RESEARCH PAPER | Medical Science | Volume : 5 | Issue : 6 | June 2015 | ISSN - 2249-555X



A Literary Review Ontubercular Complications With its Modern and Ayurvedic Management

KEYWORDS: Mycobacterium tuberculosis, vulnerable, complications

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ABSTRACT *Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis complex which affects usually lungs and thereafter invade other organs in one third of cases. The objective is to achieve universal access to high-quality care for all people with TB, Protect vulnerable populations from TB, TB/HIV and drug-resistant TB and Support development of new tools and enable their timely and effective use. The current review includes primarily the complications arise in the tuberculosis patients, for which the data is being collected from various websites, articles published in reputed journals and some recognised authentic medical books. Here an attempt is made to cover most commonly seen complications along with their conservative treatment both explained in modern and Ayurvedic science along with some surgical overview.*

Introduction:
Tuberculosisis one of the oldest diseases known to affect humans and is likely to have existed in prehominids, is a major cause of death worldwide. This disease is caused by bacteria of the Mycobacterium tuberculosis complex and usually affects the lungs (Pulmonary Tuberculosis), although other organs are involved in up to one-third ofcases(Extra pulmonary tuberculosis).[1] It is also morecommon among men than women, and affects mainly adults inthe most economically productive age groups. TB ranks as the second leadingcause of death from an infectious disease worldwide,after the human immunodeficiency virus (HIV). Thelatest estimates included in this report are that therewere 9.0 million new TB cases in 2013 and 1.5 millionTB deaths. Though most TB cases and deaths occur amongmen, the burden of disease among women is also high. In 2013, there were an estimated 3.3 millioncases and 510 000 TB deaths among women, as well asan estimated 550 000 cases and 80 000 deaths amongchildren. India is a high TB burden country contributing to 26 per cent of global TB burden.Between 2000 and 2013, an estimated 37million lives were saved through effective diagnosisand treatment.[2]If properly treated, TB caused by drug-susceptible strains is curable in virtually all cases. If untreated, the disease may be fatal within 5 years in 50–65% of cases. Transmission usually takes place through the airborne spread of droplet nuclei produced by patients with infectious pulmonary TB.[3] While treatment of TB and HIV-TB co-infection has become simpler, efforts are on to shorten the treatment duration. However, drug toxicities and drug-drug interactions still constitute a significant challenge.

Various Tuberculosis and its complications with Management (Modern view)
1.Pulmonary Tuberculosis: It is a contagious bacterial infection caused by Mycobacterium tuberculosisthat involves the lungs. It may spread to other organs.Pulmonary TB can cause permanent lung damage if not treated early.Some of the possible complications of pulmonary tuberculosis is Empyema, Pneumothorax, Aspergilloma, Endobronchitis, Brochiectasis, Laryngitis, Corpulmonale, Ca bronchus, Enteritus, Miliary Tuberculosis and HIV related opportunistic infections.[4]Medicines used to treat TB may cause side effects, including liver problems. Other side effects include:Changes in vision, Orange- or brown-colored tears and urine and Rash. A vision test may be done before treatment so that doctor can monitor any changes in the health of patient eyes.[5]

2.Lymph node tuberculosis:[6] It constitutes 20-40% of extrapulmonary tuberculosis. Commonly involved superficial lymph nodes (Scrofula or king's evil) include those in posterior and anterior cervical chains or the suprascapular fossae. Often, the lymphadenopathy is bilateral and noncontiguous. Intrathoracic (hilar, paratracheal and mediastinal in decreasing order) and abdominal lymph nodes are also involved in tuberculosis.

Tuberculous lymphadenitis usually presents as a gradually increasing painless swelling of one or more lymph nodes of weeks to months duration. Initially the nodes are firm, discrete and mobile. Intrathoracic nodes may compress one of the bronchus leading to atelectasis, lung infection and bronchiectasis or thoracic duct leading to chylous effusion. Other intrathoracic complications include dysphagia,oesophago-mediastinal fistula, tracheo-oesophageal fistula, biliary obstruction and cardiac temponade. Retroperitoneal nodes may lead to chylousascitis, chyluria and rarely renovascular hypertension.

Treatment : In general, chemotherapy regimens that are effective in pulmonary tuberculosis should also be effective in tuberculous lymphadenitis also. Both a 9 month regimen containing isoniazid, riframpicin and ethambutol for first 2 months followed by isoniazid and rifampicin for 7 months

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or a 6 month regimen containing isoniazid, rifampicin and pyrazinamide for 2 months followed by isoniazid, riframpicin for 4 months given on daily basis or on intermittent basis are found to be effective in containing lymph node tuberculosis.

3.Intestinal Tuberculosis: Tuberculous peritonitis and intestinal tuberculosis are the most commontype of infections followed by hepatic tuberculosis, and intra-abdominaltuberculoma. 35.7% of these patients had the coexistence of extra-abdominalinfection.[7]

There are three types of abdominal tuberculosis depending upon the kind of presentation.

i) Ascitic: This type of abdominal tuberculosis presents with accumulation of fluid in the abdomen, swollen abdomen and with nodules of 1-2mm in size over the peritoneum which are slightly raised. It is also commonly referred to as wet type of abdominal tuberculosis.

ii) Obstructive: This type is also called dry type and manifests with adhesions over the omentum and loops of intestines causing them to become thick and rubbery and leading to intestinal obstruction.

iii) Glandular: This type affects mesenteric lymph nodes which enlarge in size and become firm, hard and are less mobile.

