EXPERIMENTAL USE OF ALUMINUM PLAQUE TRAPS FOR ENTOMOLOGICAL EVALUATION IN THE ONCHOCERCIASIS CONTROL PROGRAMME (O.C.P.) IN THE VOLTA RIVER BASIN

C Bellec
B Philippon, G. Zerbo, H. Agoua, G Hebrard et J Nion

By using aluminium plaque traps only a qualitative evaluation by means vector population detection is obtained as opposed to a quantitative one which allows determination of the annual biting rate (A.B.R.) and annual transmission potential (A.T.P.).

The original trap (Bellec, 1976) has been modified by :
- adding a floating and mooring system to the plaque (1 m^2; 0,6 mm thick);
- applying three lengths (30 or 35 x 100 cm) of self-sticking transparent plastic: one side adheres to the plaque and the other is covered with a strong glu resistant to rain and moisture.

This model, experimented in 10 sites, in a sub-sector of O.C.P. allows :
- keeping the trap efficacy in all meteorological (rainy and sunny weather) and hydrological (sudden flood) conditions without any supervision for 4 to 6 days at the most according to preserving states of insects.
- simplifying its use in the field (quickly installed, easy to collect insects). Thus traps are easely supervised by O.C.P. staffs and the evaluation cost is reduced because more points can be checked each day.
- identifying through sorting, species groups in Simulium damnosum complex, physiological groups (newly emerged adults, males, ungravid and gravid females, and counting infective 3rd stage larvae indistinguishable from O.volvulus in the head.

In these trapping conditions the plaques have played the role of sentinel by detecting (i) local population proven by newly emerged adults (ii) migrant population collected on plaques 10 **days before on human bait.**

By another way the possibility of collaboration from village population has been proven, particularly in storing traps between two evaluation periods and in checking the placement of the traps after storms and floods.

As a result of these findings the plaques have been incorporated in other subsectors of the reduced evaluation network planned by O.C.P.. In such a way the efficacy of these plaques and people **collaboration will be verified in many** sites and during all seasons as well as gathering data trough an annual cycle.

+ Institut de Recherches sur la Trypanosomiase et l'Onchocercose (I.R.T.O.), **BP. 1500 Bouaké - Côte d'Ivoire.**
++ O.C.P. BP. 549 Ouagadougou - Haute-Volta.

STUDIES ON SOLUBLE PLASMODIUM FALCIPARUM ANTIGENS

K. Berzins
H. Perlmann, J. Carlsson, M. Wahlgren, A. Bjorkman and P. Perlmann

Spent culture medium from in vitro cultures of Plasmodium falciparum was used as the source for immunoadsorbent enrichment of soluble parasite antigens. IgG of a Liberian serum from an adult living in a P.falciparum holoendemic area was used as ligand in the immunoadsorbent. The parasite origin of the polypeptides and antigens under study was assessed by metabolic radiolabelling of the parasites using 35-S-methionine. Analysis of the soluble parasite antigens in crossed immunoelectrophoresis using sera from hyperimmune Liberians for precipitation gave 4-6 immunoprecipitates. SDS-polyacrylamide gel electrophoresis of the immunoadsorbent isolated mate- a showed about 15 major and several minor parasite polypeptides in the molecular weight range 220-15 Kd. Immunoblotting after SDS-PAGE and probing with the same antibodies as used in the immunoadsorbent showed at least 16 major antigenic polypeptides in the molecular weight range 250-15 Kd. The correlation between these antigenic polypeptides and the different antigens seen in crossed immunoelectrophoresis is under study.
Special interest has been focused on soluble antigenic polypeptides of molecular weights 155,135 and 120 Kd. These antigens are heat resistant (100°C for 5 min) and, thus, have the property of S-antigens. According to data obtained by indirect immunofluorescence these antigens seem to constitute parasite antigens present in the surface membrane of P.falciparum infected erythrocytes with early stages of the parasite (for details see abstract by H.Perlmann et al.). The antigenic activity is resistant to trypsin neuraminidase digestion, but sensitive to pronase digestion. As analytical tools with these antigens we have used antibodies from P.falciparum hyperimmune serum which have been bound to and then eluted from monolayers of glutaraldehyde fixed air dried P.falciparum cultures. Such antibodies also react with a major P.falciparum merozoite antigen, which is a polypeptide of 155 Kd molecular weight. The relationship between this merozoite antigen and the soluble antigens of 155,135 and 120 Kd molecular weight is studied by means of two-dimentional SDS-PAGE and immunoblotting as well as mapping of proteolytic peptides. Large scale isolation of these antigens for further structural studies are beeing attempted using P.falciparum RBC monolayer eluted antibodies as ligands in immunoadsorbents.

