VACCINE FAILURE

PROBABLE CAUSE

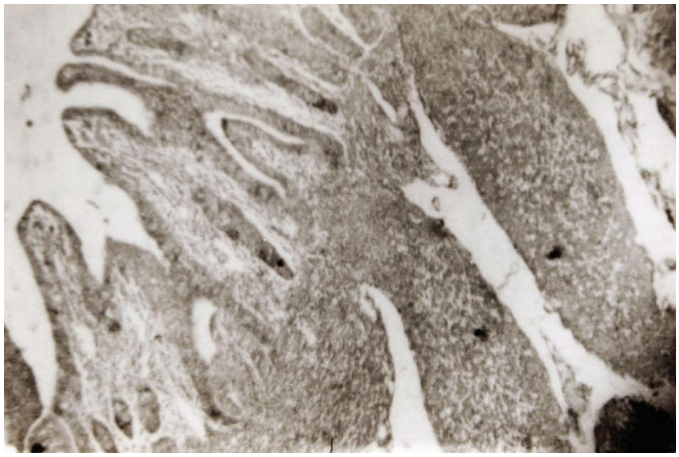
Of late there are reports on polio cases in Tamil Nadu, but there are no authentic reports on whether these cases were in immunized or non-immunized children.

There are several causes for the failure of oral vaccines. The most important one is the development of immune system of the recipient. For the oral vaccines to produce the expected immune response, the fetal immune machinery has to be properly developed. Fetus, which was once thought to be immunologically inert, develops primary lymphoid organ, called Peyer's Patches (PP) in the gut, which is the first organ to encounter antigenic stimuli. The mechanism of antigen binding is crucial for conferring immunity or failure, the latter is immuno deficiency syndrome.

To recognise the cause of failure, due to the failure of gut associated lymphoid tissue (GALT), knowledge of development and cyto-architectural pattern of GALT, distributed in the ileum as PP, is mandatory.

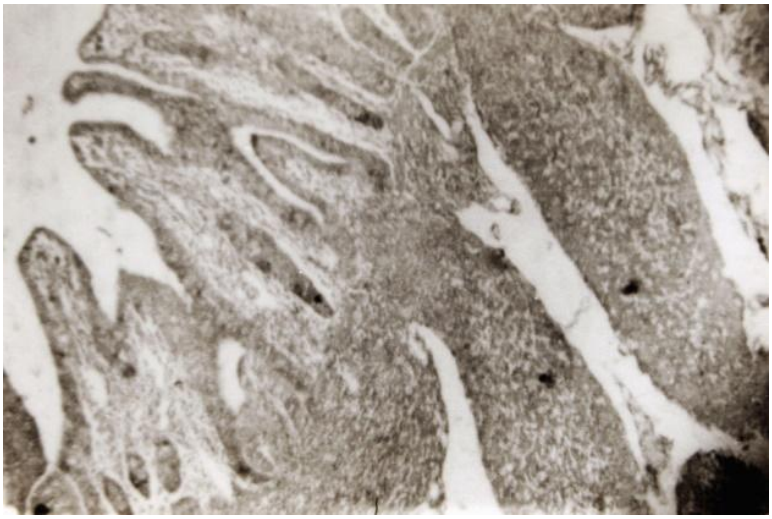
The terminal part of small intestine called ileum has aggregation of lymphoid nodules (ALN) forming PP in the anti mesenteric wall. The mucous membrane is characterized by the dome and non-dome areas. Non-dome areas are surface projections called villi with tall columnar cells with microvilli and mucus secreting goblet cells. In between the villi are domes. Domes are extension of submucosal lymphoid nodules projecting into the mucosa. Domes are lined by short cuboidal cells called 'M' cells with intraepithelial lymphocytes. Absence of goblet cells is notable feature of dome epithelium.

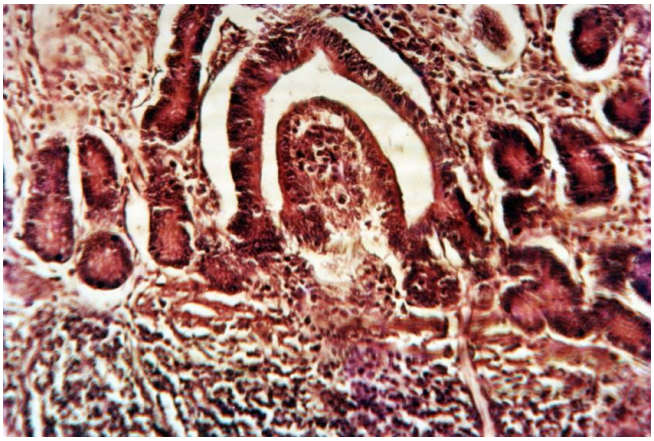
Primary lymphoid Organ– adult



PP is aggregates of lymphoid tissue, forming nodules (ALN) in the submucosa. ALN has three main components – germinal centres (of PPs) referred to as Bcell region, inter nodular areas, known as Tcell region, associated with immuno competent B Cells. The ability of local immune response esp. in case of oral vaccine depends on the proper development of PPs, which commences in the prenatal stage.

