Epidemiology of Childhood Intussusception and determinants of Intestinal resection in Kenya, 2002-2016

Richard Omore [1*] , Francis Osawa [2] , Ogwel Billy [1], Sergon Kibet [3], Tabu C [4] , Mwenda M. Jason[5], Umesh Parashar [6] and Jacqueline E.Tate[6]

[1]Kenya Medical Research Institute, Center for Global Health Research (KEMRI-CGHR),[2]Department of Surgery, School of Medicine, University of Nairobi (UoN), Kenya,[3]WHO Country Office for Kenya, Nairobi, Kenya,[4]Division of Disease Surveillance and Response, Ministry of Public Health and Sanitation, Kenya,[5]WHO Regional Office for Africa (WHO/AFRO), Brazzaville, Republic of the Congo,[6]Division of Viral Diseases, US Centers for Disease Control and Prevention, Atlanta, GA, USA

Background and aims

Kenya introduced rotavirus vaccine in the national immunization program in July 2014. Continued monitoring of changes in the epidemiological landscape and management of intussusception among children remains important. The aim of the current study is to describe the epidemiology, seasonality and factors determining intestinal resection among children <5 years treated for intussusception in Kenyan referral hospitals from 2002-2016.

Methods

We established surveillance to monitor intussusception retrospectively ((January 1, 2002- October 30, 2013) and prospectively (November 1, 2013-December 31, 2016)). A case was defined as patient <5 years of age diagnosed with intussusception that met Brighton collaboration criteria for level 1 of diagnostic certainty at 12 selected referral hospitals across Kenya. We used logistic regression to identify risk factors for intestinal resection.

Results

From 2002-2016, we enrolled 524 cases; infants (379 [72%]) and male 341/522 (65%) patients predominated. Leading clinical symptoms were vomiting (92%), blood in stool (86%), abdominal distension (83%), abdominal pain (78%), diarrhea (76%) and fever (72%). Intussusception location was mainly ileocolic (74%). Diagnoses were through ultrasound (47%), abdominal x-ray (38%) and surgery (31%). In general, 38.4% (201/524) cases were treated through intestinal resection and overall case fatality rate was 12% [61/524]. In logistic regression analysis, patients treated through intestinal resection were more likely to be infants (adjusted odds ratio (aOR) =3.02 , 95% confidence interval (95%CI) 1.39 - 6.55), present with abdominal pain (aOR=3.20 95%CI 1.75-5.85), abdominal distension (aOR=2.72 , 95%CI 1.30-5.68), and abdominal mass (aOR=1.84, 95%CI 1.18-2.88), and to have sought care >4 days after illness symptom onset (aOR=2.04 95%CI 1.31-3.18). Intussusception occurred all year round without clear seasonality pattern.

Conclusion

Intussusception among Kenyan children occurs mainly in infants with a male predominance, but without clear seasonality. Intestinal resection is associated with severe disease symptoms, suggesting possible delay in care seeking. Prompt care seeking for intussusception may contribute to early diagnosis and appropriate treatment for favorable outcomes in this setting.