MEDICAL EDUCATION FOR PRIMARY CARE: SOME INITIAL LESSONS FROM THE SUEZ CANAL EXPERIENCE

William J. Bicknell, M.D., M.P.H.

The faculty of medicine at Suez Canal University is new and shares the goal of its parent university of making education relevant to community needs. **The** intent of the six year medical school (now accepting its fourth class) is to produce a community orientated primary care physician. The curriculum is problem-based. The school is community oriented, class size is small, clinical education starts in the first year and utilizes existing Ministry of Health clinics and hospitals. Foreign assistance, largely from USAID, has been substantial. The promises and the pitfalls are great. **This paper approaches** the still unfolding Suez experience from the perspective of a generic case seeking relevant lessons for others considering new approaches to medical education for primary care in the developing world. **Special emphasis will be placed on** technical assistance and foreign donor issues as specific program elements including management needs, continuity of leadership and faculty development, adapting problem based learning to a resource constrained environment, basic medical sicences, the clinical teaching environment and revenue generation for medical education from services to patients are discussed.

TESTING DRUGS AND DRUG RESISTANCE

Berman, Jonathan D.

Leishmania exist in human lesions as amastigotes within macrophages. To test the activity of antileishmanial agents in vitro, amastigotes within human monocyte-derived macrophages or within mouse peritoneal macrophages have been exposed to drugs for 6-7 days and the number of organisms remaining within the macrophages have been quantitated. Exposure of amastigote-infected human macrophages to peak human serum concentrations of Pentostam (20 µg/ml), pentamidine (0.1 µg/ml), and amphotericin B (1.0 µg/ml) results in elimination of ≥ 90% of organisms. For comparison, the ED_{50}'s of drugs in trial or proposed for trial against human disease are as follows; allopurinol (ED_{50} = 1 µg/ml, ED_{90}> 50 µg/ml), allopurinol ribonucleoside (ED_{50} = 5 µg/ml, ED_{90} > 50 µg/ml), the primaquine analogue WR 6026 (ED_{90} = 3 µg/ml), ketoconazole(ED_{90} = peak human serum concentration of 15 µg/ml), chlorpromazine (ED_{90} = 2.5 µg/ml), sinefungin (ED_{90} = 3 µg/ml), paromomycin (ED_{90} = 20 µg/ml). In the primary in vivo model (the L. donovani infected hamster), Glucantime eliminates 98% of parasites at approximately 25 MKD. Notable findings with this model are that WR 6026 was approximately 500 times more active than Glucantime, and that liposome-encapsulated Glucantime was about 1000 times more active than the unencapsulated drug.
Whether clinical resistance to Sb correlates with in vitro Sb resistance was examined by infecting human macrophages with strains of L. mexicana and L. braziliensis panemensis, that caused both clinically sensitive and clinically resistant cutaneous disease. The in vitro Sb susceptibility of the resultant infected macrophages was then determined. The in vitro Sb susceptibility of 6/7 clinically resistant strains was comparable to that of 6 clinically sensitive strains. Recently, a highly clinically resistant L. braziliensis braziliensis causing mucous disease was found to be in vitro susceptible to Sb. These studies imply that clinical resistance in strains that cause cutaneous and mucous disease in the New World is not generally due to inherent resistance of the parasite of Sb.
The susceptibilities of isolates that are in vitro as well as in vivo Sb resistant have been examined. An in vivo and in vitro resistant L. mexicana and a similarly resistant L. donovani from Kenya were found to be in vitro susceptible to pentamidine and amphotericin B; and to purine analogues, WR 6026, and ketoconazole. Dr. W. Hanson has found that liposome-encapsulated Sb is effective against Sb resistant visceral disease in hamsters. Collectively, these results support the present use of pentamidine and amphotercin B in cases of clinical resistance, and suggest that if the experimental agents have clinical utility, they will be useful against both Sb sensitive and Sb resistant strains.

CONGENITAL TOXOPLASMOSIS: SERUM PROTEIN DETERMINATION FOR AN ADVANCE DIAGNOSIS AND COMPLICATION PREVENTION

Bessieres M. H.
Esteve T., Cazaux M., Seguela J. P.

