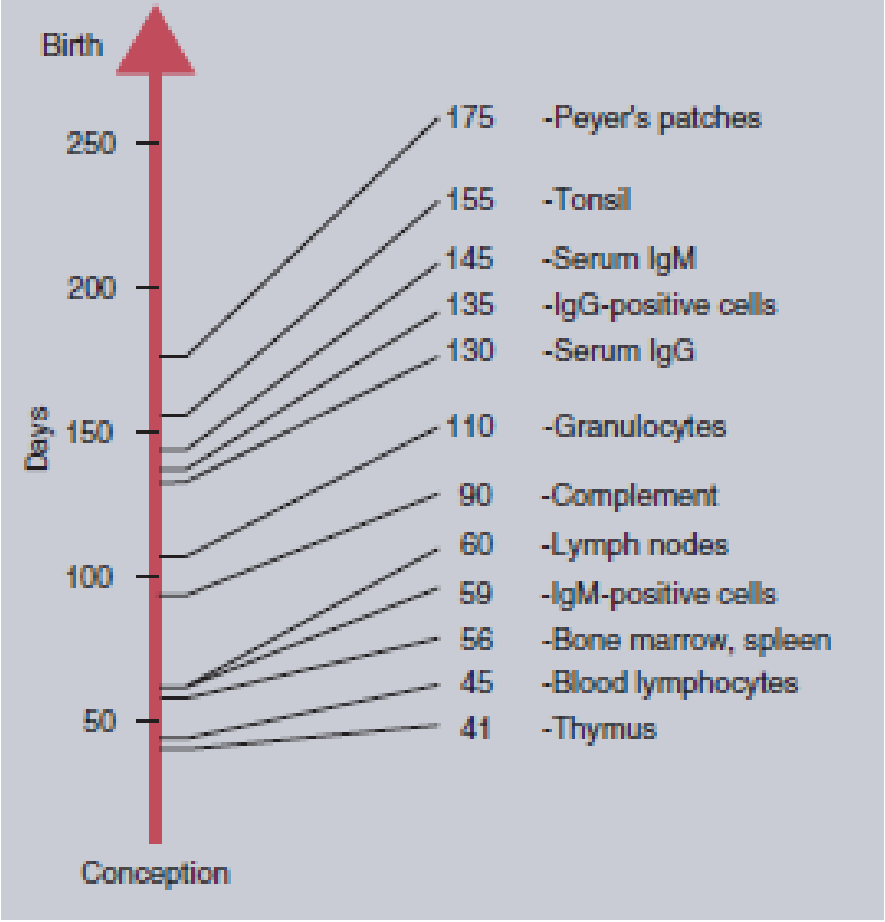
IMMUNITY in the FETUS and NEWBORN

IMMUNITY in the FETUS and NEWBORN



- The first developing organ in the fetus is thymus,
- Acquire the ability to respond to fetus antigens shortly after the development of lymphoid organs,
- The order of ontogenesis is the same in all living things
- Immune system development time is directly proportional to pregnancy period.

