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Ye. N. Pavlovskiy (Summary)

Laboratory of Tularemia under Division of Parasitology and Medical Zoology of I. E. M., headed by Ye. N. Pavlovskiy.

Supracutaneous inoculation favored over subcutaneous--simpler, facilitates recording skin inoculation reaction; high immunogenicity of vaccine good prophylactic anti-epidemic effectiveness.

Evaluation of inoculations based on immunological reaction; allowed accurate calculation of efficacy.

Decisive criteria for strength and duration of immunity applied to observation of persons inoculated in epidemic foci, established that proper administration of inoculation gave immunity in majority of inoculated persons for no less than 4 years (period of observations). This immunity protects against infection caused by various means of transmission. Length of immunity observed in some inoculated persons for as long as 7 years. On same level of efficacy as smallpox vaccine. Of two types of tularemia vaccine which have been widely used in practice, NIIEG --dry-vaccine was better, had greater stability than liquid egg yolk vaccine. Wide cooperation from "peripheral" institutes. Great part of work presented in June 1951 at conference on "Effectiveness of Tularemia Vaccine" by Ministry of Health, RSFSR.

N. G. Olsufiyev

Laboratory of Tularemia of Division of Parasitology and Medical Zoology of I.E.M. (Summary of records of collaborators). Development during 1943 - 1953 period. Current attempts to further perfect vaccine by M. N. Faybich (develop drying technique in "full valued" state in vacuum; more stable product.

Present time inoculations carried out almost exclusively by supracutaneous method. Well developed program. Data based on conferences, (1951) institute and anti-tularemia station reports.

Liquid egg yolk vaccine - Zh TV

Dry vaccine -- NIEEG type

Greatest number of observations based on ZhTV -- Used more frequently than NIEEG vaccine.

ZhTV -- period of suitability is 2 months from day of preparation, at temperatures 4 - 10°C. At high temperatures, ZhTV loses vaccine properties earlier. Period of suitability of dry NIEEG is 2 years from day of preparation at 4°C; can be maintained frozen 2 years, 300 days at room temperature.

Vaccine strains #15 (Gayskiy strain) was used in many cases for preparation of vaccine. Faybich strain #10 was added to NIEEG vaccine. Live attenuated vaccine variant produced sub-clinical infection which gave immunity against virulent strains. Vaccine process verified by pathological examination in animals (benign human process). Vaccine elicited increased sensitivity of body to repeated introduction of organisms after intracutaneous inoculation of tularemia.

Local general reaction areas comparatively rapidly undergo reverse development, leaving no harmful sequelae. In 75% of persons inoculated, no reaction is noticed, other than skin reaction at site of inoculation. The extremely rare case of violent reactions to vaccine do not change the general character of vaccine process, since they are basically different from natural disease. Stronger reactions are possible connected with constitutional peculiarities of persons inoculated, but cannot exclude that these persons may have had tularemia and therefore are hypersensitive to the tularemia antigen. In certain cases,

heightened reaction caused by overdosage of vaccine. Avoid reactions by observing rules governing selection of persons to be inoculated, according to described counter indications with regard for proper inoculation technics. Hyperemia at site of inoculation (small vesicles) is considered index of development of vaccine process resulting in immunity. But well known instance of inoculated persons having completely insignificant skin reaction but person gets a sufficiently strong immunity anyhow. Ideal is high immunity and no reaction.

A killed vaccine gave negative results, Mayskiy used this on laboratory animals and wild animals and Olsufyev tried gray rats.

Infection, as a result of highly virulent strain from actual foci, caused immunity in animals. Gave non-sterile immunity, followed by sterile immunity. Sterile immunity appears normally about 1 month after infection, but in individual animals, elimination lasted up to 4 months. Assume that (live attenuated) vaccine process presents some regularity. Requires further study to verify sterile immunity in inoculated persons.

P.M. Burgasov - showed possible to produced immunity in rabbits with killed vaccine. This gave no change of infectious immunity and indicated possibility for sterile immunity.

More thorough study of immunity to tularemia (post-vaccine or post-infectious) requires physiological data based on CNS action.

NOTE: 1953 - NIIEG vaccine information is not sufficiently available to Soviet civilian preventive medicine investigators to really compare immunological effectiveness with ZhTV. But, NIIEG data does not show that there is a stronger reaction initially after inoculation and after test with tulyarin a year later; also there is a higher agglutination titer a year later with NIIEG vaccine.

Difference Between ZhTV and NIEG

1. Differences in strains.

2. Main superiority of NIEG is its stability; 2 year suitability time for use which is 12 times suitability of ZhTV. Effectiveness comparison of supra and subcutaneous inoculation of NIEG (1950). Khanin is only available information given. i.e., Supracutaneous = 93.8% (114 people) reacted to tulyarin after 1 year.  
Subcutaneous = 78.1% (32 people) reacted to tulyarin after 6 most.

(Khanin concludes that supracutaneous method more effective)

Based on small sample and not completely accepted.

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