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RESEARCH ARTICLE

Eosinophilic oesophagitis: a diagnosis to consider in African children

TJ Afaa,[1] VK Etwire,[2] NA Seneadza,[3] AD Abrahams,[4] NA Anane-Binfoh,[5] YA Awuku[6]

[1] *Department of Child Health, College of Health Sciences, Korle Bu Teaching Hospital, University of Ghana Medical School, Ghana*
[2] *Paediatric Surgery Unit, Department of Surgery, Korle Bu Teaching Hospital, Ghana*
[3] *Department of Community Health, College of Health Sciences, Korle Bu Teaching Hospital, University of Ghana Medical School, Ghana*
[4] *Department of Pathology, College of Health Sciences, Korle Bu Teaching Hospital, University of Ghana Medical School, Ghana*
[5] *Department of Child Health, Korle Bu Teaching Hospital, Ghana*
[6] *Department of Medicine and Therapeutics, University of Health and Allied Sciences, Ghana*
Corresponding author, email: *tjafaa@ug.edu.gh; taibaafaa3@gmail.com*

Background: Eosinophilic oesophagitis (EoE) is a chronic inflammatory disease of the oesophagus which often presents in younger children as food refusal and failure to thrive, and in older children as food impaction and dysphagia. The goal of this study was to highlight some characteristics of the presence of EoE in African children who presented for upper gastrointestinal (GIT) endoscopy at the Korle-Bu Teaching Hospital in Accra, Ghana.

Cases: This is a case series of four children seen at a paediatric gastroenterology clinic with abdominal pain, vomiting and food impaction. They had personal and family histories of atopy. Uppe GIT endoscopy and oesophageal biopsies showed eosinophil count of greater than 15. They all had a remarkable response to the treatment of EoE.

Conclusion: EoE was diagnosed in Ghanaian children although the exact prevalence is not known. There is the need to create awareness among clinicians in Africa for early diagnosis and optimal care of this condition.

Keywords: eosinophil, oesophagitis, endoscopy, children

Introduction

Eosinophilic oesophagitis (EoE) is a chronic inflammatory disease of the oesophagus, characterised by clinical features of oesophageal dysfunction in the setting of immune and antigen-mediated eosinophilic infiltration of ≥ 15 eosinophils per high power field of the oesophageal mucosa.[1] EoE is a cause of significant upper gastrointestinal (GIT) morbidity and high cost of healthcare.[2] In untreated cases, it may not lead to mortality or the risk of malignancy, but it leads to poor quality of life.[3] Eosinophils are normally found in the mucosa of the GIT tract, except for the oesophagus.[4] The presence of eosinophils in the oesophagus is not exclusively due to EoE, but may also be found in conditions like gastro-oesophageal reflux disease, Barrett's oesophagus, Crohn's disease, vasculitis, and some infections and medicine use. It is essential to distinguish EoE from other causes of oesophageal eosinophilia during the patient's evaluation.[5] EoE affects both children and adults with a mean age at diagnosis of between 5.4 to 9.6 years in children.[3] The commonest clinical presentation is dysphagia and food impaction in older children and adolescents.[6] In younger children, food refusal and failure to thrive predominate in presentation. Other symptoms include abdominal pain, vomiting and diarrhoea.[7] At endoscopy, some oesophageal abnormalities seen are longitudinal furrowing, friability, oedema, longitudinal shearing, whitish exudates, narrow oesophagus, felinisation, and transient or fixed rings.[8] A normal-appearing oesophagus at endoscopy does not rule out the diagnosis of EoE.[7] Children with EoE often have other associated allergic diseases and/or a family history of atopy.[9] Males are more affected than females with a risk ratio of 3:1.[10] This study highlighted the presence of EoE in Ghanaian children.

Case descriptions

This is a case series of four children diagnosed with EoE at the gastroenterology clinic at the Korle Bu Teaching Hospital. Upper GIT endoscopy was done for all the children and biopsies were taken from the lower, middle and upper oesophagus as well as from stomach and duodenum. The biopsies were processed routinely into formalin fixed paraffin embedded blocks, slides were prepared from thin sections (3 um), stained with haematoxylin and eosin. The stained slides were examined microscopically for the presence of eosinophils and other histological features of EoE. The clinical presentations are shown in Table I.