The management of the case can be done by anti-tubercular drugs administration as stated above.Surgical treatment is usually conservative. Correction for strictures with stricturoplasty and perforations in the intestines with resection and anastomosis is recommended. Intestinal obstruction is initially treated with drug therapy before proceeding to corrective surgeries.[8]

4. Pericardial Tuberculosis: The human immunodeficiency virus (HIV) epidemic has been associated with an increase in all forms of extrapulmonary tuberculosis including tuberculous pericarditis. Tuberculosis is responsible for approximately 70% of cases of large pericardial effusion and most cases of constrictive pericarditis in developing countries, where most of the world's population live.

Treatment consists of 4-drug therapy (isoniazid, rifampicin, pyrazinamide, and ethambutol) for 2 months followed by 2 drugs (isoniazid and rifampicin) for 4 months regardless of HIV status.[9]

5. Genito-urinary Tuberculosis:[10] In the kidneys, when multiple granuloma form at the site of metastatic foci, they are typically bilateral, cortical, and adjacent to the glomeruli, and they may remain inactive for decades. Although both kidneys are seeded, clinically significant disease, which is caused by capillary rupture and delivery of proliferating bacilli into the proximal tubules, usually develops in only one kidney. Ureteral TB is an extension of the disease from the kidneys, generally to the ureterovesical junction, and develops in about one half of all patients with renal TB.

The higher frequency of isolated epididymal TB lesions in children favors the possibility of hematologic spread of infection, whereas adults seem to develop tuberculous epididymoorchitis caused by direct spread from the urinary tract.

6. Spinal Tuberculosis:[11] Pott's disease is tuberculosis of the spinal column.The usual sites to be involved are the lower thoracic and upper lumbar vertebrae.The source of infection is usually outside the spine. It is most often spread from the lungs via the blood.In adults, disc disease is secondary to the spread of infection from the vertebral body but in children it can be a primary site, as the disc is vascular in children.The infection spreads from two adjacent vertebrae into the adjoining disc space.

Medical treatment is the mainstay but surgical intervention may be required. Immobilisation of the spine is usually for two or three months.

Surgical: Most patients affected by spinal tuberculosis can be successfully treated conservatively with chemotherapy, external bracing and prolonged rest. However, kyphotic deformity, spinal instability and neurological deficit are often associated with a conservative approach.

Complications
Progressive bone destruction leads to vertebral collapse and kyphosis. The spinal canal can be narrowed by abscesses, granulation tissue, or direct dural invasion. This leads to spinal cord compression and neurological signs (Pott's paralysis).Kyphosis occurs because of collapse in the anterior spine and can be severe.

Lesions in the thoracic spine have a greater risk of kyphosis than those in the lumbar spine.Neurological problems can be prevented by early diagnosis and prompt treatment. It can reverse paralysis and minimise disability.

7. Meningeal Tuberculosis:[12] Sometimes, the bacterium will travel to the membranes surrounding the brain and spinal cord (the meninges). Infection of the meninges can result in the development of a life-threatening condition known as meningeal tuberculosis. The complications of TB meningitis are significant and life-threatening. They include: seizures, hearing loss, increased pressure in the brain (intracranial pressure), brain damage, stroke and death. Increased pressure in the brain can cause permanent and irreversible brain damage. The treatment is same as the other systemic tuberculosis.

Possible Ayurvedic management of Tubercular complications: [13]
The complications of Tuberculosis can be enumerated as the some grievious sign and symptoms seen in the patients having ekadasharoopa of rajayakshma (tuberculosis) which are absent in sadroopa and triroopa rajayakshmarogi.

Amsataapa (pain in shoulder and chest), Raktavaman (hemoptysis), Sleshmachardi (mucoid sputum vomiting), swas (dyspnoea).

As rajayakshma disease is tridoshaja and hence depending on the predominance and stage of the disease the physician has to estimate the plan of management.

Table No. 1: Ayurvedic Treatment Principles of Rajayakshma

S. No	Samprapti vighatan (Pathology)	Treatment principles
1	SrotoAvarodha	Srotorodhaharasodhan
2	Agnimandya	Dipana and pachan for Amaharana
3	DhatushmaApachaya	Dhatwagnivardhak
4	Raktadinamsamkshaya	Saptadhatuvardhak
5	Balamamsaparikshaya	Balya and mamsavardhak
6	Ojakshya	Satwavardhan and ojavardhan

Volume : 5 | Issue : 6 | June 2015 | ISSN - 2249-555X

If there is mamsakshinata observed in patient then meat diet of animals or birds which are tikshna, ushna and laghu can be given to patients. The processed meat or mamsagunabhuyisthayavagu or yusha processed with panchakol or milk and meat processed with ghee can be given. If there is mucoid sputum vomiting seen in patient then madanphal mixed with yastikwath can be given for emesis. If patient shows hemoptysissitopaladichurna along with pravalabhasma is useful.

The single drug of choice for rajayakshma is Bala, kushmanda, pravala, laksha, Abhraka, Haridra, Suvarna, Vanga etc.

For external application chandanbalalakshadi oil or Aswagandhabalalakshadi oil can be used.

Conclussion

Tuberculosis remains a major cause of death worldwide. The rise and spread of drug resistance and synergistic interaction with the HIV epidemic are posing difficult challenges and threatening global efforts at tuberculosis control. Newer antituberculosis drugs offer the promise of shortened treatment regimens for drug-sensitive disease and more effective treatment for drug-resistant disease and latent infection. Strong political and financial commitments71 will be required to achieve global control of tuberculosis and avert millions of unnecessarydeaths.

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