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Lye Stricture of the Esophagus Complicated by Carcinoma*

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= Abstract =

Five cases of esophageal cancer developed at the site of esophageal lye stricture were reported. Duration of lye stricture was between 13 and 40years, and all 5 cases had taken normal diet without appreciable troubles after recovery from the acute stage of burn till the suspected onset of esophageal malignancy. Outstanding symptoms of this grave condition were rather acute progressive dysphagia and frequent episodes of esophageal foreign bodies. Diagnosis could be confirmed easily by endoscopic biopsy in suspected cases, and all were epidermoid carcinoma histopathologically. Curative resection of this condition was made in neither of the cases, and their prognoses were more grave than other esophageal malignancies in our experience.[1]

The development of esophageal carcinoma at the site of corrosive esophagitis with resulting benign stricture has now been suspected as a cause and effect relationship between these two conditions, and Kiviranta[2] stated that the incidence of esophageal cancer in patients with lye stricture of longer duration is a thousand times higher than normal population.

During last one decade the authors experienced 5 cases of esophageal carcinoma developed at the site of lye stricture of the esophagus among about 350 cases of lye burned esophagus at the Department of Thoracic & Cardiovascular Surgery, the National Medical Center in Seoul, Korea.

In Korea they still use lye as a detergent in rural area, and there are still many persons ingesting lye for suicidal attempt or on accident. Lye stricture of the esophagus is, therefore, the most common esophageal disease needing surgical procedures, and the authors believe that there will be much more cases of lye stricture complicated by esophageal carcinoma repoted in near future in this Country.

Case Report

Case 1.

A 56-year-old Korean house wife who swallomed lye solution for suicidal attempt at her age of 40, and was treated with bouginage at another hospital came to the ENT department of the National Medical Center on April 9, 1963 After dilatational therapy during the initial stage of lye burn she had taken normal diet without diffidclties on swallowing till December, 1962, when there developed substernal pain on swallowing and progressive dysphagia.

On April 12, 1963, she was admitted to the hospital under the clinical diagnosis of lye stricture of the esophagus. Physical examination on admission revealed a moderately developed and nourished woman without any abnormal

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findings externally. Chest roentgenogram showed no pathological findings, and esophagogram showed stenosis at the carinal level with prestenotic dilatation but preserved passage at the distal esophagus (Figure 1).

Esophagoscopy reveal9d a protruding mass on the anterior wall of the esophagus at 26 cm level from the upper incisor. Biopsied specimen from the mass showed well differentiated epidermoid carcinoma of the esophagus. Hematologic examination showed 11.7 gm% of Hgb, 4900/mm^3 of WBC and 30 mm/hr of ESR. Blood chemistry showed normal findings excepthypopotassemia (3.0-3.4 meq/L) which was corrected parenterally. No bleeding tendencies, and EKG revealed normal tracing.

During preoperative hospitalization she developed staphylococcal septicemia, probably due to the complication of esophagos copy and biopsy, which was completely controlled under parenteral therapy with chloramphenicol.

On May 6 exploratory right thoracotomy was performed under general endotracheal anesthesia. Main tumor mass was located at the level of the azygos vein with infiltration to the periesophageal sheath which was adhered to the right main bronchus and the aorta but dissection between these structures was made without great difficulties. Subcarinal lymph nodes, mediastinal lymph nodes and the vertebral body were invaded with cancerous tissue. We performed palliative total esophagectomy, though the patient was the case with inoperable esophageal malignancy, cervical esophagocutaneostomy and feeding gastrostomy with a mushroom catheter as the first stage of operation. Postoperative course after the first operation remained uneventful, and substernal esophageal reconstruction was perfomed on May 31 as the final stage of operation without any postoperative complications. The patient disch-

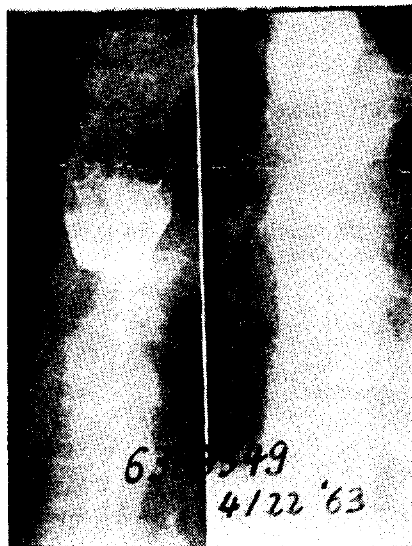

Fig. 1. Esophagogram in case 1 showing stenosis at carinal level with prestenotic dilatation and preserved passage distally.

arged from the hospital 4 weeks after the operation. After discharge the patient had been seen at the out-patient department till October 4, 1963, and the patient developed irritative cough and mediastinal widening because of bronchial and mediastinal metastases during the period. The terminal events of the patient were not known to us.