FETAL DEFENSE MECHANISMS

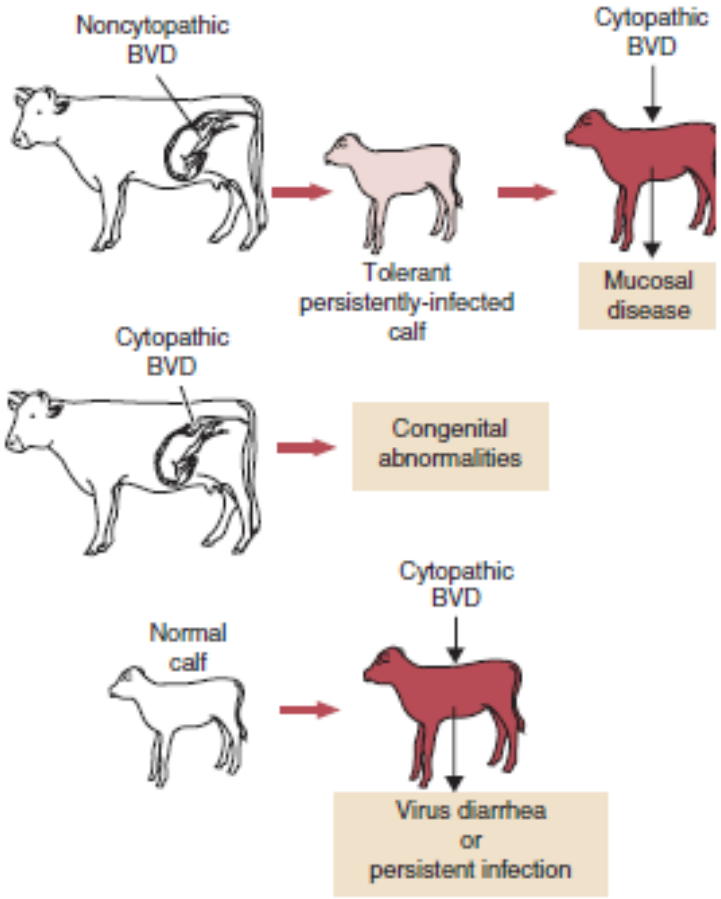
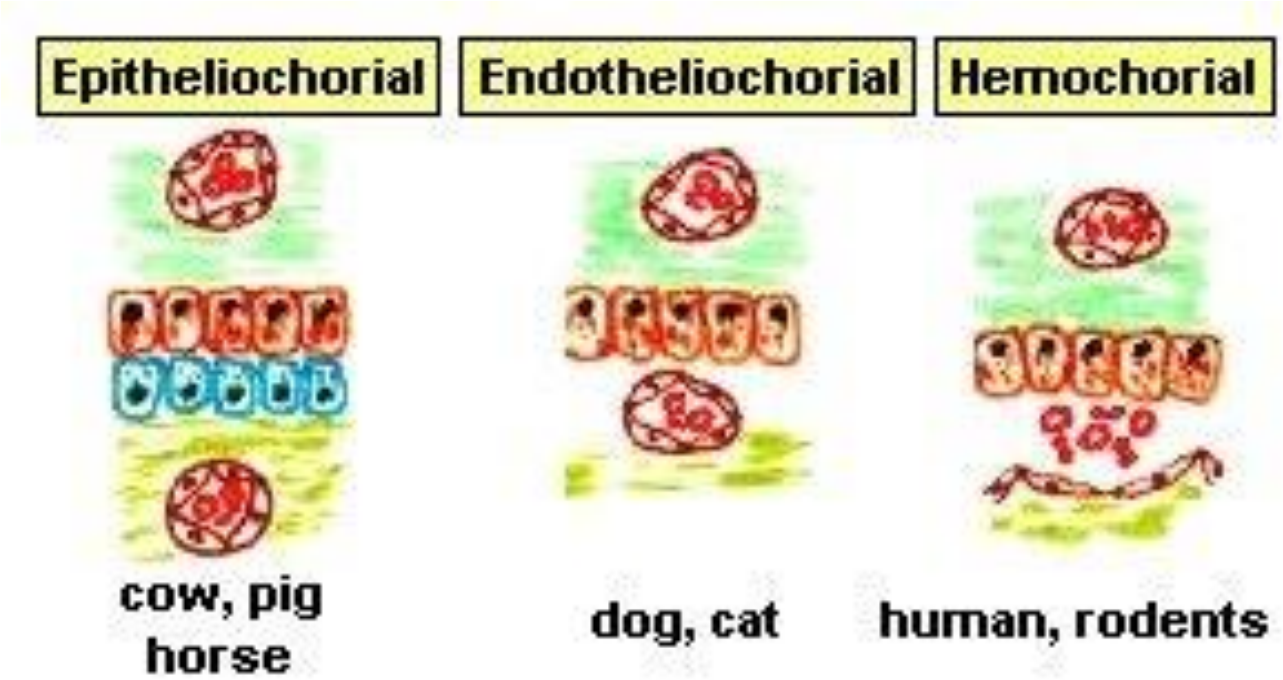


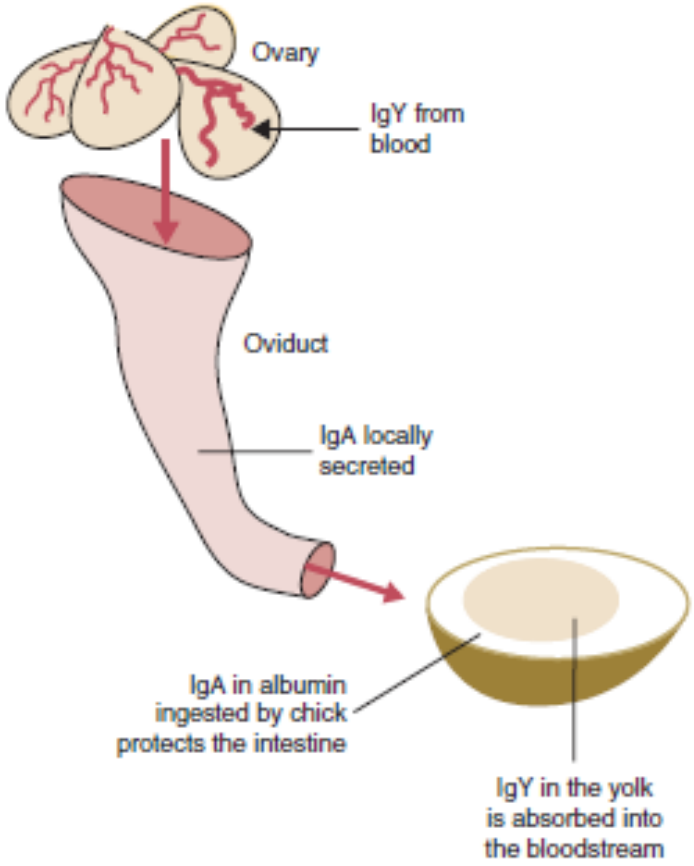
FIGURE 21-3 The relationship of mucosal disease to persister infection with bovine viral diarrhea virus (BVDV) in tolerant cattle Calves persistently infected with noncytopathic BVDV and the superinfected with cytopathic BVDV develop mucosal disease.

