistent with a diagnosis of arachnoid cyst. Follow-up magnetic resonance imaging (MRI) confirmed radiographic suspicion of arachnoid cyst (Figure 1).

The patient was treated with an intravenous loading dose of levetiracetam for seizure control and was prescribed maintenance oral doses for continued home usage. Upon discharge, the patient was additionally prescribed acetazolamide to reduce cerebrospinal fluid (CSF) production for medical management of elevated intracranial pressure (ICP) (11).

The patient returned four weeks later to the outpatient neurosurgery clinic for follow-up with decreased seizure activity but increased frequency and intensity of headaches, accompanied by blurred vision. A repeat CT scan did not demonstrate any interval changes in the cyst since previous imaging, but fundoscopic examination revealed new onset papilledema, indicating sustained elevations in the patient's ICP. At this time, surgical options were offered to further decrease ICP and to improve the patient's symptoms.

Surgical options were discussed with the patient, after which the patient consented to and underwent an open craniotomy with endoscopic cyst fenestration. This procedure was chosen over other methods of surgical intervention, including surgical displacement of fluid (e.g., cystoperitoneal (CP) shunt), due to concerns that the patient's lack of insurance and undocumented status would make access to consistent follow-up care difficult. Histopathologic evalu-

ation confirmed a diagnosis of arachnoid cyst. The patient's surgical recovery was unremarkable, and he was discharged home on post-op day 2, after which the patient was not seen for follow-up. Details of the case report were discussed with the patient and signed consent was obtained.

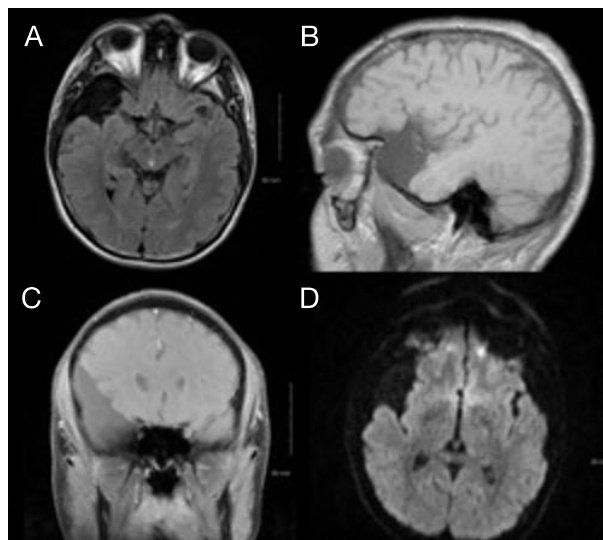


Figure 1. Magnetic Resonance Imaging (MRI) demonstrating right temporal arachnoid cyst. A. Axial fluid-attenuated inversion recovery (FLAIR). B. Sagittal T1 image of cyst overlying both temporal and frontal operculum. C. Coronal T1 demonstrates cyst does not enhance after administration of contrast agent. D. Axial diffusion-weighted image does not demonstrate restricted diffusion within the cyst.

## Discussion

Arachnoid cysts are benign fluid-filled sacs, usually the result of congenital malformation, that occurs on the arachnoid membrane of the central nervous system (9). Although the underlying pathogenesis of arachnoid cysts remains unspecified (12, 13), therapeutic treatment aims to relieve increased intracranial pressure associated with the increasing size of the cyst. Multiple clinically accepted surgical approaches are used for the decompression of symptomatic arachnoid cysts. These include craniotomy with cystectomy, cyst fenestration via either an open craniotomy or endoscopic approach, or physical displacement of the fluid (e.g., CP shunt) (10). Evidence suggests that CP shunts are associated with more rapid and sustained cyst obliteration (evaluated radiographically), however, the shunt itself poses significant risks (14). Shunts, especially in children, can lead to neurological complications later in life (14). Shunts are also prone to failure or can serve as a nidus for infection, each requiring surgical re-intervention (15). In this case, an inability to guarantee access to the follow-up care that is often required in shunt patients made this intervention a much less viable treatment option. In comparison, endoscopic approaches are less effective at obliterating cysts (14). Still, endoscopic approaches are less invasive and carry lower rates of surgical complications, while still effectively resolving cyst associated ICP issues (14).