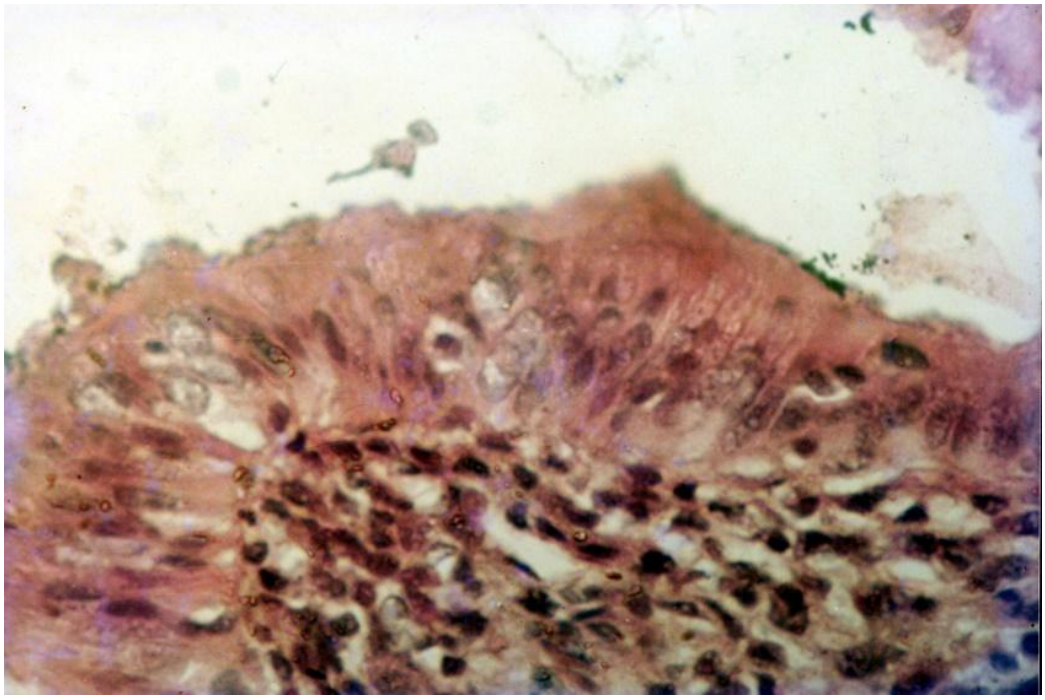
Lymphopoises & Development of Dome- II trimester