Congenital toxoplasmosis is the result of an acute infection occuring in pregnant woman. The diagnosis of congenital toxoplasmosis is difficult. The serum protein determinations should be of greater diagnosis usefulness. They are measured in cord serum and monthly during the six firth months. 600 sera are studied,the selected population includes healthy and congenital toxoplasmosis infants.

Serum proteins, IgM, IgA, IgG Immunoglobulins, C3 and C4 complement components, haptoglobin, orosomucoïd, 1 antitrypsin, 2 macroglobulin, albumin, transferrin are detected by nephelemetry laser. **Statistic study of mean value** variations, monthly, during the first six months, permits to know protein profile during congenital toxoplasmosis and in healthy infants.Albumin, transferrin, 1 antitrypsin values in cord serum have near adult values, few variations are noted during the first month with any difference in healthy and infants with disease. **2 macroglobulin value,in cord serum are higher than** adult's, they persist elevated during the first six months, mostly in toxoplasmosis. Hypocomplementemy of C4 component observed in acquired toxoplasmosis is confirmed. C3 and C4 values are lower in cord serum than adult's. Haptoglobin absent in cord serum and orosomucoïd increased in severe form of congenital toxoplasmosis. IgM and IgA are synthesized by the foetus during an intrauterine infection,their values are elevated in cord serum of congenital toxoplasmosis infants (IgM mean = 35,3 mg/dl, IgA mean = 11,7 mg/dl). When infection, a more rapid rise of IgM and IgA is noted during the first month (IgM mean = 85 mg/dl, IgA mean = 20 mg/dl). However, some infants had retarded development of serum IgA and IgM during the first six months. That was perhaps in relation with toxoplasmosis disease involving an immunodeficiency. IgG are transmitted from the mother to the foetus in healthy infants as well as when the foetus is infected. Maternal antibodies decrease and finally disappear from the serum of uninfected infants during the first year. In contrast infected infants antibodies IgG levels persist. Consequently the demonstration of persistant or increasing amounts of antibody during the early months of life can be of diagnosis **import** in infants. The ratio specific antibodies IgG/ serum IgG permits to know this evolution; it increased in toxoplasmosis during the second month and it decreased in uninfected children.
To conclude, the most characteristic data in this study is the failing of C4 values , in relation with the stage of infection and the increase of Immunoglobulins. These serum protein determinations permit an advance diagnosis for institute rapidly treatment to prevent severe complication of congenital toxoplasmosis.

THE EVALUATION OF SCHISTOSOMIASIS CONTROL IN GUANGDONG PROVINCE

Xu Bing-kun

Guangdong Province has an area of 220 thousand sq. km. and a population of 56 millions. **14 schistosomiasis endemic counties where lived 5 millions people,** scattered from north to south along the North River-Pearl River Valley. Oncomelania snails heavily infected by Schistosoma japonicum were found here and there in 40 rather isolated places, from several Mous to 80,000 Mous in area, with a total of 200,000 Mous (excluding their adjacent areas). 100,000 persons were infected, and more than 200 villages, ruined by this disease. But now, after a period of 30 years' effort, schistosomiasis japonca is no more a public health problem, even though this disease might still exist in a few very limited areas.
A schistosomiasis control project of complex measures focused on snail control and concentrated at the point of modification of snail-infested environments has been proved to be very successful and may be the project of best choice. Such an assessment was based on the facts that the population, infection rate and the breeding places of Oncomelania snails, as well as the infection rates of the adults, children and bovines in the endemic areas decreased rapidly, greatly and correspondingly and as a whole, with no fluctuation. The intensive searches in the recent five years indicate that no living Oncomelania snails can be found in more than 99,99% of the original snail-infested areas, and the rest (a total of about 0.7 Mou) might not be reliable, since a few snails had once been picked up. Among the 100,000 persons previously infected by this worm and repeatly examined and treated during the past 30 years, 59,000 persons were re-examined recently, only 5 positive cases, all chronic stage, were found and all children were negative etiologically, serologically and clinically. All bovines in the endemic areas were free from Schistosoma infection. Basing on the incomplete data, for the modification of the environments of snail-infested areas alone, 123 dams and reservoirs, more than 920 canals and irrigation ditches, and **dikes of about 200 kilometers long** have been built.

ABSTRACT AND POSTER VOLUME

XI INTERNATIONAL CONGRESS

for

TROPICAL MEDICINE & MALARIA

CALGARY, CANADA
SEPTEMBER 16 - 22, 1984