A research article and related Commentary on a novel anti-inflammatory agent for prevention of preterm delivery, a research article on the role of interferon (IFN)-α and IFN-β in glomerular pathology, and a research article on the observation that milky spots promote ovarian cancer metastatic colonization were selected for the August 2013 AJP CME Program in Pathogenesis. The planning committee members and staff have no relevant financial relationships with commercial interests to disclose. As noted below, the authors of the Commentary on preterm delivery and the research articles on interferon and ovarian cancer have no relevant financial relationships with commercial interests to disclose; however, two of the authors of the research article on preterm birth disclosed that they have filed a patent application for the use of N,N-dimethylacetamide (DMA) for inflammatory conditions.


Upon completion of this month’s journal-based CME activity you will be able to:

- Define preterm birth.
- Describe the causes and associated outcomes of preterm birth.
- Understand the mechanism of action of N,N-dimethylacetamide (DMA) in preterm birth.
- Understand the role that viral infections play in glomerulonephritis.
- Discuss the role of interferons in glomerulonephritis.
- Describe metastatic ovarian cancer.
- Discuss omentum adipose tissue and milky spot formation.
1. A wide variety of disorders are associated with proinflammatory responses, including sepsis, the fetal inflammatory response syndrome, and preterm birth. Based on the referenced article and the related Commentary, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:422-430 and Am J Pathol 2013, 183:330-332.]

   a. Delivery before the 37th week of gestation is considered preterm.
   b. Preterm birth accounts for more than 12% of all births in the United States.
   c. Preterm birth causes more than 90% of perinatal morbidity and mortality.
   d. Preterm birth is a huge international problem, accounting for 1 million perinatal and pediatric deaths, and is the most significant contributor to perinatal and pediatric morbidity and mortality.

2. The devastating outcomes that are increased in prevalence with premature delivery include blindness, chronic lung disease, cognitive neurodisability, cerebral palsy, and death. Based on the referenced article and the related Commentary, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:422-430 and Am J Pathol 2013, 183:330-332.]

   a. Whether the etiology of preterm delivery is indicated (or iatrogenic) or spontaneous, the outcomes are similar.
   b. Available clinical interventions targeting prevention of spontaneous preterm delivery are few and have had limited success.
   c. Inflammatory disorders account for 75% of obstetric precursors of preterm birth.
   d. No effective therapy to prevent inflammatory preterm birth is currently available.

3. The most common cause of spontaneous preterm birth is intrauterine infection in the mother. Based on the referenced article and the related Commentary, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:422-430 and Am J Pathol 2013, 183:330-332.]

   a. Bacteria in the gestational compartment of pregnant women can trigger the immune system via cell surface recognition molecules, such as Toll-like receptor-1 and T-helper cell (Th)2 cytokines.
   b. The release of proinflammatory cytokines plays a critical role in the pathogenesis of inflammation-associated premature delivery.
   c. The inflammatory response induces steps in the latter part of the parturition cascade, such as decreased prostaglandin catabolism, functional progesterone withdrawal, increased expression of proteases, contraction-associated proteins, and increased uterine contractile activity.
   d. Inflammation can induce the rupture of membranes and cervical ripening, known to be mediated by matrix metalloproteinases.

4. *N,N*-dimethylacetamide (DMA) is a common organic solvent, which is used as a cryopreservative for platelets and as a novel antiretroviral agent. Based on the referenced article and the related Commentary, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:422-430 and Am J Pathol 2013, 183:330-332.]

   a. DMA is metabolized first to monomethylacetamide and then demethylated further to acetamide.
   b. DMA is carcinogenic in rats and humans.
   c. DMA can significantly attenuate the proinflammatory response mediated by lipopolysaccharide in timed-pregnant E15.5 mice.
   d. DMA suppresses nitric oxide production and nuclear translocation of NF-κB in cultured macrophages.

5. Systemic viral infections are frequently associated with immune complex glomerulonephritis. Based on the referenced article, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:431-440.]

   a. Immune complex glomerulonephritis deposits viral nucleic acids inside the glomerulus.
   b. Once inside the intracellular cytosol of mesangial and glomerular endothelial cells, viral nucleic acids are recognized by distinct recognition receptors to induce massive secretion of interferon (IFN)-α and IFN-β.
   c. Generally, the induction of IFN-α and IFN-β is a central element of the host’s antiviral response because these interact with IFN receptors on adjacent cells in a paracrine manner.
   d. IFN-α significantly induced podocyte death and increased the permeability of podocyte monolayers.

6. Some viruses cause glomerulopathies by directly infecting glomerular epithelial cells. Based on the referenced article, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:431-440.]

   a. Human immunodeficiency virus (HIV) and parvoviruses can infect glomerular epithelial cells.
   b. HIV replicates in podocytes and parietal epithelial cells (PECs) and viral nucleic acids induce IFN production and IFN-stimulated gene expression in glomerular cells.
   c. Proteinuria, collapsing nephropathy, and pseudocrescents are hallmarks of viral glomerulopathies.
   d. The IFN receptor consists of two transmembrane chains with identical binding affinities for IFN-α and IFN-β.
7. Most ovarian cancer patients present with metastases or eventually die of metastatic disease within the abdominal cavity. Based on the referenced article, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:576-591.]

a. It is estimated that 10,000 women will be diagnosed with and 8,800 women will die of ovarian cancer in 2013.
b. Ovarian cancer cells in the peritoneal fluid have access to and can potentially lodge within a variety of tissues.
c. Attachment of ovarian cancer cells to the omentum represents an early step in the development of widespread peritoneal disease.
d. Although the importance of the omentum is widely acknowledged, there still is no consensus on its role in metastasis formation.

8. Milky spots are the major immune structure for host defense of the peritoneal cavity. Based on the referenced article, select the ONE statement that is NOT TRUE: [See Am J Pathol 2013, 183:576-591.]

a. Omentum is the central regulator of peritoneal homeostasis.
b. Omentum functions include regulating fluid and solute transport, sensing and repairing injuries, promoting angiogenesis, fighting infection, serving as a source of stem cells, producing regulatory molecules, and storing and supplying lipids.
c. A distinctive feature of the omental vasculature is the presence of numerous branching blood vessels ending in tortuous glomerulus-like capillary beds near the tissue periphery; immune cells that aggregate around and within these capillary beds form milky spots.
d. The majority of the omentum is composed of collagen.