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Anthrax outbreak in Sesheke District, Western Province of Zambia, December 2023: A matched case-control study

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Introduction

On October 21, 2023, Sesheke District in Zambia's Western Province notified a human case of cutaneous anthrax. Anthrax is a zoonotic disease of public health concern in Zambia, with sporadic outbreaks occurring annually in Western Province. However, Sesheke District had not reported any cases of anthrax for over five years. We conducted an outbreak investigation to assess the risk factors contributing to the onset of this outbreak, review surveillance practices for anthrax and make recommendations to prevent future outbreaks.

Methods

We conducted a case-control study, matched by age and sex in the ratio of one case to three controls. A questionnaire was administered to collect exposures and risk factors on cases and controls. We used conditional logistic regression to calculate matched odds ratios (mORs) and 95% confidence interval (CI) to identify risk factors associated with contracting anthrax.

Results

We interviewed 13 cases with 39 controls. All the cases had cutaneous anthrax; laboratory confirmed by culture. The majority of the cases were male (n=11, 85%). The median age was 25.5 years (range 10-66 years),. Handling raw meat [mOR=17, 95% CI (3.3-89.5)], skinning of cattle and goat carcasses [mOR=15.7, 95% CI (1.6-153.0)], contact with cooked meat during meals [mOR =7.6, 95% CI (1.5-38.5), handling dead animals [mOR =7.5, 95% CI (1.8-30.8)], and being a farmer [mOR=4.0, 95% CI (1.08-14.5)], were all risk factors. Furthermore, there was poor documentation of surveillance data and delayed implementation of control measures in the district (18 days instead of 7 days threshold).

Conclusion

These findings underscore the need for improved surveillance, timely intervention, and educational programs to reduce the risk of anthrax, particularly among farmers. We conducted sensitization on safety practices in handling meat and carcasses to prevent future outbreaks. We recommend prompt response to outbreaks using a one-health approach, with improved documentation of surveillance activities.