- The immune response to intrauterine microorganisms is directly related to the age of the fetus (gestation period),
- Fetal infections cause lymphoid hyperplasia (increase in lymphoid organs) and increase serum Ig levels

PLACENTAL IMMUNITY TRANSFER



Embryonal immunity transfer in Chick



- IgG transfer from maternal serum to egg yolk in ovary
- IgA and IgM transfer to albumin in oviduct
- Hatchery period;
- -IgG is absorbed from the yolk and passes into the blood of the chick
- -albumine absorbs IgA and passes into the chick gut

NEONATAL IMMUNITY (Immunity in neonates)

- Immunological capacity of newborns is low.
- Because;
- - maternal antibodies,
- - high levels of suppressor T-lymphocyte and immunosuppressive hormone (glucocorticoid) at birth,
- **- the offspring's pathogen experience is lacking**

NEONATAL IMMUNITY (Immunity in neonates)

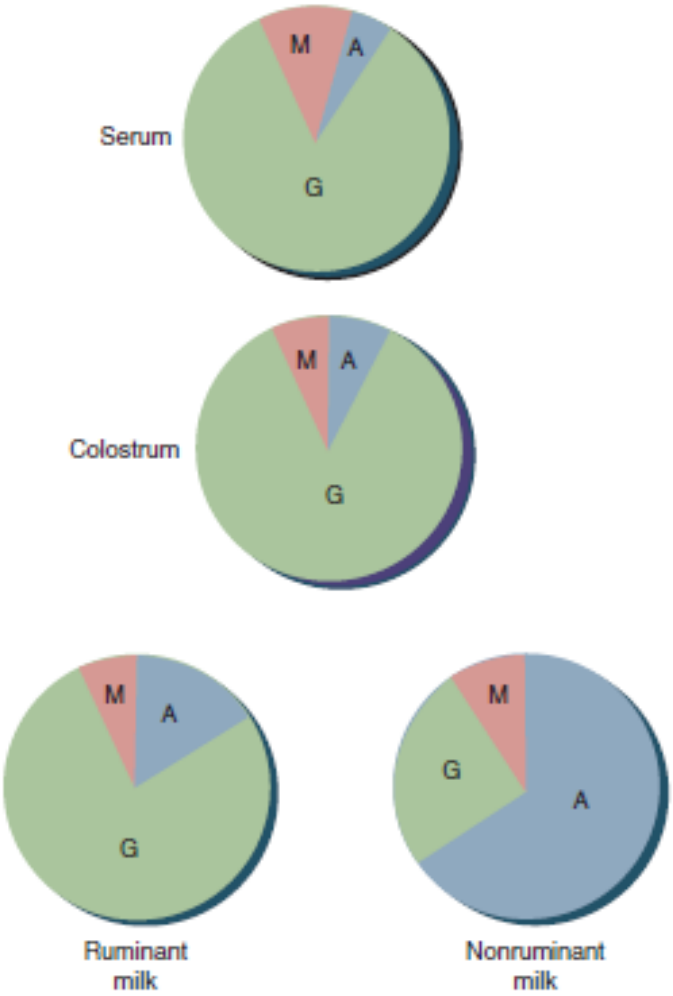
Newborns;

- The number of B-lymphocytes in the blood circulation is low,
- Neutrophil and macrophage activation is low,
- Complement activity is low,
- Local and cellular immunity begins late.
- Adequate immunological capacity in newborns develops in 30 days,
- Full capacity is reached in puberty.

Passive Immune Transfer in Newborns

- Colostrum: It is a nourishing and protective mammary gland secretion which is formed by the accumulation of mammary secretions and proteins passing through the blood in the last few weeks of pregnancy.

Passive Immune Transfer in Newborns



- The rate of IgG in colostrum is high in animals.
- The source of IgG in colostrum is blood serum,
- Most of the IgGs in milk are synthesized in the breast,
- Colostrum also contains macrophages, B and T-lymphocytes,

Passive Immune Transfer in Newborns

- Newborns should receive the highest amount of colostrum (2-6 liters) as soon as possible after birth. Because;
- Newborns are vulnerable,
- Proteolytic activity in digestive systems is low,
- Intestinal permeability is highest in the first 6 hours after birth There are specific receptors for Igs on the intestinal epithelial cell surface,
- Ig absorption is higher in offspring that suckles the mother directly compared to offspring of colostrum.

Passive Immune Transfer in Newborns

- Maternal antibody,
- Maternal immunity
- Colostrum suppresses the immune system of the newborn,
- The transition from maternal immunity to active immunity is the time when the offspring is most susceptible to infections.
- The relationship between maternal antibody level and vaccination time is important!
- The protection of the maternal antibody is specific.