

The Disorder Named Koro

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The koro syndrome is a triad of deep-seated fear of penile shrinkage, its disappearance into the abdomen and consequent death. The disorder, which is considered culture related, is endemic in South-East Asia and China, where it occurs in both epidemic and sporadic form. In the western hemisphere single cases are occasionally encountered. The association with psychiatric pathology in sporadic cases of koro has been well described, but lately attention has been drawn to systemic or neurologic involvement in these patients. The clinical, historical and cultural features of koro, as well as therapeutic strategies, are discussed.

Introduction

The term koro denotes a culture-related syndrome predominantly prevalent in South-East Asia and China. The afflicted patient is convinced that his penis is shrinking and will ultimately disappear into the abdomen, whereupon death is inescapable. If in this triad of subjective symptomatology one of the components is missing, or the syndrome appears outside the endemic areas, it is referred to as "koro-like" or "atypical koro". Sporadic cases of koro have surfaced in the western hemisphere, often in association with an underlying psychiatric or organic disorder. Koro-like manifestations call for thorough medical investigation so as to shed light on the etiopathogenesis and therapeutic implications. The present article reviews the clinical features, historical roots, cultural pathogenesis, and the occurrence of koro in epidemic and sporadic form. Folk-healing practices and modern therapeutic modalities utilized in patient suffering from the syndrome are discussed. Sixteen sporadic cases of Koro published in the literature since 1982 were collected and added to a previous compilation of 16 patients. A list of the five major epidemics reported since 1967 is also presented. Careful examination of the combined data reveals that a search for organic pathology, with emphasis on CNS involvement, is imperative in patients displaying koro characteristics.

Definition of Malady and Symptomatology

Koro is an enigmatic culture-related syndrome, currently unclassified in DSM-III-R (American Psychiatric Association, 1987). It is a unique

disorder, in which the patient complains of deep-seated fear of penis shrinkage and its ultimate retraction into the abdomen. The patient is convinced that after final penile dissolution, death is inescapable. The syndrome, which may be triggered by acute anxiety, often assumes panic dimensions. The patient experiences profuse sweating, palpitations, dizziness or vertigo, tingling sensations and feeling of numbness throughout the body. His insuperable fear impels him to perform preventive manoeuvres, such as holding his penis, pulling it outward and showing it to others for reassurance (Yap, 1951, 1965). In the majority of cases, the attack is transient, lasting from minutes to days. Sexual inadequacy may pre-exist or appear as a sequela of the attack. In the female counterpart of the syndrome, occurring but rarely, the woman is afraid that her breasts or labia are shrinking (Arieti and Meth, 1959; Ellenberger, 1965; Nandi *et al.*, 1983).

Etymological and Geographical Background

The origin of the word *Koro* is uncertain. In the Western medical literature the term was first used by Blonk (1895) and van Brero (1896). van Wulfften-Palthe (1936) thought it to derive from the Malayan term *kura* (head of the tortoise) and noted that both the Chinese and the Malays use the expression "head of a turtle" for the glans penis, while Gwee (1968) designated the word *keruk* ("to shrink" in Malayan) as the most probable origin. Adriani and Kruijt (1912) and LeBar (1972) propose a geographical connection, in that the name may be associated with a river, its surrounding valley and a local tribe in the northwestern sector of Sulawesi, (Celebes) all bearing the name Koro. *Suk-yeong* (Cantonese) and *suo-yang* (Mandarin), ("retraction of the male sexual organ"; Yap, 1965; Tseng *et al.*, 1988), *shin-kuei* ("heart defect") or *shern-kuei* ("spiritual defect") are descriptive Chinese terms also employed for the syndrome (Yap, 1965). Variants of these terms are the Thai word *rok loo* ("genital shrinking disease") and the Indian versions *jinjinia bemar* (Assam) indicating a disease characterized by a tingling sensation of the body (Dutta, 1983), *kattao* (North Bengal; "cut off") (Chakraborty *et al.*, 1983; Westermeyer, 1989) and *disco* (Calcutta), a trendy term for any sort of novelty (Chakraborty *et al.*, 1983; Nandi *et al.*, 1983). Payne (as cited by Edwards, 1984) depicts a similar shrinking penis disease called *lanuk e laso* occurring in the Bogoba tribe of the Philippines, who ascribe it to the power of sorcery. A penis-shrinking syndrome, *tira*, believed to be caused by overindulgence in coitus, has been reported from the Cook Islands (Marshall, 1980).

Historical Roots

The first mention of shrinkage of *yang* (Chinese term for "the male principle") as a symptom signifying imminent death dates back to the Yellow Emperor's "Classic of Internal Medicine", the ancient Chinese medical textbook, presumably written in the 3rd century B.C. *Suo yang*

(retraction of the male organ into the abdomen) refers to a syndrome in which the diminishing *yang* comes together with the fear of inevitable death. Later, other traditional Chinese medical books described *suo yang* as a fatal disease caused by retraction of the penis, nipple or other protruding organs (*yang*), including nose or tongue (Gwee, 1968; Tseng *et al.*, 1988).

