Cricoid webs—incidence and follow-up study in Indian patients

S. N. KHOSLA
M.D., F.I.A.M.S.

Department of Medicine, Medical College and Hospital, Rohtak (Haryana), India

Summary
A study was conducted to investigate the association of anaemia with dysphagia and cricoid webs in an adult Indian hospital population of 2,840 patients (1,200 males and 1,640 females).

There were 150 cases (5-2%) of anaemia in the total population studied. One hundred and seventeen patients suffered from iron deficiency anaemia and only 33 from non-iron deficiency anaemia. Dysphagia was present in 15 patients (13%) of those with iron deficiency. Six (40%) of these cases of iron deficiency with dysphagia had cricoid webs.

None of the cases with non-iron deficiency anaemia or the control population had either dysphagia or cricoid webs.

Iron therapy improved four out of the six patients of iron deficiency with cricoid webs both subjectively and objectively.

KEY WORDS: anaemia, iron deficiency, malnutrition.

Introduction
Since the first description of Paterson (1919) and Kelly (1919) of the triad of glossitis, koilonychia and anaemia associated with a small web or stricture in the upper end of the oesophagus especially the cricoid or post-cricoid region in middle-aged females, a number of reports have appeared (Elwood et al., 1964; Wynder and Fryer, 1958; Shamma and Benedict, 1958; Chisholm et al., 1971).

There are hardly any epidemiological surveys about the frequency of cricoid webs in relation to iron deficiency anaemia. Elwood et al. (1964) carried out one such in Wales and among a population of 5,000 found the prevalence of post-cricoid dysphagia to be 1-1% in men and 5% in women. A web was seen radiologically in 15-4% of the women with dysphagia but in none of the 21 men. No marked difference in the haemoglobin or serum iron levels in patients with or without a web and the control population was detected.

There are conflicting views about the frequency of cricoid webs in iron deficiency anaemia. Webs appear to be rare in some populations especially tropical and sub-tropical regions where severe chronic iron deficiency is common (Jacobs and Kilpatrick, 1964).

This study was undertaken to detect cricoid webs in cases of iron deficiency anaemia and in a control Indian population.

Material and methods
Over a period of 6 years, all adult patients above the age of 18 years attending the medical outpatients and admitted in the medical wards were examined and investigated for the presence of anaemia with or without dysphagia.

All persons with clinically detectable anaemia and haemoglobin levels less than 10 g/dl were selected for further study. Fifty persons of different age groups consisting of 20 males and 30 females with haemoglobin levels more than 14 g/dl served as controls. In every case a detailed history and examination was made to arrive at a possible cause of anaemia.

The diagnosis of iron deficiency anaemia was based on the presence of koilonychia, blood picture indicating the presence of hypochromic microcytic anaemia, diminished concentration of haemoglobin and erythroid hyperplasia with iron deficient erythropoiesis on bone marrow examination.

Barium swallow with lateral and anteroposterior films were taken after a conventional barium meal. Anteroposterior films were also taken with the head turned first to the left and then to the right. A radiological diagnosis of a post-cricoid web was made when at the level of the cricopharyngeal sphincter there appeared a thin projection at least 1-2 mm thick.

Serum iron was estimated in patients with webs and those complaining of dysphagia. Normal values ranged from 60–180 μg/100 ml.

Oesophagoscopy was done in all patients complaining of dysphagia and patients with radiological evidence of web.
In patients with cricoid webs, treatment with iron was instigated and patients followed up over varying periods of time from 2–8 years.

Results

Of 2,840 patients screened, 150 (5-2%) patients (56 males and 94 females) with haemoglobin levels less than 10 g/dl with or without dysphagia were detected. The average age was 32-8 years.

Haemoglobin levels were between 7–10 g/dl in 22 cases, between 5-7 g/dl in 52 cases, 3–5 g/dl in 53 cases and less than 3-0 g/dl in 23 cases.

