In the majority of cases of superior mediastinal obstruction the chest radiograph shows evidence of a tumour in the superior mediastinum, even when the primary tumour is not obvious (Roswit *et al.*, 1953). In two of our cases (Nos. 3 and 5) there was no such x-ray evidence, though Case 3 did have an enlarged mediastinal shadow four months previously when under treatment with x rays. If thrombosis were the main cause of the mediastinal obstruction, x-ray changes would not necessarily be present; in these cases phlebography may be of help in establishing the diagnosis (Roswit *et al.*, 1953), and this is well shown in Case 3.

In the U.S.A. phlebography has been widely employed in the investigation of superior mediastinal obstruction (Katz *et al.*, 1947; McIntire and Sykes, 1949; Hudson, 1957) and in the investigation of vessel involvement in carcinoma of the lung (Steinberg and Finby, 1959). In Great Britain, however, the use of phlebography in obstruction of the veins of the superior vena caval system appears to have received little attention. Injection of contrast medium by hand through a needle or cannula introduced percutaneously into an antecubital vein tends to yield results of uncertain quality. Injection through a jugular catheter would appear attractive when it is certain that the superior vena cava and proximal innominate veins alone are involved. Thromboses, however, tend to involve more peripheral vessels.

In this investigation phlebography was performed in Cases 1, 2, and 3 by introducing radio-opaque catheters into veins of both antecubital fossae and passing them, if possible, as far as the axillary veins under screen control. Injection of about 50 ml. of 45% "hypaque" (sodium diatrizoate) at a pressure of 50 lb. per sq. in. (3.5 kg. per sq. cm.) through a split output was made with a Talley pressure injector. Films were taken at intervals either manually using a Garrow box or with an "elema" A.O.T. film-changer.

The anatomy of superior vena caval obstruction and its collateral circulation has been previously described. The description of McIntire and Sykes (1949) of the phlebographic findings, incorporating the earlier experimental work of Carlson (1934), has not been significantly changed by later workers.

Treatment by radiotherapy for superior mediastinal obstruction is well recognized, and is usually successful when a minimum tumour dose of 3,000 r in three weeks is given (Bignall, 1958). Response to such treatment is very rapid, and even after the first few days some alleviation of the patient's condition becomes apparent, and in all cases some relief will have occurred by the end of treatment.

When no treatment at all is given to patients with superior mediastinal obstruction due to carcinoma the average survival time will be less than 10 weeks, the majority of patients dying in less than four weeks from the onset of symptoms (Roswit *et al.*, 1953). Of the seven cases in this series, five showed relief of symptoms for periods ranging from two to six months, the average survival time being four months.

We have used anticoagulant therapy only in cases in which there was clinical evidence of thrombosis and which have failed to respond to radiotherapy or were considered unlikely to do so. Treatment has been with intravenous heparin followed by oral anticoagulant (dindevan) therapy. When the prothrombin index has become stabilized between 35 and 65% patients have

been discharged to attend a follow-up clinic weekly, the prothrombin index being estimated at each attendance. The one complication which we expected to occur—haemorrhage from an ulcerated tumour of the bronchus—was obvious in only one case, and caused no more than a slight increase in the haemoptysis which had already been present for some time.

It is suggested that anticoagulant therapy be considered in cases failing to respond to radiotherapy, or in cases in which, having once been successfully treated by radiotherapy, mediastinal obstruction subsequently redevelops with clinical evidence of thrombosis of the main veins. It is possible that the over-all results of treatment of superior mediastinal obstruction might be improved if a combination of radiotherapy and anticoagulant therapy were to be tried.

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Medical Memoranda

A Case of Localized Cervical Disk-arthritis

The subjective troubles and the objective clinical picture that may result from cervical spondylosis can be very different. A syndrome in which the symptoms complained of and the signs observed are in exact accord is less frequently met with, and we describe a case of this type here.

CASE REPORT

A housewife aged 42 had had her tonsils removed in 1955. She suffered from chronic adnexitis. For some time she had felt pain in both hips and recently in the neck also. Her main complaint, however, was that for six years she had a slight feeling of oppression in the throat, a little below the larynx, when she swallowed. She said it was as if food stuck at this point, passing on through the oesophagus only when it had overcome some impediment. She was often forced to cough, and when swallowing larger pieces of food she had slight difficulty in breathing. There were no other complaints. Various possibilities were considered in the course of the past six years: cancer of the larynx, a retro-sternal goitre, a mediastinal tumour, and even globus

hystericus. After detailed examination in a general hospital, the results of which were negative, she was referred to our institute.