Procedural selection is typically based on patient and surgeon preference and the pathophysiologic indications favoring a particular clinical intervention. In many cases such as the one we report here, interventional options can be limited by the neurosurgical re-

sources offered at this rural hospital { more specifically, the lack of an available endoscope. Because of these factors, the patient's best option to avoid the substantial and unpredictable follow-up burden associated with CP shunts, was to undergo a more invasive open craniotomy and cyst fenestration. This highlights an increasingly common instance wherein physicians and patients must equally consider external socioeconomic and healthcare policy-related factors in their clinical decision-making process.

The Emergency Medical Treatment and Labor Act (EMTALA) requires that hospitals accepting federal and state sponsored health insurance (nearly all US hospitals) provide emergency services to any person regardless of insurance or legal status (8). EMTALA defines an emergency medical condition as one that manifests as sudden onset with such severity of symptoms that the absence of immediate medical care could reasonably put the patient's health at serious risk (8). Because this definition does not specify any objective findings, it is often left open to interpretation, and is based on the healthcare provider's decision.

If a provider determines that the patient fulfills that risk requirement (as was evident in this case), EMTALA covers the cost of this emergent care by allowing hospitals to seek financial reparation for patients that qualify for Emergency Medicaid (8). Like Medicaid, Emergency Medicaid is administrated by individual state governments and eligibility criteria is therefore variable. If a patient does not qualify for Emergency Medicaid, the hospital may attempt to recoup some of costs through the Medicare Prescription Drug Improvement and Modernization Act (MMA), which set aside \$1 billion reimbursement services to uninsured citizens and undocumented immigrants (16). However, the hospital is more likely to go completely uncompensated, as hospitals are estimated to pay upwards of \$50 billion annually for UI care that is not reimbursed by the government (17).

While EMTALA and Emergency Medicaid funds were fortunately accessible to cover the cost of this specific patient's surgical intervention, reimbursement is not available for the follow-up or preventative measures that are often associated with a life-threatening condition (8). Simultaneously, Medicare regulations require that hospitals provide patients with a discharge plan (18). Such competing interests place healthcare workers at the center of multiple expensive ethical dilemmas { complying with federal regulations while also fulfilling their duty as a care provider.

Similarly, hospitals are performing a very delicate balancing act. They too must abide by federal regulations and simultaneously face the financial realities of providing uncompensated care (3, 5, 16). Rural US hospitals take particular responsibility in aiding and

serving the uninsured and other susceptible populations including undocumented immigrants. It remains unclear whether a new policy, such as Medicaid Delivery System Reform Incentive Payment program (DSRIP), would effectively benefit the hospitals that provide a large amount of uncompensated care to this population.

In this case, the patient and his physicians did indeed modify the care plan based on this reality. The treatment option that avoided all follow-up care, including the routine post-operative visits that would otherwise be considered essential, was selected largely because the patient could not afford this care and the hospital was ineligible for reimbursement through existing government programs. The altering of the patient's treatment plan due to concern of insurance and undocumented status highlights the limitations undocumented immigrants face in accessing healthcare in the United States. regarding healthcare in a population that is only continuing to grow in America.

## Conclusion

The sociopolitical circumstances underlying this patient's inability to access affordable American medical care informed and altered the approach to his treatment. Leaving the undocumented immigrant population out of historical and current policies that pertain to insurance and access to health care is an oversight that has the potential to affect not only the 11 million UIs in the United States, but all tax paying citizens (3). Beyond the health ramifications for the UI population, the policies in place create a strain on already limited budgets of public hospitals. Situations such as this, often result in emergency departments, and at times physicians, paying out of pocket to ensure the best outcomes for their patients. This chronic misallocation of hospital funds may ultimately impact the very Americans that laws such as EMTALA and ACA are intended to protect. In order to benefit all Americans, maximize the efficiency of care, and minimize the financial burden on US healthcare systems, further conversations and healthcare policies must address access to care for the undocumented immigrant population.

## Conflict of interest

Authors declare no conflict of interest.

## Authors' contributions

S.S. was responsible for research design and collection of clinical data. M.K., R.S., K.B., C.G., and S.S. performed the literature search and drafted the manuscript. K.B., C.G. J.S., and S.S. edited and revised the manuscript.

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