

Osseous Metaplasia in A Juvenile Polyp: A Rare Case Report in India

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ABSTRACT

Osseous metaplasia is a phenomenon which is described in a variety of tissue types with respect to both neoplastic and non-neoplastic conditions. In the gastrointestinal tract, osseous metaplasia (heterotopic bone formation) is rarely detected. Most of the reported cases were associated with malignant lesions. Here, we are reporting a rare case of a juvenile rectal polyp in a 14 years male, which showed osseous metaplasia on histological examination. This feature is a striking phenomenon on histological examination.

INTRODUCTION

Osseous metaplasia is a phenomenon which is described in a variety of tissue types with respect to both neoplastic and non-neoplastic conditions. Osseous metaplasia is exceedingly rare in colonic polyps. Only six cases of osseous metaplasia in juvenile polyps have been documented so far [1]. Here, we are reporting a rare case of osseous metaplasia in a juvenile polyp, with description of the phenomenon of potential pathogenesis.

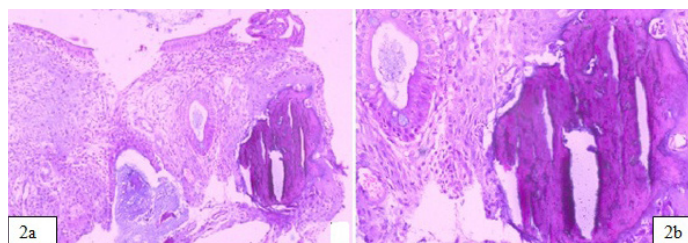
CASE REPORT

A 14-year-old boy presented to the Gastroenterology Clinic with complaint of bleeding per rectum since the past 1 month. A colonoscopic examination revealed a friable rectal polyp (1cm), about 5 cm away from anal verge [Table/Fig-1]. On gross examination, multiple fragments of grey-white, small, soft tissue pieces were seen, largest pieces being 0.4 cm in maximum dimension. All materials were embedded for doing a histologic examination. On microscopic examination, sections showed a fragmented and a polypoid colonic mucosa which was ulcerated, with granulation tissue, oedema and a mixed inflammatory cell infiltrate. Rest of the mucosa showed a focally reduced crypt density, mild muco-depletion and mixed inflammatory cells which were admixed with neutrophils and lymphocytes. One of the tissue fragments showed bony trabeculae in lamina propria, which were surrounded by osteoblastic cells



[Table/Fig-1]: Endoscopic picture of friable rectal polyp 5 cm from anal verge

Key words: Osseous metaplasia, Juvenile rectal polyp



[Table/Fig-2a]: Histologic picture showing osseous metaplasia (H & E x200)

[Table/Fig-2b]: Histologic picture showing osseous metaplasia (H & E x400)

which blended with fibroblastic cells. No evidence of malignancy was seen. Features were suggestive of a juvenile rectal polyp with foci of osseous metaplasia [Table/Fig-2a & 2b].

DISCUSSION

Osseous metaplasia is very rare in intestine and only few case reports have been published. Seventeen cases of osseous metaplasia were reported in colonic polyps in reviewed literature which was published by Odum et al., [1]. Although it mostly occurs in adenomatous polyps, only ten cases of osseous metaplasia have been reported in benign colonic polyps; specifically four were reported in inflammatory polyps [2-4] and only six cases of osseous metaplasia in juvenile polyps other than ours have been reported [5-9].

Exact mechanism of heterotrophic bone formation in colonic polyps has yet to be elucidated. Many theories have been published with regards to this mechanism. In 1964, Marks and Atkinson suggested that osseous metaplasia may result from the ability of fibroblasts to transform into osteoblasts [9].

In 1989, Randall et al., suggested alkaline phosphatase expression, a marker of osteoblasts from proliferating mesenchymal cells [10]. Recently, most of the studies have suggested expression of bone morphogenic proteins (BMPs) in the setting of osseous metaplasia [11,12]. BMP2 and BMP4 were noted in the stromal fibroblasts. Kypson et al., suggested BMP2 expression in rectal adenocarcinoma with osseous metaplasia [13].

The in vivo mechanics, the initial step down of the path of osteoblastic differentiation, is still unknown. In in vitro studies, mouse and human fibroblasts cultures, under the influence of four specific transcription factors (Oct3/4, Sox2, c-Myc, and Klf4), have been found to generate pluripotent stem cells. Subsequently, these stem

cells have demonstrated the capability to differentiate into different cell types [14,15]. So, mature fibroblast which present within the stromal component of these intestinal lesions are under the influence of these similar transcription factors, leading to differentiation of stem cells to osteoblasts.

In conclusion, we have reported an extremely rare case of osseous metaplasia in a juvenile polyp in india.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Feb 03, 2013**
 Date of Peer Review: **Apr 22, 2013**
 Date of Acceptance: **May 21, 2013**
 Date of Publishing: **Sept 10, 2013**