The patient was afebrile, of good physique, and well nourished; there were no signs of wasting. Her general condition was normal. Arterial blood-pressure was 120/80 mm. Hg and pulse 72. There was slight emphysema of the lungs. The heart was normal, as was the thyroid gland. The B.M.R. was +5%. The neurological condition of the cervical and brachial plexus was normal. E.S.R. 10 mm. in one hour. The blood picture and the results of urine examination were normal.

Oesophagography of the patient presented. Impression of the posterior wall of the oesophagus by ventral osteophytes, causing a marginal defect in filling exactly at the site of discomfort indicated by the arrow.

So far as evidence of rheumatic changes was concerned the mobility of both hips was slightly limited and painful, and radiographs showed early coxarthrosis. There were moderate crepitations in both shoulders. The lower part of the cervical spine was tender on

movement. X-ray examination showed narrowing of the disk C 6-7 with thorn-like osteophytes at the front edge of the vertebral bodies, projecting forward, with a tendency to form an osseous connexion. When the patient swallowed contrast medium in the course of oesophagography it was seen that the posterior wall of the oesophagus was distinctly pressed in at that point, and there was a marginal defect in filling at the level described. The configuration of the oesophagus in all other parts was regular and smooth (see Fig.). During the swallowing of the contrast medium the patient indicated that the site of the discomfort was exactly at the level of the local diskarthrosis described.

DISCUSSION

The first description of vertebral osteophytes pressing on the oesophagus was probably given by Zahn (1905, 1906). Hall and Osborne (1958) described such a case with a massive osteophyte at the level T 8-9 but without trouble in swallowing. They mention that such massive osteophytes are often encountered on the lower part of the cervical spine, but seldom on the lowest segments. From our experience with a large number of cases, massive ventral osteophytes on the lower cervical spine are not uncommon, but they seldom cause difficulty in swallowing.

Disturbances of swallowing connected with cervical spondylosis can be caused either mechanically, as in the above case, or by the passing over of degenerative inflammatory periarticular processes to the prevertebral connective tissue. In addition, the disturbances may arise in a spastic-reflexory way or because of psychogenic factors (Schröer, 1959).

The cases most often met with in our practice are those in which, besides a cervical spondylosis, there occurs an irritation either of the cervico-brachial nervous plexus, in the sense of a "cervical syndrome," or of the sympathetic system (Isemein and Ramis, 1957), when it is known that various clinical features may arise, such as dizziness (Ryan and Cope, 1955), headache (Hercog, 1949), precordial pain (Stanojević, 1957), many other visceral functional disturbances, anginous attacks, and digestive troubles. Disturbances of swallowing are less often encountered, and when they occur are often of functional origin, for such a massive osteophytosis is not found on the spine. On the other hand, we have observed a series of cases with distinct ventral osteophytosis—not so marked, however, as in the above case, and with the osteophytes directed more steeply downwards—without disturbance of swallowing, but with evident signs of irritation of sensory, motor, and/or vegetative nervous elements.

In the above case there existed a massive localized change in the sense of disk-arthritis, without marked spondylous changes in other parts of the cervical spine, except for a diminished lordosis. On oesophagography the change described corresponded exactly to the site of the functional disturbance indicated by the patient. The difficulty in swallowing—a distinct visceral symptom—was caused by direct pressure on the posterior wall of the oesophagus.

From the therapeutic point of view such cases are unrewarding. In the opinion of most authors, treatment should be conservative. We applied local x-ray therapy, which temporarily was almost entirely effective.

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"There is a general impression that the investigation and control of trade waste discharges to the sewers of London only started when the 1953 General Powers Bill became law. This is certainly not true, for the writer and his colleagues in the branch still have vivid recollections of walking through sewers for the first time to examine damage to brickwork and jointings, although it is thirty years ago. Also, it was most interesting to discover recently among the laboratory records a laboratory notebook of the chemical department of the Metropolitan Board of Works—the predecessor of the London County Council. The book, a vellum-bound volume with entries written in a beautiful copper-plate hand, is dated January, 1881, to January, 1884. Amongst a variety of investigations are found analyses in connexion with 'the Thames pollution Enquiry' and analyses of 'Cow Shed' waters which were, in the main, generously polluted by cesspit drainage. The anonymous analyst's usual comment was, 'Not fit for potable purposes,' but one sample merited the comment, 'This is the most disgusting sample I have ever smelt.'" (*Annual Report of the Scientific Adviser for the Year 1960*, London County Council Public Health Department—Scientific Branch.)