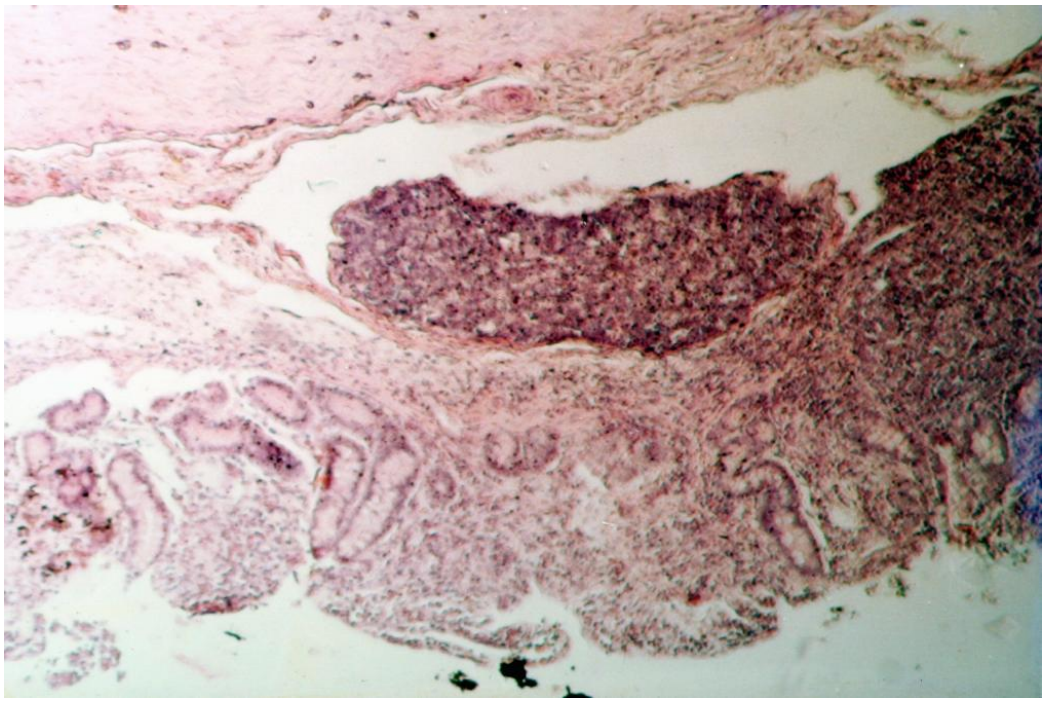


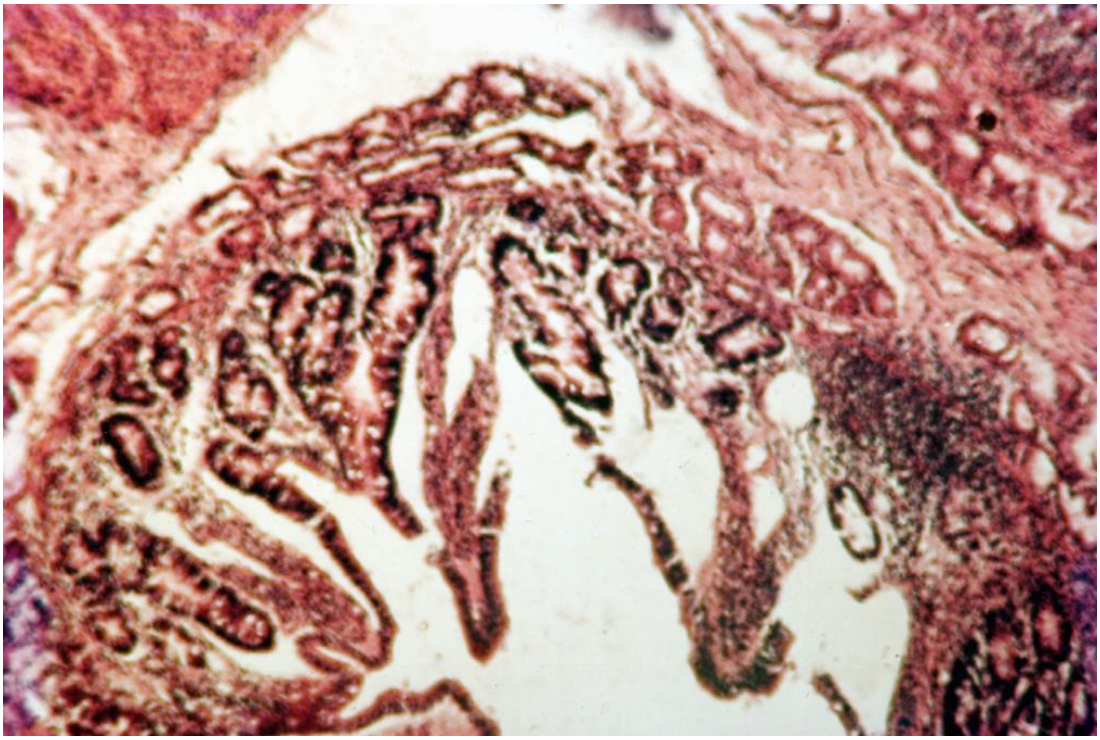


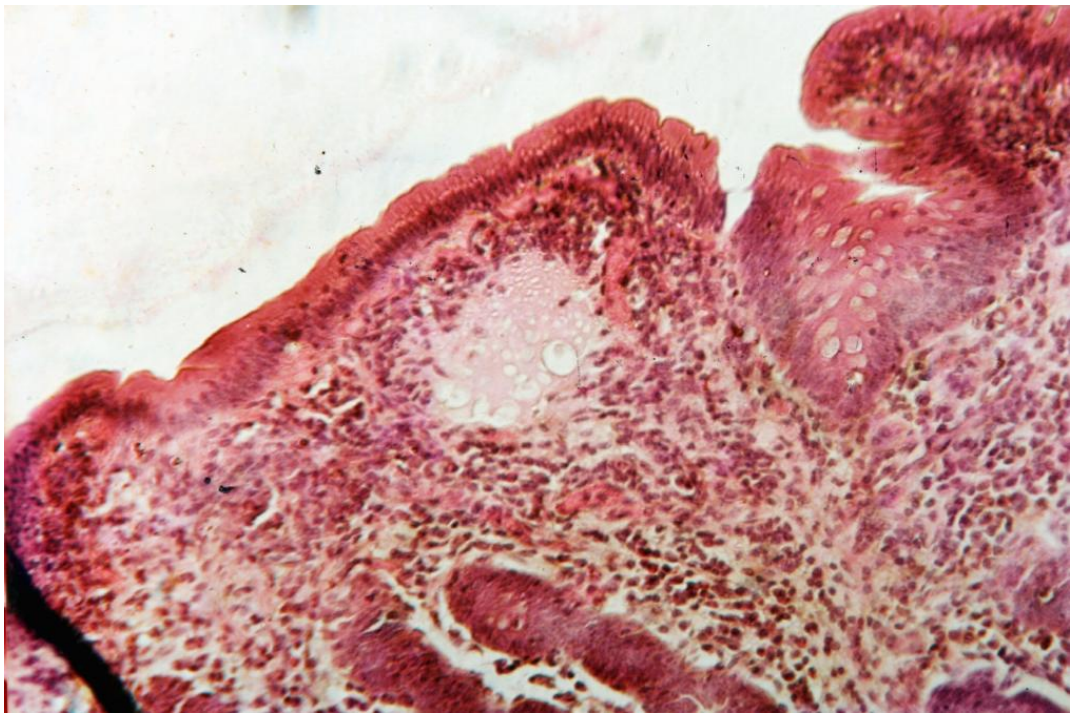
In the II trimester of pregnancy, lympho poises commences. Increased activity of lympho poietic cell forms aggregated lymphoid nodules, occupying sub mucosa. Development of dome is an extension of ALN into the mucous membrane. Domes are characterized by short cuboidal epithelial lining called follicle-associated epithelium (FAE) of M cells and infiltration of lymphocytes as seen in postnatal life. In fetus, cuboidal M cells are distinguished by hyper chromatic cytoplasm as against vacuolated cytoplasm of columnar cells of villi with H&E staining. The dome with FAE, M Cells, IEL, goblet cells in the villi, and PP in the submucosa form the primary lymphoid organ called Gut Associated Lymphoid Tissue (GALT), in the fetus and are totally responsible for recognition of antigen, conferring immunity. Certain cyto - architectural abnormalities, even in developmental stages could form the cause of vaccine failures. Structural abnormalities such as flat mucosa (absence of villi), stunted villi, fewer villi leads to deficiency of IgA secretion, and the absence of goblet cells render the epithelium defenseless. The concomitant deficiency of lymphopoiesis may result in reduction of plasma cells, essential for secretion of antibody, resulting in immuno-deficiency. For the immune response, there must be coordination between “B” lymphocytes, macrophages, T lymphocytes, lymphatics, secretory columnar cells and goblet cells.

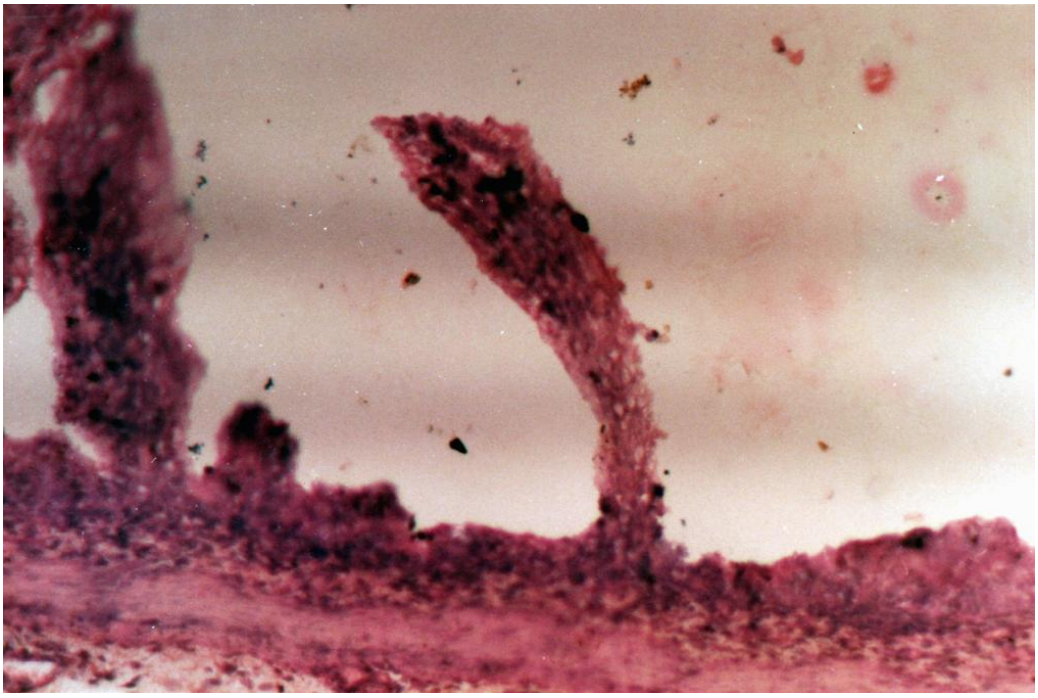
Structural Abnormalities in the Primary Lymphoid Organ at Birth