Case 1: A 12-year-old adolescent with recurrent abdominal pain of 13 months was referred for upper GIT endoscopy. He was managed with triple therapy based on positive stool *Helicobacter pylori* antigen test. He had intermittent asthma, for which he was managed with inhaled short-acting beta agonist and the last episode was three years ago. He has both personal and family history of atopy. No abnormality was noted at endoscopy, but biopsies were taken based on personal and family history of asthma and atopy. Histology confirmed the diagnosis of EoE and he was managed with dietary elimination, which resolved the abdominal pain.

Case 2: This case involves a 7-year-old male child with seven months history of poor growth, difficulty swallowing, and poor appetite. He had episodes of food impaction a month prior to presentation and this was relieved by straightening his neck and hitting his chest to bring comfort. He was previously

Table I: Characteristics of patients

Features	Case 1	Case 2	Case 3	Case 4
Age Years	12	7	8	11
Sex	Male	Male	Female	Male
Indication for endoscopy	Abdominal pain	Abdominal pain, vomiting, food impaction and failure to thrive	Vomiting and dysphagia	Abdominal pain, vomiting
Duration of symptoms (months)	13	7	14	48
History of asthma	Present	Present	Absent	Present
History of other atopic diseases	Present	Present	Present	Present
Family history of asthma and or atopy	Present	Present	Present	Present
Endoscopy findings	Normal	Longitudinal furrows, oedema (Figure 1)	Normal	Normal
Treatment given before endoscopy	Triple therapy	Proton pump inhibitor	Proton pump inhibitor	Triple therapy
Treatment given after diagnosis of EoE	Dietary elimination	Diet, systemic and topical steroid, dilation	Topical steroid	Dietary elimination

managed with a proton pump inhibitor (PPI), which produced no improvement. He had asthma which was intermittent with allergic conjunctivitis and eczema. Upper GIT endoscopy showed oesophageal oedema and longitudinal furrows (Figure 1). Biopsies confirmed the diagnosis of EoE. He was managed with systemic steroid for two weeks and then changed to topical steroid. He improved dramatically with resolution of the symptoms and weight gain. He was lost to follow-up for six months after which he reported again with food impaction and severe odynophagia. A barium swallow revealed oesophageal stenosis. This was managed with four sessions of oesophageal dilation and oesophageal steroid (40 mg of methylprednisolone) injections together with dietary elimination. This led to improvement of the symptoms and he is currently on topical steroid.

Case 3: An 8-year-old female was referred with reported upper GIT endoscopy indicating hiatus hernia. She also suffered from daily vomiting and dysphagia. She was given antacid and PPI but the symptoms did not improve. Allergic rhinitis and conjunctivitis and a family history of atopy were also present. She had a repeat upper GIT endoscopy with biopsies taken from the oesophagus, stomach and duodenum. Histology reports confirmed EoE. She was managed with topical steroid.

Case 4: An 11-year-old male adolescent with well-controlled asthma was referred to our unit with a four-year history of abdominal pain and vomiting. Pain was generalised, dull and interfered with activities, but not sleep. Vomiting was usually unprovoked and not associated with any time of day, but usually occurred after meals. He also had functional constipation, which was managed with low molecular weight polyethylene glycol. He had completed triple therapy for *Helicobacter pylori* before referral. An endoscopy confirmed the diagnosis of EoE. He was managed with dietary elimination.

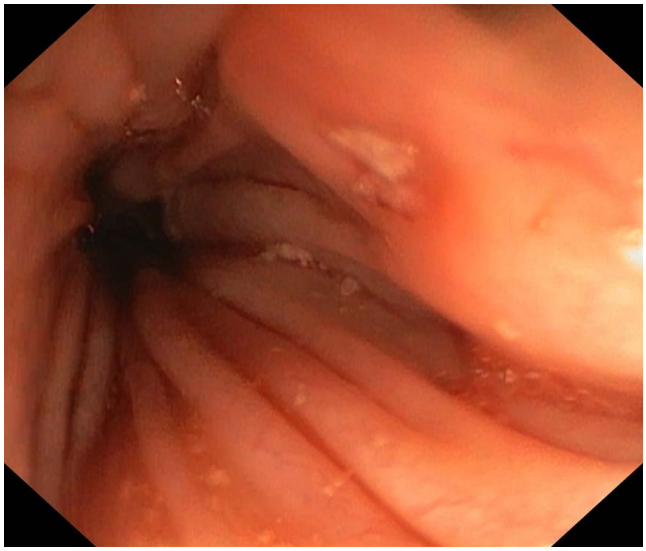

Figure 1: Oesophageal appearance. Longitudinal or linear furrows of the oesophagus with exudates