Case 2.

This case was previously reported by Kinnman at al[3] and only brief summary of the case was described in this report. The patient was the youngest one in our esophageal cancer series and antemortem dianosis could not be made in the case.

This 15-year-old boy ingested lye solutionby accident at his age of 2 but he had taken normal diet after the acute st age of lye burn till 4 months prior to admission the hospital on November 12, 1966. Because of progressive dysphagia feeding gastrostomy was made in August of the year at another hosp!tal. 2 weeks prioro to the hspitalization, the patient developed cough, increased expectoration, fever

dyspnea and later cyanosis, and was admitted to the hospital as an emergency basis. Chest x-ray showed left pneumothorax and esophagogram revealed complete stenosis at the upper thoracic esophagus with probable tracheoesophageal fistula. Tracheostomy and closed thoracic drainage were performed on the admitted day but the patient died on December 7. Autopsy findings showed esophageal cancer with malignant esophagotracheal fistula and bilateral bronchopneumonia.

Case 3.

A 53-year-old woman was admitted to the hospital on April 17, 1968, because of months' duration of dysphagia. She had an episode of lye ingestion during her childhood without remarkable resulting dysphagia. 2 months prior to the admission she developed progressing dysphagia and dyspnea one month later. About 20 days before the admission shewas undergone tracheostomy for respiratory distress at another hospital and esophagoscopic biopsy revealed esophagoscopic biopsy revealed esophageal cancer at that time.

Physical examination on admission revealed no abnormalities except a tracheostomy tube on the neck. Chest x-ray showed no abnormal findings and esophagogram revealed diffuse narrowing of the entire esophagus with nodular filling defects on the mid esophagus(Figure 2), and CBC on admission showed normal findings.

The cause o dyspnea was diffusely swollen larynx but biopsy specimen of the larynx showed no specific findings. Esophagoscopy showed polypoid tumor at 22 cm level from the upper incisor which was proved to be epidermoid carcinoma histopathoogically.

During hosptalization she developed a rapidly growing cervical tumor on left side and progressing dysphagia even with Co^{60} irradiation for 20 doses. Feeding gastrostomy was made on

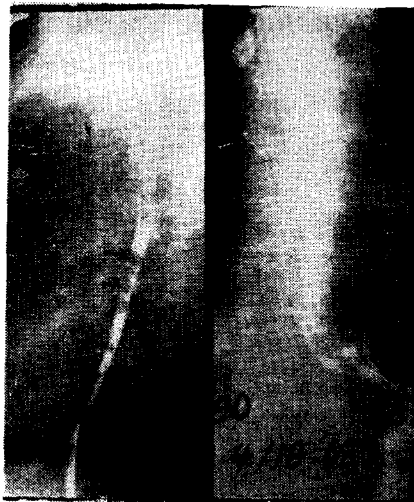

Fig 2. Esophagogram in case 3 showed narrowed esophagus with nodular filling defects on mid esophagus.

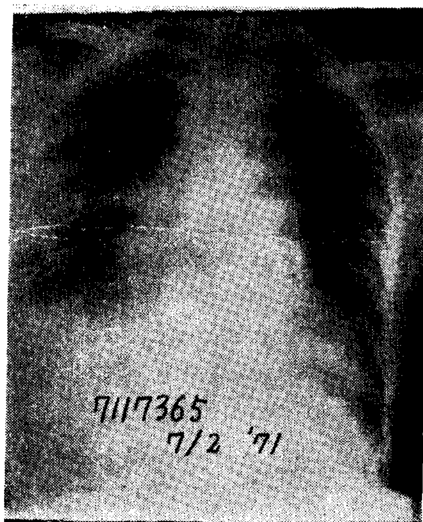

Fig 3. Chest P-A in case 4 showing increased hilar structures on right side and pleural reaction due to thoracotomy.

