

## Abdominal wall inflammation

Peritonitis is an inflammation of the peritoneum, the thin membrane that lines the abdominal wall and covers most of the organs of the body. There are two major types of peritonitis. Primary peritonitis is caused by the spread of an infection from the blood and lymph nodes to the peritoneum. This type of peritonitis is rare -- less than 1 % of all cases of peritonitis are primary. The more common type of peritonitis, called secondary peritonitis, is caused by the entry of bacteria or enzymes into the peritoneum from the gastrointestinal or biliary tract. Both cases of peritonitis are very serious and can be life-threatening if not treated properly.

## Signs and Symptoms

The signs and symptoms of peritonitis include:

- Swelling and tenderness in the abdomen with pain ranging from dull aches to severe, sharp pain causing board-like rigidity
- Fever and chills
- Loss of appetite
- Nausea and vomiting
- Increased breathing and heart rates
- Shallow breaths
- Low blood pressure
- Limited urine production
- Inability to pass gas or feces

## Causes

The cause of primary peritonitis is infection in the blood. It occurs most commonly in individuals with liver disease. Fluid accumulates in the abdomen, creating a prime environment for the growth of infectious microorganisms. Secondary peritonitis is caused by the spillage of bacteria, enzymes, or bile into the peritoneum from a hole or tear in the gastrointestinal or biliary tracts. Such tears can occur as a result of an infected organ, such as a ruptured appendix, or as a complication from surgery.

## Risk Factors

The following factors may increase the risk for primary peritonitis:

- Liver disease (cirrhosis)
- Kidney damage
- Fluid in the abdomen
- Compromised immune system
- Pelvic inflammatory disease

Risk factors for secondary peritonitis include:

- Appendicitis (inflammation of the appendix)
- Stomach ulcers
- Torn or twisted intestine
- Severely inflamed gallbladder
- Damage to the pancreas
- Inflammatory bowel disease, such as Crohn's disease or ulcerative colitis
- A twisted intestine that can cause obstruction
- Injury caused by an operation
- Continuous ambulatory peritoneal dialysis (CAPD) -- a procedure used for people with end-stage renal disease
- Trauma

## Diagnosis

Given that peritonitis can be life-threatening, the doctor will first conduct a physical examination to determine whether surgery to correct the underlying problem is necessary. During the physical exam, the physician will feel and press the abdomen to detect any swelling and tenderness in the area as well as signs that fluid has collected in the area. The doctor may also listen to bowel sounds and check for difficulty breathing, low blood pressure, and signs of dehydration. The following procedures may be included to confirm the diagnosis of peritonitis:

- Blood tests -- identify the microorganism causing the condition
- Samples of fluid from the abdomen -- identify the microorganism causing the condition
- CT scan -- identifies fluid in the abdomen, an accumulation of pus, or an infected organ
- Chest x-rays -- detect air in the abdomen, which indicates that a torn or perforated organ may be present
- Peritoneal lavage -- large amounts of fluid may be injected into the peritoneum and removed to wash out any microorganisms causing the condition

## Preventive Care

The best way to prevent serious complications associated with peritonitis is to seek medical attention as soon as symptoms appear.

## Treatment

Peritonitis is a potentially life-threatening condition that requires immediate medical attention. Hospitalization is common. Surgery is often necessary to remove the source of infection, such as an inflamed appendix, or to repair a tear in the walls of the gastrointestinal or biliary tract. Antibiotics are prescribed to control infection, and intravenous therapy is used to restore hydration. Integrative therapies such as vitamins and herbs may also be used for supportive care when recovering from peritonitis.

## Medications

The following medications may help control infection and reduce pain associated with peritonitis:

### Antibiotics

Antibiotic medications inhibit the growth of microorganisms, such as bacteria, and prevent further spread of infection. The antibiotics prescribed vary, depending on the type of peritonitis and the organism causing the condition.

### Opiates

Opiate drugs, such as meperidine, morphine, or oxycodone, may be prescribed in the hospital to reduce pain.

## Surgery and Other Procedures

Surgery is often necessary for individuals with both primary and secondary peritonitis. It can be the fastest and most effective way to remove infectious agents and repair damaged organs. Most surgical procedures are designed to locate the source of the bacterial infection, to drain excess fluid, and to remove or repair damaged tissue.

## Nutrition and Dietary Supplements

Peritonitis is a medical emergency and should be treated by a qualified medical doctor. A comprehensive treatment plan for recovering from peritonitis may include a range of

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complementary and alternative therapies. Ask your team of health care providers about the best ways to incorporate these therapies into your overall treatment plan. Always tell your health care provider about the herbs and supplements you are using or considering using.

