The Body Keeps the Score: An Exploratory Study on the Long-Term Impact of Voiding Cystourethrograms (VCUGs)

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Abstract

BACKGROUND

Voiding cystourethrograms (VCUGs) are widely performed in pediatric urology; most commonly on young children with febrile urinary tract infections (UTIs). VCUG involves catheterizing the urethra (the final tube transporting urine from kidneys to outside of the body) to diagnose vesicoureteral reflux, a common pediatric condition in which urine flows backward from the bladder back into the kidneys. Despite its importance as a diagnostic test, bodies of literature have asserted that the potential "psychological trauma resulting from VCUG [is] considered the same as from a violent rape, especially in girls"[1]. Little is known about the long-term physical and psychological impacts of VCUG outside of its ability to diagnose reflux. The goal of this study was to evaluate and quantify the potential long-term impacts of VCUG on patients' lives.

METHODS

We conducted a 9-month retrospective cohort study involving adults ("respondents") who were at least 18 years old at the time of the survey and received "most or all" of their medical care in the United States. We used social media and other online channels (Instagram, Reddit, LinkedIn, Twitter, etc.) to collect the largest possible group of adults who remember undergoing (and concurrently, *not* undergoing) VCUG as children. All respondents self-reported information via a 20-minute survey that asked about various health metrics, behaviors, patient history, and outcomes. Based on their answers, respondents were split into two groups: "VCUG", defined as those who had undergone at least one VCUG in childhood (<18 years old), and "Controls", defined as those who had not. In a branched survey component, VCUG respondents provided additional information on the procedure's impact, if any, on their lives.

RESULTS

In this study, we analyzed data from 334 respondents to investigate possible long-term impacts of undergoing VCUG in childhood. Of the total respondents, 204 (61%) were identified as having undergone VCUG, while the remaining 130 (39%) served as the control group. While these groups were neither perfectly randomized nor match, the focus of our analysis was to characterize the effects of VCUG in an adult population, which has never previously been done.

Our findings revealed significant associations between VCUG exposure and adverse health outcomes, including poorer perceptions of physical and mental health, higher prevalence of pelvic and psychological conditions such as hypertonic pelvic floor, anxiety, depression, and PTSD, and increased rates of medical care refusal, particularly for intimate examinations such as pap smears and gynecological consultations. Additionally, individuals with a history of undergoing VCUG exhibited a greater propensity for engaging in risky behaviors such as smoking, alcohol consumption, physical inactivity, and work absenteeism. These initial findings underscore the need for further research and clinical consideration regarding the potential long-term consequences of VCUG.

CONCLUSIONS

This preliminary study suggests that the enduring effects of childhood VCUG extend beyond childhood and adolescence, revealing significant associations with adverse health outcomes and risky behaviors in adulthood. The results present strong grounds to weigh the diagnostic value of VCUG against its potential long-term consequences, particularly its impact on patients' future physical and mental health, medical care engagement, and lifestyle behaviors. Our findings emphasize an acute need to reassess informed consent protocols for VCUG and for more resourced institutions to consider a full-scale study that would minimize selection and recall bias in the population sample.

References and Contact Information

REFERENCES

1. Azarfar, A., Esmaeeili, M., Farrokh, A., Alamdaran, A., Keykhosravi, A., Neamatshahi, M., Hebrani, A., & Ravanshad, Y. (2014). Oral midazolam for voiding dysfunction in children undergoing voiding cystourethrography: a controlled randomized clinical trial. *Nephro-urology monthly*, *6*(3), e17168. https://doi.org/10.5812/numonthly.17168

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