June 25 and tube feeding had been made till her death on September 6, 1968, and her terminal events showed epistaxis, bleeding through the tracheostoma and dyspnea. The most probable cause of death was suspected to be respiratory insufficiency with general cachexia.

Case 4.

A 49-year-old house wife was admitted to

the hospital on June 5, 1971, because oJ irritative cough and increased expectoraiton. 20 years ago she ingested lye solution for suicidal attempt but her swallowing ability remained rather good with intermittent bouginage. 5 months prior to the admission she developed in ncreasing swallowing difficulty, and irritative cough developed 4 months before the admission with fever. About 20days before the admission the patient developed a sudden attack of cough on swallowing foods with following increased expectoration continued till the admission but those symptoms seemed to be not associated with swallowing.

CBC wit blood chemistry showed normal findings except 44mm/hr of ESR and reversed A/G ratio. Esophagogram showed diffuse narrowing of the esophagus below the 5th dorsal vertebral level with prestenotic dilatation, and chest films revealed slightly increased hilar structures on right side.

Esophagoscopy showed a papillarv type of tumor mass at 28cm level from the upper incisor which proved to be a invasive epidermoid carcinoma of the esophagus, and bronchoscopy showed inflammatory tracheal and right bronchial mucosa with moderate bronchial secretion from the right bronchial tree.

On June 29, 1971, exploratory right thoracotomy was performed, and there was a hard, tubular mass of 5cm length on the mid esophagus below the carina with metastass to the hilar nodes. Tumor tissue invaded the right main bronchus with firm attachment to the aorta. Chest wall was closed and only feeding gastrostomy was made because of non-resectability of the case. Postoperatively she became worse with continuous coughing, and chest films showed more increasing shadows on the right hilum (Figure 3), and the patient discharged on 35 th postoperative day.

Case 5.

A 33-year-old woman was admitted to the hospital on December 27, 1971, for the third time. She ingesited lye solution for suicidal attemptn August, 1955, and a certain surgical procedure was made on the stomach probably due to the sequel of corrosive gastritis 2 months after lye ingestion at another hospital. Several years later the patient experienced probable adhesive ileus twice and exploratory laparotomy relived the obstructive symptoms. She had taken normal or occasionally soft diet without remarkable difficulties till December, 1966, except during the periods of acutely burned esophagus and the ileus. On December 19, 1966, she developed abrupt dysphagia after swallowing meat and impacted meat was removed by esoph agoscopy with relief of dysphagia. After endoscopic removal of meat she experienced dysphagia due to esophageal foreign bodies in December, 1970, April, 1971, and June, 1971, and admitted to the hospital twice for removal of foreign bodies. Since August, 1971, she developed increasing dysphagia and esophagoscopic dilatation was made twice with slight slight relief of dysphagia.

Chief complaints on the last admission to the hospital were severe dysphagia of 15 days duration and general weakness. Physical examination on admission showed a severely emaciated woman with cervical lymphaden opathies. CBC and blood chemistry showed normal findings. Esophagoscopy revealed stricture at 27cm level from the upper incisorwith inflammatory changes on the mucosa. No gross tumor was visible but biopsied specimen from tre reddened mucosa revealed epidermoid carcinoma. Chest films showed infiltrations in the both apical areas, and EKG revealed normal tracings.

On January 6, 1972, feeding gastrosmtsy was performed because of poor general condit-

Table 1. Summary of Cases

Case No.	Sex/Age(yr)	Duration of lye stricture(yr)	Duration of dysphagia(mos)	Treatment	Remarks
1.	F/56	16	5	1. Esophagectomy 2. Recostruction	Palliative resection
2.	M/15	13	4	1. Gestrostomy 2. Tracheostomy & thoracic drainage	T-E fistula
3.	F/53	40	2	1. Tracheostomy 2. Irradiation 3. Gastrostomy	—
4.	F/49	20	5	1. Expl. thoracotomy & gastrostomy	—
5.	F/33	16	4	1. Gastrostomy	Foreign bodies

ion of the patient. All intra-abdominal organs showed no pathological findings except swollen mesenteric lymph nodes due to tuberculous lymphadenitis. Postoperatively she developed staphylococcal wound infection and discharged from the hospital without further surgical management on February 3, 1972. 10 days after discharge she once visited the outpatient department but on visitings thereafter.