Sprenger and Kramer in their notorious book *Malleus Maleficarum*, published in 1489, mention apparent, transient disappearance of a man's genitals, and ascribe it to "glamour" cast over the man by witches. Some 200 years later, Guazzo, in his *Compendium Maleficarum*, compiled a list of sexual disorders, the seventh and last of which is "narrowing of the female genitals" and "retraction, hiding or actual removal of the male genitals". These aberrancies were also supposed to be due to a witch's spell, which causes the unfortunate victim to believe that his genital organ is retracting, or even succeeds to conceal it from his senses. This phenomenon may be interpreted as a true abstraction of the member in imagination, although not in fact (Trethowan, 1963).

Toward the end of the 19th century Blonk (1895) reintroduced the syndrome to the Western world, describing it as a malady indigenous to Western Sulawesi. Van Brero (1896) and van Wulfften-Palthe observed a few cases of Koro in what was the Dutch Indies. Over the last three decades, single occurrences of the Koro syndrome in non-Chinese subjects were occasionally reported in the professional literature (see below, Sporadic Cases).

Cultural Pathogenesis

The onset and perpetuation of culture-bound syndromes are considered to be linked with the moral/educational, social, mythological and psychodynamic background of a given population group, and they seldom extend beyond the boundaries of such particular culture (Nandi *et al.*, 1983).

The koro syndrome is regarded as a culture-bound psychogenic phenomenon encountered chiefly in China and other regions of South-East Asia. The geographical origin of the genital retraction syndrome is difficult to trace. Did it derive from an ancient Chinese prototype that spread throughout Malay and neighbouring countries, or did it spring up independently in different cultural societies?

Suo yang, the Chinese form of koro is influenced and perpetuated by Chinese traditional education and sexual philosophy. In a culture known for its veneration of the older generation, parental warnings against masturbation are not lightly discarded. The prohibition, which is based on the rationale of its harmful effect on the genitals, is deeply embedded in the Chinese philosophy of harmony between the two basic principles of *yin* and *yang* ("feminine and masculine principles that combine to produce all that come to be"). According to this philosophical concept, a loss of *yang* or an excess of *yin* exert negative effects on the male (Malinick *et al.*, 1985), while normal sexual intercourse between men and women allows a healthy exchange of *yin* and *yang* humours. It is believed that the semen is a precious

substance and that a man should restrain his sexual desires, because not only will excessive discharge of semen (*yang*) result in a weakening of the mind and body, it will also determine death. Nocturnal emissions, masturbation, improper diet or exposure to cold, which all cause a loss of *yang*, are therefore dangerous to the male's vital energy (Malinick *et al.*, 1985; Tseng *et al.*, 1988). An ancient Chinese myth centres around the belief that a female ghost searches for and collects penises for the purpose of male ghost reincarnation (Tseng *et al.*, 1988).

Witness to the fact that the notion of the Koro syndrome is strongly rooted in Chinese consciousness are the popular superstitions relating to prophylactic means against the disorder. For example, one is warned never to walk in front of a tortoise, because retraction of its head is a negative omen, nor to step over tortoise stool or horse hair (Edwards, 1984). It is also advisable not to pass near a water pond. Then there are the dietary taboos, such as refraining from eating too much *yin* food (e.g. bananas) and to shun a certain legumen called *kentjoer* (*Kaempferia galanga*), which means "retracts".

In its Malayan form, the manipulations surrounding the syndrome differ slightly from those described in the Chinese manifestation. For example, in the former the preventive manoeuvres may not be performed by the opposite sex, as this is supposed to be fatal to the victim, whereas in *suo-yang* this prohibition does not exist (Edwards, 1984).

The disorder has generally been considered a culture-bound syndrome, owing to its circumscribed origin and Chinese etiopathogenesis (Gwee, 1968; Rin, 1965; Yap, 1965). However, in view of recent non-Chinese epidemics, as well as reports of sporadic cases in the West, the attenuated term "culture-related psychiatric disorder" has been suggested (Tseng *et al.*, 1988). The appropriateness of this term is exemplified by the Judeo-Christian doctrine which abhors onanism. The word stems from the biblical text in Genesis 38:8–10, where the story of Onan links masturbation (in Hebrew *onanut*) with punishment by death. The strong injunctions against onanism precipitate guilt feelings and fear of castration, which, in turn, activate unsuccessful attempts at solutions, symptomatically expressed in illusionary shrinkage of the penis (Levav and Bilu, 1980).