Following these nutritional tips may help reduce symptoms:

- Try to eliminate potential food allergens, including dairy, wheat (gluten), corn, preservatives, and food additives. Your health care provider may want to test for food sensitivities.
- Eat antioxidant foods, including fruits (such as blueberries, cherries, and tomatoes) and vegetables (such as squash and bell peppers).
- Eat foods high in B-vitamins and calcium, such as almonds, beans, whole grains (if no allergy), dark leafy greens (such as spinach and kale), and sea vegetables.
- Avoid refined foods, such as white breads, pastas, and especially sugar.
- Eat fewer red meats and more lean meats, cold-water fish, tofu (soy, if no allergy), or beans for protein.
- Use healthy oils in foods, such as olive oil or vegetable oil.
- Reduce or eliminate trans-fatty acids, found in commercially baked goods such as cookies, crackers, cakes, French fries, onion rings, donuts, processed foods, and margarine.
- Avoid coffee and other stimulants, alcohol, and tobacco.
- Drink 6 - 8 glasses of filtered water daily.

Nutritional deficiencies may be addressed with the following supplements:

- A multivitamin daily, containing the antioxidant vitamins A, C, E, the B-complex vitamins, and trace minerals such as magnesium, calcium, zinc, and selenium.
- Omega-3 fatty acids, such as fish oil, 1 - 2 capsules or 1 tablespoonful oil one to three times daily, to help decrease inflammation and help with immunity. Cold-water fish, such as salmon or halibut, are good sources.
- Vitamin C, 500 - 1,000 mg one to three times daily, as an antioxidant and for immune support.
- L-glutamine, 500 - 1,000 mg three times daily, for support of gastrointestinal health and immunity.
- Probiotic supplement (containing *Lactobacillus acidophilus* among other species), 5 - 10 billion CFUs (colony forming units) a day, when needed for maintenance of gastrointestinal and immune health. You should refrigerate your probiotic supplements for best results.
- Grapefruit seed extract (*Citrus paradisi*), 100 mg capsule or 5 - 10 drops (in favorite beverage) three times daily when needed, for antibacterial, antifungal, and antiviral activity, and for immunity.
- Alpha-lipoic acid, 25 - 50 mg twice daily, for antioxidant support.
- Resveratrol (from red wine), 50 - 200 mg daily, to help decrease inflammation and for antioxidant effects.

- Coenzyme Q10, 100 - 200 mg at bedtime, for antioxidant and immune activity.
- L-arginine, 1 -2 gm three times daily, for blood vessel and immune support.

## Herbs

Herbs are generally a safe way to strengthen and tone the body's systems. As with any therapy, you should work with your health care provider to get your problem diagnosed before starting any treatment. You may use herbs as dried extracts (capsules, powders, teas), glycerites (glycerine extracts), or tinctures (alcohol extracts). Unless otherwise indicated, you should make teas with 1 tsp. herb per cup of hot water. Steep covered 5 - 10 minutes for leaf or flowers, and 10 - 20 minutes for roots. Drink 2 - 4 cups per day. You may use tinctures alone or in combination as noted.

- Green tea (*Camellia sinensis*) standardized extract, 250 - 500 mg daily, for antioxidant, anti-inflammatory, and heart health effects. Use caffeine-free products. You may also prepare teas from the leaf of this herb.
- Cat's claw (*Uncaria tomentosa*) standardized extract, 20 mg three times a day, for inflammation and antibacterial or antifungal activity.
- Reishi mushroom (*Ganoderma lucidum*), 150 - 300 mg two to three times daily, for inflammation and for immunity. You may also take a tincture of this mushroom extract, 30 - 60 drops two to three times a day.
- Olive leaf (*Olea europaea*) standardized extract, 250 - 500 mg one to three times daily, for antibacterial or antifungal activity and immunity. You may also prepare teas from the leaf of this herb.
- Milk thistle (*Silybum marianum*) seed standardized extract, 80 - 160 mg two to three times daily, for detoxification support.

## Homeopathy

The use of homeopathic remedies for the treatment of peritonitis has yet to be thoroughly scientifically evaluated, but a trained specialist may recommend the following:

- Deadly nightshade (*Belladonna*) -- for individuals who are hypersensitive to touch, have sudden attacks of pain that come and go, and have a high fever
- Trioxide of arsenic (*Arsenicum album*) -- for individuals with a swollen abdomen, unquenchable thirst, extreme chills, and symptoms that worsen at night

## Other Considerations

### Prognosis and Complications

Complications from peritonitis can include the following:

- Sepsis -- an infection throughout the blood and body that can potentially cause multiple organ failure
- Abnormal clotting of the blood (generally due to significant spread of infection)
- Formation of fibrous tissue in the peritoneum
- Adult respiratory distress syndrome -- a severe infection of the lungs
- Some forms of chronic peritonitis do not respond to treatment.

The prognosis for peritonitis depends primarily on the type of the condition. For example, the outlook for those with secondary peritonitis tends to be poor (10 - 40% death rate), especially among the elderly, individuals with compromised immune systems, and those who have had symptoms for longer than 48 hours before treatment. While the long-term outlook for individuals with primary peritonitis related to liver disease also tends to be poor, the prognosis for primary peritonitis among children is generally very good after treatment with antibiotics.

## Supporting Research

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