

II. CLINICAL PROBLEMS

CONTRAST X-RAYS INVESTIGATION OF TRACHEA WITH TANTAL POWDER

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Tantal powder was applied as a contrast material in bronchography for the first time by Nadel, J. in 1968. Later, Nadel, J. et al. (1970), Hinkliffe, W. et al. (1970), Pickard, R. (1971), Kirisawa et al. (1971), Zlatanov, Zl. (1973), Stitin et al. (1973) (1978) proved the advantages of the new contrast substance compared to the liquid iodine bronchographic preparations.

The object of the present study was to investigate the diagnostic possibilities of X-rays contrast examination with tantal powder of patients suspected to have stenosis disorders of their tracheae.

Materials and methods

During 1974—79 we studied 82 patients with suspective pathological changes of trachea and bronchia. They were subjected to 118 tracheobronchographies with tantal powder.

After a preliminary local anaesthesia with 1% dicain solution we apply intratracheally 3—4 g tantal powder (chemical purity 99,9%). The size of tantal particles is 1 micron in diameter; the powder is insufflated in the trachea through a rubber Matras catheter under X-rays control. 30 minutes after insufflation we perform X-rays graphies of the patient in various positions (projections).

Results and discussion

The contrast X-rays graphies of all patients were enough qualitative concerning the tracheal and bronchial outlines and their mucosa relief. X-rays contrast photos were highly expressive due to the attached tantal particles which could not be blown away from the mucous membrane even after coughing. It made possible taking several X-rays photos one after the other in various projections (profile, face, oblique) even 20—30 minutes after insufflation; the quality was the same for all graphies.

11 of all 82 patients shew a stenosis of the tracheal lumen. Etiological factors causing this tracheal stenosis were considered as follows:

- Carcinoma — 7 cases
- Adenoma — 1 case
- Benignant tumour — 1 case
- Post-tracheostomia — 2 cases

11 cases altogether

The stenosis of 2 patients was in such a degree that it was impossible for the distal end of fibrobronchoscope to pass through this tracheal part. Tracheal

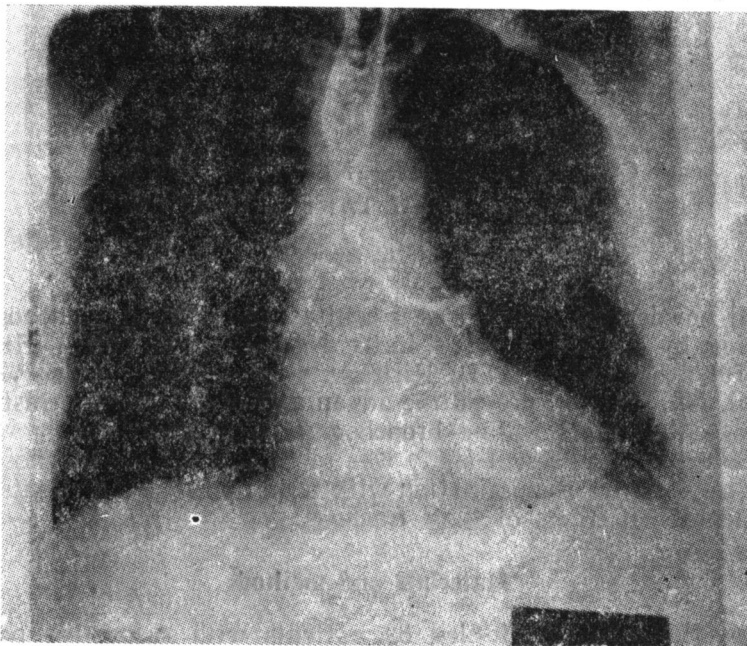


Fig. 1: Tantal tracheobronchography of patient with adenoma located very near to the tracheal bifurcation

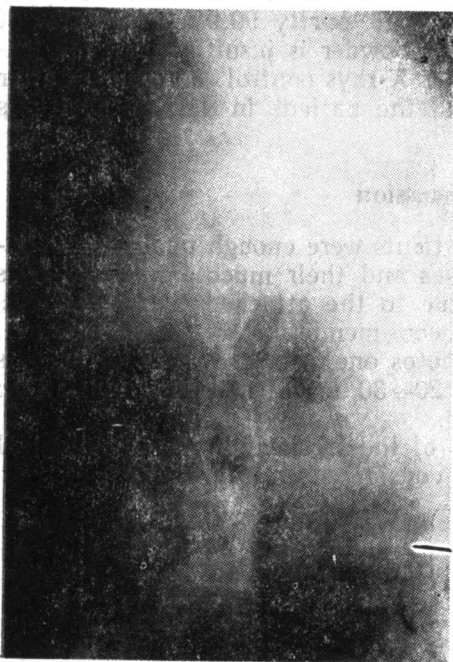


Fig. 2: Tantal tracheography of patient with decubitus stenosis after a long-term tracheostomia

adenoma was the reason for the disease of the former of these 2 patients (fig. 1), whereas the latter one had a heavy decubitus due to the tracheal canule applied for a long-term tracheostomia (fig. 2).

The contrast X-rays study of tracheal stenosis with tantal powder provides an important information (specially for surgeons) concerning the location, character and sizes of disorder which must be operated later (resection). In these cases the application of liquid contrast materials is not recommended (it is even dangerous) because they can clog the tracheal lumen, thus causing asphyxia. The tantal powder does not fill the windpipe volume and respiratory ducts; it adheres tightly to the mucous membrane and does not hinder respiratory functions (Zlatanov, Zl. — 1976; Smith et al. — 1979).

No considerable differences of all spiographic indexes before and after tantal powder application are established.

Tantal elimination can be registered also under X-rays control. It has maximum 6 hours duration.

No side-effects, reactions of toxic and allergic origin are reported after insufflation of tantal powder in tracheae of patients admitted to our clinic.

Conclusions

1. Contrast X-rays tracheal study with tantal powder is an actual method for the diagnosis of heavy stenosis.

2. Tantal tracheography provides a precise information concerning sizes, character and location of any tracheal stenosis which is of great importance for the operative treatment.

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КОНТРАСТНОЕ РЕНТГЕНОВСКОЕ ИССЛЕДОВАНИЕ ТРАХЕИ ТАНТАЛОВЫМ ПОРОШКОМ

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Р Е З Ю М Е

С использованием танталового порошка проведено 118 трахеобронхографий 82 больных с различными патологическими изменениями трахеи и больших бронхов. У 11 больных установлен стеноз просвета трахеи.

Танталовая трахеография дает ценную информацию о размерах и характере поражения, вызванного стенозом. Она, кроме того, дает возможность точного определения участка трахеи, который при необходимости должен быть резецирован, в случае оперативного лечения больного.