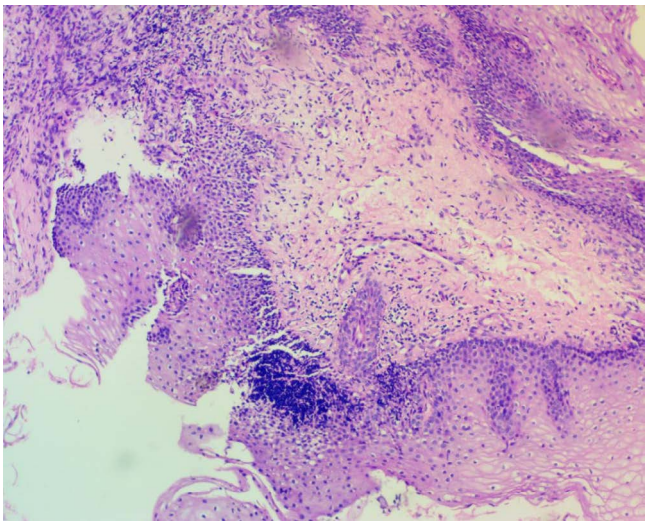

Figure 2: Histology of oesophageal biopsy. Histology of the oesophagus showing < 15 eosinophils per high power

Discussion

EoE is an emerging GIT condition worth noting by clinicians especially in the paediatric population. The only case series available were a case report from South Africa[11] and one from Nigeria.[12] Our study highlighted four Ghanaian children with EoE with varied clinical characteristics.

Clinical presentation of EoE varies depending on the age of the patient and severity of disease. EoE can present in all age groups from infancy to old age. Patients from this series were all of school going age and able to articulate their symptoms very well. Their clinical presentation included vomiting, vague abdominal pain, failure to thrive, dysphagia and food impaction. Severe disease with features of oesophageal stenosis was seen in one of the patients. EoE is commonly seen in male patients and in patients with atopic disease such as food allergy, asthma, and allergic rhinitis. Seventy-five per cent (3/4) of the patients in this series were males and they all had personal and family histories of atopic disease which included allergic rhinitis, conjunctivitis, eczema and asthma. The duration of symptoms in this series was between seven months to two years, which is in keeping with the duration found in the literature of 1.2 to 3.5 years.[5]

Diagnosis of EoE requires a high index of suspicion and specialised expertise. During upper GIT endoscopy, biopsies are taken from the upper and lower oesophagus regardless of the endoscopicy appearance of the oesophagus. Biopsies are taken from the stomach and duodenum to exclude the presence of eosinophils and other differential diagnosis in other parts of the upper GIT.[6]

EoE is not well known or diagnosed in Africa due to the low number of gastroenterologists and the need for a high index of suspicion coupled with knowledge of exactly what to do at endoscopy, and finally to communicate with the histopathologist on what the differential diagnosis is. Knowing and doing, all of these will improve the diagnostic yield and hence influence treatment. Typical endoscopic features are: oesophageal rings, a thickened, pale mucosa with linear furrows and white exudates and, less frequently, narrowing of the calibre of the oesophagus. A normal oesophagus at endoscopy does not exclude the diagnosis of EoE. Only one patient had classic endoscopic features (Figure 1) of EoE whilst all of them had histological features. This strengthens the need to take biopsies from the oesophagus for confirmation of the diagnosis even when the endoscopy appears normal. Paediatric gastroenterologists have a role in alerting pathologists when sending out biopsy specimens from such patients for review, and pathologists who receive such specimens should actively look out for signs indicative of EoE.[12]

The mainstay of treatment is dietary elimination, steroid and oesophageal dilation in severe disease with stenosis. Patients in this series were exposed to all the types of treatment based on the severity of disease. All the patients in this series responded well to the treatment available locally.

Conclusion

EoE is a chronic inflammatory condition of the oesophagus that presents in children with features not only limited to the oesophagus. It is a masquerade of all kinds of extra-intestinal diseases. Although it is more common among Caucasians, African children can also be affected. There is the need to create awareness among clinicians in sub-Saharan Africa of the disease entity, as its treatment may be inappropriate. Further research including patients from other referral sites is needed to estimate the burden and associated characteristics of EoE in Ghanaian children.

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Conflict of interest

None declared by the authors.

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Ethical approval

Informed consent was obtained from the caregivers and assent from the patients. All ethical issues have been considered to protect the patients' rights.

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