Total duration of anaemia preceding examination varied from less than 1 year (6 cases) to more than 3 years (34 cases). Poor nutrition was the responsible factor in 98 cases (65-3%) parasitic infestation in 37 cases (24-6%), chronic blood loss in 12 cases (8%) while chronic diarrhoea accounted for only 3 cases (2%). Iron deficiency cases formed the predominant group (117 in 150 cases). In addition to anaemia notable features in this group were koilonychia, glazed tongue with atrophic papillae. Dysphagia was seen in 15 cases (0-52%) with iron deficiency anaemia but only six patients (0-21%), four males and two females, out of these had radiological and endoscopic evidence of cricoid webs which were demonstrated at the cricopharyngeal region. No webs were located at any other site. Anaemia in cases of webs was iron deficiency. Haemoglobin levels ranged between 2–7-5 g/dl. Serum iron levels were between 35-50 µg/100 ml.

Of these six cases, four improved with treatment along with a rise in haemoglobin levels and iron stores. The other two cases did not show any improvement. Webs were persistent but there was no evidence of malignancy. All cases have been followed up for a period ranging up to 8 years.

In the fifty control cases, the haemoglobin levels were above 14 g/dl and the peripheral blood film showed a normocytic normochromic picture. No bone marrow examination was done in any of the controls. None of the cases complained of dysphagia and in no case there was radiological evidence of any web.

Discussion

In our broad based study consisting of 2,840 patients confined to the hospital outpatient and indoor attendance only 150 cases (5-2%) of anaemia were detected, out of which the major proportion of cases (117) fell into the iron deficiency type. Dysphagia was observed in 15 cases in the total series (0-52%) and only six cases (0-21%) had a classical picture of dysphagia, iron deficiency anaemia and radiologically and endoscopically demonstrable webs. This incidence is less than the one reported by Elwood et al. (1964). The mechanism by which iron deficiency predisposes to tissue damage is uncertain. A number of factors have been cited. These range from chronicity of anaemia and persistence of sideropenia to lower red cell GPT (glutamic pyruvic transaminase) activity as compared to GOT (glutamic oxalacetic transaminase) (Jacobs and Cavill, 1968a, b) and lack of iron-containing enzymes essential for cellular metabolism.

The most convincing evidence (Chisholm et al., 1971), still favours chronicity of iron deficiency in addition to nutritional deficiency being responsible in the aetiology of cricoid webs. This is demonstrated in our series by the fact that no case of cricoid webs was detected in non-iron deficiency anaemia or in the control population. Moreover iron therapy alone could partially or completely cure the symptoms. Thus in four out of our six cases with dysphagia and cricoid webs there was reversal not only of the symptoms but also of radiologically demonstrable webs after they had been adequately treated with iron. In the other two cases, however, the webs persisted and only subjective improvement occurred. It may be inferred that when irreversible anatomical changes have occurred iron therapy cannot reverse the changes though correction of anaemia often relieves the dysphagia associated with small or medium sized webs (Simpson, 1939; Waldenstrom, 1946). However, only a small proportion of patients with iron deficiency anaemia develop a post-cricoid web. This is evidenced by the rarity of this syndrome in populations where chronic iron deficiency is universally prevalent. Our observations are similar in this study.

An unusually high incidence of gastric parietal cell antibodies has suggested that the population which Elwood et al. (1964) studied had a high incidence of severe gastritis and factors like autoimmune (Wynder and Fryer, 1958; Jacobs and Kilpatuck, 1964) genetic and biochemical defects may play an important part in the formation of webs.

To conclude, our study shows that the syndrome of iron deficiency anaemia, dysphagia and post-cricoid webs is not very common in India though a large number of people suffer from chronic iron deficiency and malnutrition.

It is possible that besides iron deficiency other factors like genetic predisposition, autoimmune and biochemical defects and constitutional background may play a part. The association, however, between the iron deficiency anaemia and the appearance of cricoid webs was significant in the way that these occurred only in patients suffering from iron deficiency.

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References


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