Discussion

Lye stricture of the esophagus, as previously stated, is the most frequent esophageal disease needing some kinds of surgical measures in Korea, and though the incidence of lye ingestion seems to be decreasing nowadays in this Country there are still many patients suffering from the strictured esophagus due to previous lye ingestion. The relation between lyestricture of the esophagus and esophageal cancer has been suspecteP in many reports[2,4], and there is a recent report of 3 cases of esophageal cancer csoendary to lye stricture in Korea.[5]

As shown in Table 1 there are some similarities among the cases younger age incidence than other esophageal malignancies, no sexual predominancy in male, and less resectability with poor prognosis. Duration of lye stricture till the development of esophageal malignancy was more than 10 years in all cases with minimum of 13 years and maximum of abput 40 years. Duration of dysphagia till the discovery of esophageal carcinoma was not long, and the character of dysphagia was acuteo rapidly progressing because of tumor engrafting onthe pre-existing narrowed esophagusdue to lye burn.

Diagnosis of this condition was not difficult in our experience except in case 2 who was too young to suspect esophageal malignancy and was in emergency situation on admission to the hospital due to pneumothorax and bronchopneumonia. Suspicion on this condition should be made in patients with lye stricture of longer duration who developed recent, abrupt and progressive dysphagia or frequent esophageal foreign bodies, and diagnostic esophagoscopy with biopsy in those patients will prove the condition without difficulties. In some patients with this condition diagnosis of carcinoma may be delayed because the symptoms of carcinoma can be blamed on lye stricture, but no such situations occurred in our series.

Because of the developmentof late esophageal malignancy like those patients someone claimed that esophageal resection with reconstruction would be wiser choice than a simple bypass

procedure[6], but we still perform substernal bypass of the colon without esophagectomy and didn't experience any esophageal cancer developed at the site of stricture after substernal bypass.

The carcingenic effect of lye is same as that of other irritants and the authors believe that the most important factor for the development of a cancer is chronic irritation at the site of lye stricture rather than scar itself.

The prognosis of the condition was poor in our experience and curative resection was made in neither of the cases, Kim et al[5] claimed that the prognosis of this condition is better than other esophageal malignancies because of early symptomatic discovery of the condition, scar tissue preventing early neoplastic invasion to the adjacent structures. and younger age group in this condition, and we agree them in some point of view but operative findings in some of our cases showed scar tissue completely oreplaced with tumor tissue with invasions to adjacent structures and metastasis to the regional or distant lymph nodes.

The best management of this grave condition is early recognition of it during treatment of patients with lye stricture of the esophagus, especially in patients with longer duration of lye burn who developed rather abrupt development of progressive dysphagia and frequent esophageal foreign bodies, and radication though the chances of successful treatment are less than usual esophageal malignancies.

Conclusion

Five cases of lye stricture of the esophagus complicated by esophageal cancer were reported. The authors think that more such cases will be reported in future because of many patients with lye stricture in this Country, and early recognition with radical therapeutic measures is the best management of the condition. but the prognosis was poor in our experience.

REFERENCES:

1. H. S. Yu and H. Lee: *Concer of the esophagus The Korean Journal of Thorac. & Cardiovasc& cardia among Korean. Surg. June: 101, 1673*
2. Kiviranta, U. K.: *Corrosion carcinoma of the esophagus, 381 cases of corrosion and 6 cases of corrosion carcinoma. ACTA Otolaryng. (Stockholm) 42:86, 1652,*
3. Kinnman, J. et al: *Carcinoma of the esophagus after lye corrosion. ACTA Chir. Scand. 134: 486. 1668.*
4. Benedict, E. B.: *Carcinoma of the esophagus developing in benign stricture New Eng. J. Med. 224:408, 1641.*
5. Kim, C· et al: *Carcinoma of esnphagus developing at the site of lye stricture. J. Korean Surg. Soc. 14:416, 1672,*
6. Geram!, S., Booth, A. and Pate, J. W.: *Carcinoma of the esophagus engrafted on lye stricture. Chest 56:226, 1671,*