LIGHT TREATMENT IN TUBERCULOSIS*

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Ultra-violet treatment of tuberculous laryngitis needs no introduction to laryngologists who have visited Continental clinics. Many of us in Melbourne were impressed by the work of Cemach and Wessely in Vienna, though we considered that the elaborate apparatus used by them was out of the question in this city. Having tried a Kromayer lamp for another purpose, I eventually found a suitable applicator, which could be introduced without discomfort to the patient, whilst at the same time giving efficient irradiation.

Method of Application

The pharynx and larynx are anaesthetized as for any operative procedure under local anaesthesia. The laryngeal reflex must be abolished, and the epiglottis in particular must be insensitive. The patient must co-operate intelligently by traction on the tongue with the right hand.

The laryngologist introduces a small mirror (post-nasal size), obtaining the usual view of the larynx, while the glass rod is carefully passed over the tongue until the epiglottis is hooked forwards by the tip of the rod. Then, controlling the position by the view in the mirror, the rays are directed on to that portion of the larynx requiring the maximum concentration. An attendant controls the time of exposure with a stop-watch.

Dosage

Commencing with irradiation for half a minute, the dosage is gradually increased up to five minutes. Larger doses may have to be given in two or three exposures, but the tolerance of the pharynx increases with each subsequent treatment. In institutions treatment may be given daily if desired, but I have found it impracticable to give treatments more often than weekly to patients who must travel to the city from their homes.

Effects of Irradiation

Normal Tissues.—Ultra-violet rays may be defined as a series of intense spectral lines of wave-length ranging from 2,570 to 3,650 A.U. where A.U.= one ten-millionth of a millimetre. Rays have a high germicidal action when shorter than 2,900 A.U. The object of treatment is to produce a reaction which should not be so intense as to be subjective. If skin or mucous membrane is irradiated with a sufficient dose of ultra-violet rays there will arise in six to eight hours a photochemical reaction in the cells which will show all the characteristics of inflammation, but is non-infective—for example, dilatation of capillaries, local acceleration of blood stream, exudation, and diapedesis.

Tuberculous Tissues.—Mucous membrane infected with tuberculous nodules should be assisted by ultra-violet irradiation. Healing with fibrosis should be stimulated, and there should be some bactericidal action on the tubercle bacillus. Relief from pain is a common result, whether this be due to the induced hyperaemia around the lesion or to a sedative action on the nerve end-organs themselves. Unfortunately, the penetration of the rays is only about 1/10 millimetre, so that one cannot expect to benefit sub-epithelial nodules.

Technical Points

Several factors contribute to prevent more general use of this treatment.

1. *Apparatus.*—Lamps supplied by direct current are vastly superior to those designed for A.C. Until an efficient A.C. lamp is produced treatment in the suburbs would be difficult.

2. *Technique.*—It is apparent that treatments must be given by a laryngologist, and few patients can afford the additional expense incurred.

3. *Advantages over Indirect Irradiation.*—The more common method of irradiation of the larynx by light is by reflection of sunlight or ultra-violet rays into the larynx by means of a mirror held at the back of the pharynx. The direct method has the obvious advantage that it is under control by the laryngologist, so that the light rays can be concentrated on one portion of the larynx. A further advantage is that an overhanging epiglottis, which would prevent efficient irradiation by the indirect method, is drawn forward out of the way by the quartz applicator.

Clinical Considerations

Choice of Cases.—Speaking generally one finds that the hypertrophic type of tuberculous larynx responds best to this treatment, and next comes the ulcerative type, and, lastly, the oedematous lesions. Wessely emphasized that light treatment should be withheld until the physician has pronounced the chest under control, and until there is no evening rise of temperature.

A woman aged 35 was examined on June 20th, 1933. She had had hoarseness for two months, and there was a history of a cavity at the left apex some time previously. Laryngeal examination revealed ulceration and granulations on the whole of the left vocal cord, extending slightly above and below it. She was referred to a physician, and spent three months at a sanatorium, at the end of which period the physician consented to local treatment. Light treatment was commenced on October 6th, 1933, weekly irradiations being given until December 15th, when the ulcerated area appeared to be healed. In June, 1934, the area had healed, with scar tissue. The patient has since remained well.

A woman aged 43 came for examination on December 16th, 1932. Laryngeal tuberculosis had been diagnosed ten months previously, and she had been treated during that time with vocal rest. The physician reported that the chest was well under control. Laryngeal examination revealed ulceration and granulations involving both cords and the interarytenoid space. Light treatment was commenced, and was given weekly for two months, then fortnightly for eight months. At the end of this period the ulceration appeared healed over with scar tissue. The patient has remained well since, and has done some broadcasting work.

The Treasury, on the recommendation of the Import Duties Advisory Committee, has made an order, adding to the free list, as from January 1st, 1936, gramophone records for the reproduction of speech, specially adapted for the use of the blind. The national charities for the blind in this country and the United States of America have recently developed a method of preparing books for the blind by sound-recording on gramophone records. At present there are books published in this way circulating in both countries, and an agreement has been entered into between the charities of the two countries for the exchange of records of certain books of common interest. The committee is satisfied that the removal of the present duty on the records in question would be in the interests of the blind of this country, and that such a concession would not affect adversely the interests of the home gramophone recording industry.

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