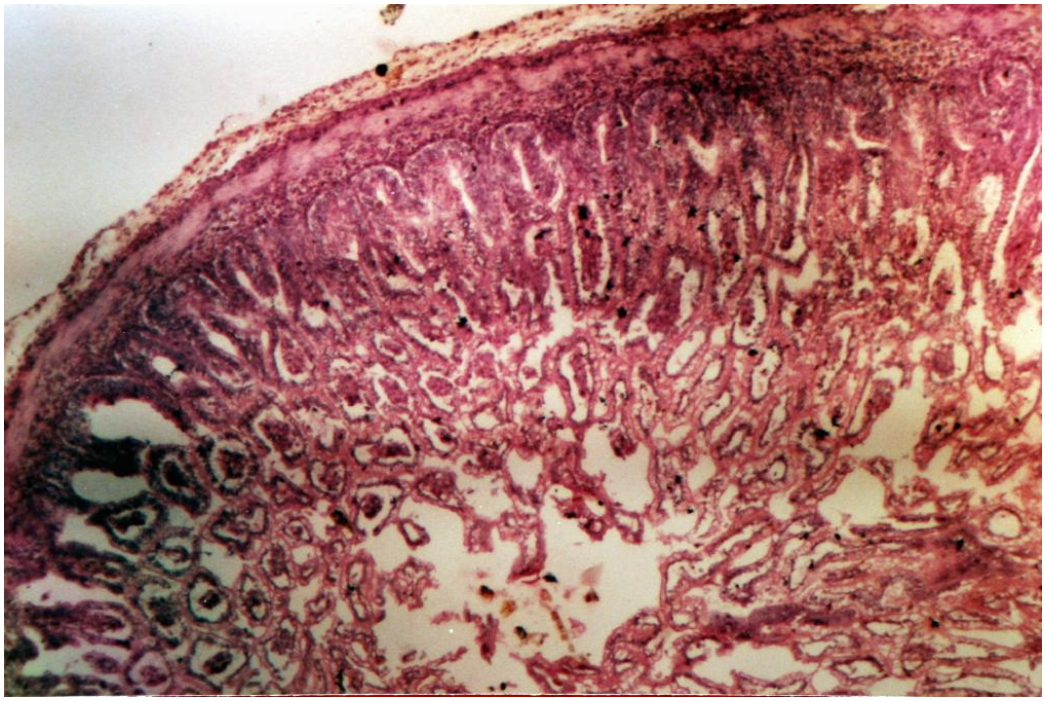


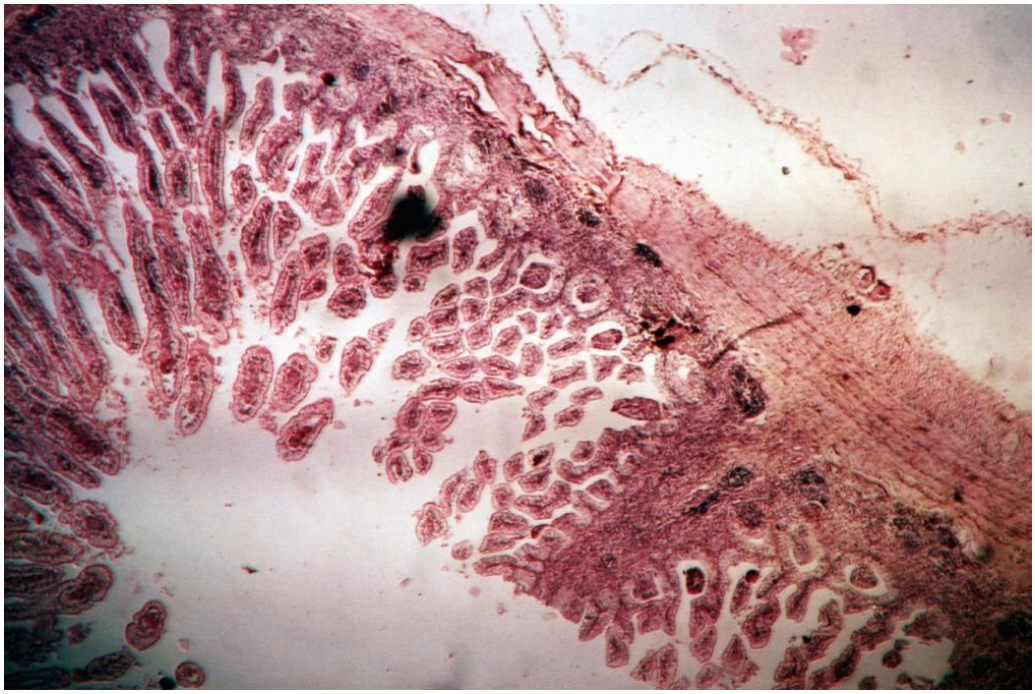


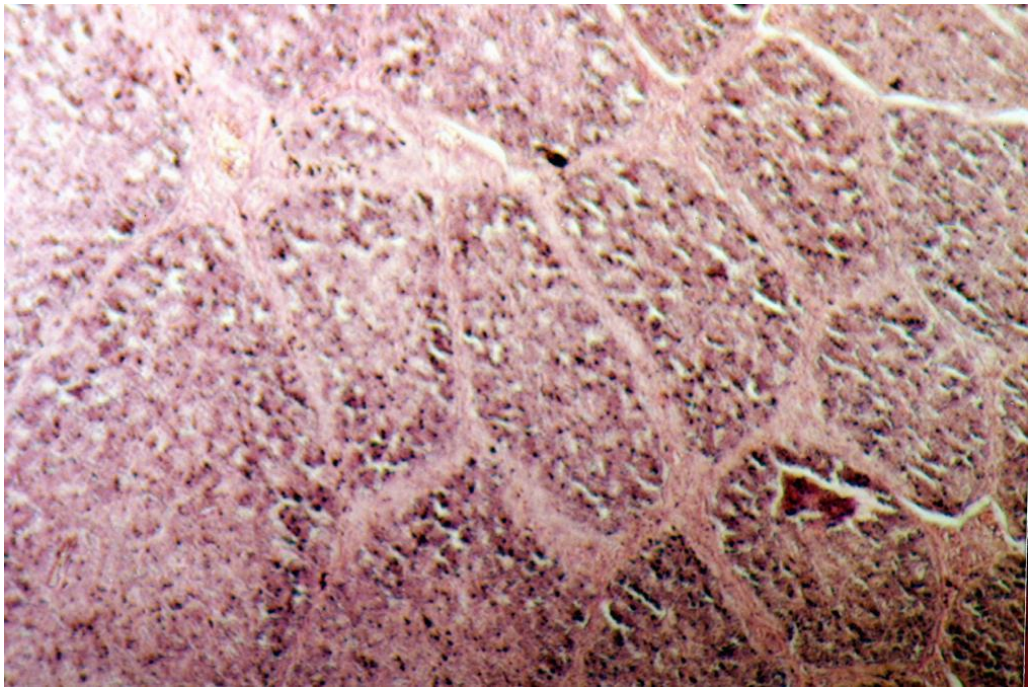


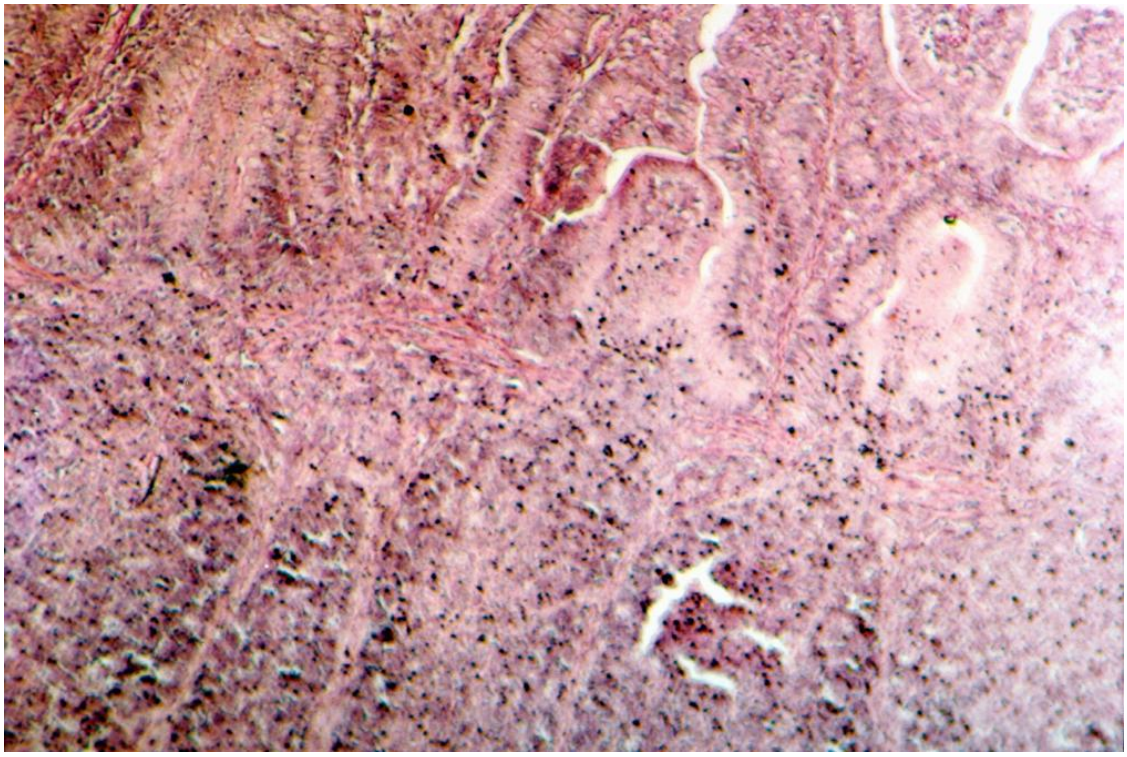


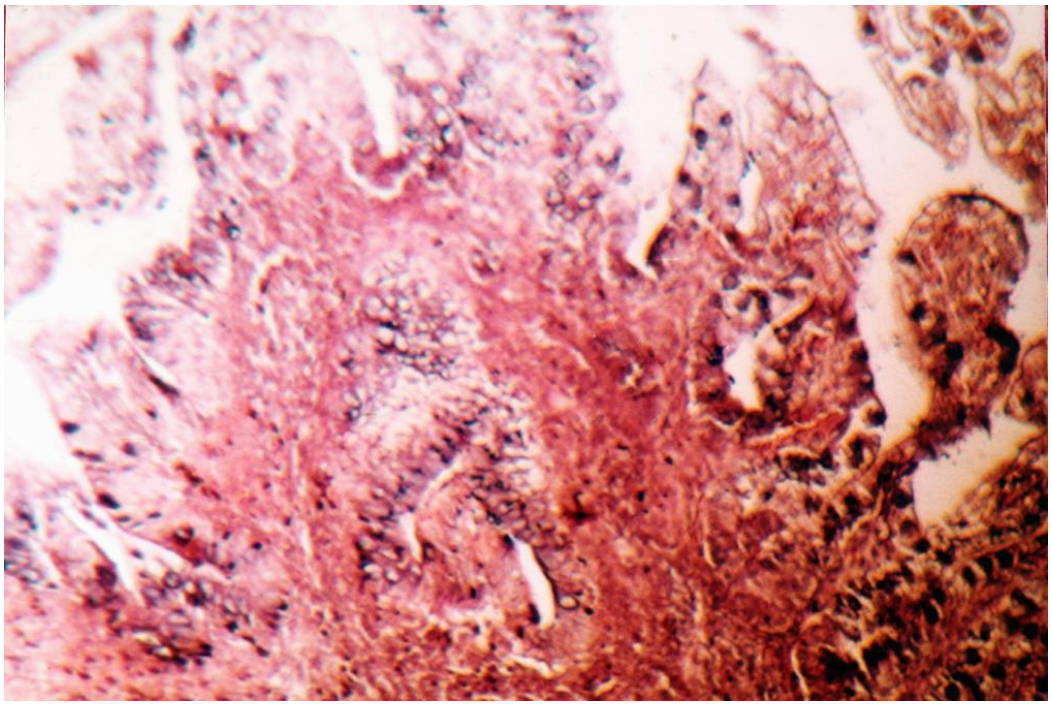


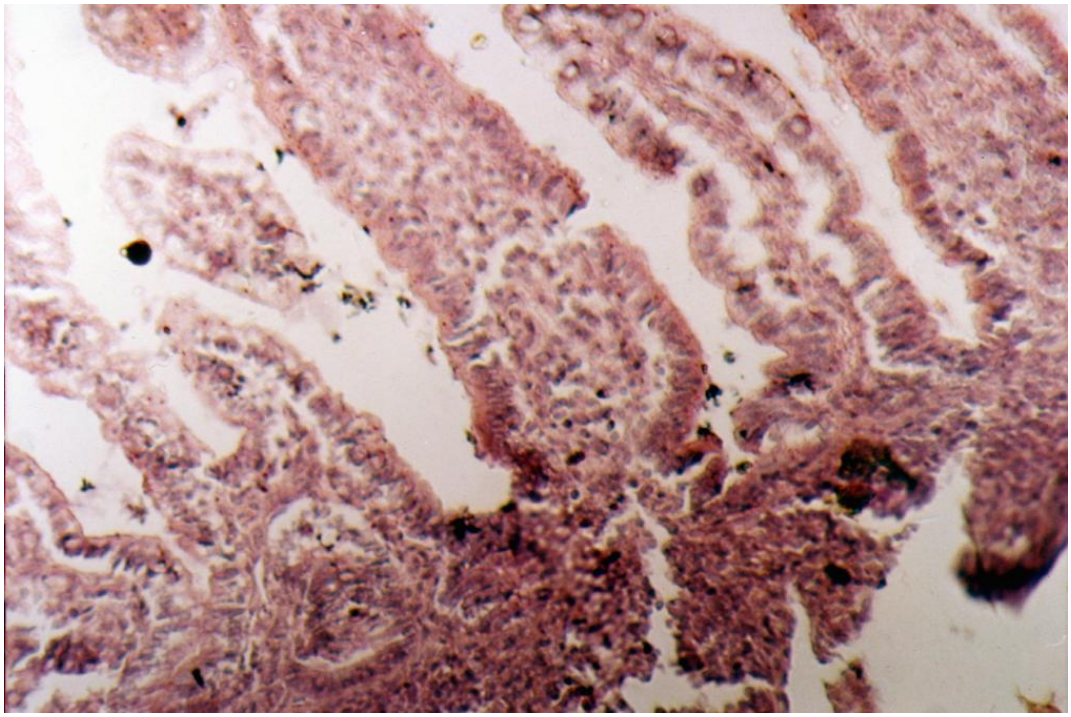












Apart from developmental defects, inflammatory changes such as hyperplasia, nodular hyperplasia, stratification of PPs, lymphocytic infiltration of lamina propria may be present, indicative of intrauterine infection in apparently healthy children.

Oral vaccine evokes a local immune response in the GALT stimulating antibody production. The abnormalities in development might lead to immuno incompetence of neonates. With the abnormal internal milieu prevailing in GALT, the defects detailed may not show any clinical symptoms and children are apparently normal with enteropathy.

My suggestion is that mass vaccination which happens without checking the child's health should be banned.

Some decades back, vaccines were administered only to the apparently healthy children. Even if the child had common cold, parents were advised to bring the children later. The reason is that any infection is likely to interfere with the specific antibody production against the vaccine; but nowadays, mass vaccination is done irrespective of health condition of the children.

Oral vaccine, when administered in sick children {with any infection} reaches the lymphoid organ in the gut, which does not provide a conducive atmosphere for the production of antibody due to any one of the causes listed earlier. The attenuated virus in the vaccine may mutate to become virulent resulting in polio or the failure of vaccine to produce antibody in the abnormal environment may make the child prone to acquire the disease at a later stage.

Apart from the biological aspect, meticulous care in production of vaccine, maintenance of cold chain also play a crucial role in affording immunity.

P.S. I have done research on Gut associated lymphoid tissue in day old calves and foetus. I am of the opinion that a lot of research has to be done on the development of fetal immune system and correlate it vaccine failure. Similarly now Chinese brain fever vaccine is used in a few pockets of Tamil Nadu. Viral vaccines are supposed to be manufactured using local strains. Should we introduce a new strain and watch our children suffering from encephalitis/with a new stain of encephalitis virus? Similarly, new virus is being introduced with the object of preventing cervical cancer. How safe these vaccines are

Wake up; Protect yourself from foreign vaccines

S.No	Vaccine	Prevents	Minimum Age for Dose 1	Interval Between Dose 1 and Dose 2	Interval Betw Dose 2 and D
1	BCG	TB & bladder cancer	Birth		
2	HepB	Hepatitis B	Birth	4 weeks	8 weeks
3	Poliovirus	Polio	Birth	4 weeks	4 weeks
4	DTP	Diphtheria, Tetanus & Pertussis	6 weeks	4 weeks	4 weeks
5	Hib	Infections caused by Bacteria	6 weeks	4 weeks	4 weeks
6	PCV	Pneumonia	6 weeks	4 weeks	4 weeks
7	RV	Severe Diarrheal Disease	6 weeks	4 weeks	4 weeks
8	Typhoid	Typhoid Fever, Diarrhea	9 months	15 months (Booster 1)	
9	MMR	Measles, Mumps & Rubella	9 months		
10	Varicella	Chickenpox	1 year		

INDIAN BABY
Vaccination & Immunization Schedule
2015

This article is based on the research project on ' The cause of calfhood diarrhea' in day-old buffalo calves. I have done extensive research on nearly 400 calves and fetuses. In Indian Journal of Anatomy volume I. My article was on presence of villi in large intestine of day old calves which recedes within four days. The reason for the presence of villi in large intestine in day-old calves was discussed. This is to provide large surface area for absorption of immunoglobulin from the mother within 24 hours.

I was in charge of this project from 1986 to 1993. My request as anatomists(Histologists) , we can contribute a lot to pathology, immunology.

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