The common denominators between Jewish religious principles and Chinese philosophical concepts regarding sexual behaviour are the rules on abstinence from self-gratification and the instructions toward harmonic sexual practice. The two fundamental beliefs hold the semen invaluable and recognize it as a substance not to be spent improperly or excessively. One of the commentaries of the medieval Jewish philosopher and physician Maimonides (1135–1204) treats of the regulations concerning sexual behaviour and the undue waste of sperm. Both the *Shulhan arukh* (Karo, 1979) and the Yellow Emperor's *ying* and *yang* theory mention the dire consequences of disharmonic sexual exchange. Although the text of the *Shulhan arukh* does not specifically dwell on the fate of the penis ["The semen constitutes bodily strength and the light of the eyes. To excessively spill semen is to spill the power of the body, and its life, and the light of the eyes"], the authority of

this set of laws in Jewish culture and ethics may explain the relative frequency of Jewish koro patients among the sporadic cases (Durst and Rosca-Rebaudengo, 1988; Hes and Nassi, 1977; Modai *et al.*, 1986).

Underlying Personality

Yap (1965) described Koro patients as immature, dependent, lacking confidence in their virility and being in constant sexual conflict. In case reports of single koro occurrences that also address the issues of its premorbid personality, the traits extant in the patients fit Yap's description. The patient presented by Scher (1987) was shy, immature, boyish and naive and, although considering it a sin, masturbated frequently. Cremona (1981) found similar characteristics in her case of a young Briton, an only son overdependent on his mother, who was preoccupied with self observation of his genitals. In epidemic events, involving sometimes thousands of young adults, the general underlying personality is portrayed in similar terms (Nandi *et al.*, 1983; Tseng *et al.*, 1988).

Epidemics

Most cases of Koro in Asia occur in epidemic form. As far as could be

TABLE 1. *Epidemics of koro*

<i>Reference</i>	<i>Year</i>	<i>Geographical area</i>	<i>Number of cases</i>	<i>Psychological trigger</i>	<i>Physical trigger</i>
1. Koro study team (1969) Ngu (1969)	1967	Singapore	469	Rumours of poisoning	Antiswine fever vaccine in pork
2. Jilek and Jilek (1977) Suwanlert-Coates (1979)	1976	Thailand	2000	Rumours of food poisoning by the Vietkong	Rabies
3. Ilechukwu (1988)	1975-1977	Lagos	Not given	News report of penis disappearance after contact with strangers	—
4. Dutta (1982) Chakraborty <i>et al.</i> (1983) Nandi <i>et al.</i> (1983) Chowdhury (1989)	1982	India	Not given	—Rumours of harm by immigrants —Fear of lethal disease	Cerebral malaria
5. Tseng <i>et al.</i> (1988)	1984-1985	Hainan (China)	> 2000	Fortune teller predicted disaster	—

ascertained by us, five major outbreaks were documented in the literature since 1967 (Table 1). The epidemics were reported to be triggered by popular rumours or mass media communications. The process of contagion develops under, and is propagated by, socio-cultural stress (Hughes, 1985), political situations and commonly shared beliefs (Tseng and McDermott, 1981); individual psychopathology was seen to play a less important role (Tseng *et al.*, 1988). The epidemic manifestations of Koro have also been described as mass hysteria (Ellenberger, 1965) or epidemic psychosis (Harrington, 1982).

The most plausible explanation for the epidemic occurrences is arousal of deep anxiety concerning the continuity of the group as an ethnic entity, symbolized by fear of losing potency and the organs of reproduction. This assumption is substantiated by the fact that the epidemics appeared at a moment in time when social change was so profound as to imply loss of cultural identity (Ellenberger, 1965). Notwithstanding the emphasis placed on the psycho-social aspects involved in koro outbreaks, one should not overlook the fact that physical factors may also be conducive in the occurrence of the syndrome. Thus, in three of the five major epidemics antiswine fever vaccine, rabies and cerebral malaria were mentioned as concomitant features.

Sporadic Cases

Since the review by Berrios and Morley in 1984 of 16 non-Chinese patients with koro-like symptoms, 16 additional sporadic cases have been published in the literature (Table 2). In 13 instances in Berrios and Morley's series the koro manifestations were secondary to psychiatric disorders, in one patient they were recorded as having "no psychiatric history" (Constable, 1979), while in two cases the symptoms coincided either with drug abuse (Dow and Silver, 1973) or carcinoma (Lapierre, 1972). In 12 of the 16 cases compiled by the present authors (Table 2), the koro syndrome was associated with a documented physical illness: three cases were related to alcohol or drug abuse, three to CNS disorders, four patients had a background of urogenital symptoms, and in one case malaria seems to have been implicated, a fact that raises the question of cerebral involvement (Daroff *et al.*, 1967; Westermeyer, 1989).

Therapeutic Modalities

The treatment approaches can be divided into four main avenues: (1) preventive measures as prescribed by the culturally embedded myths (see cultural pathogenesis); (2) manipulatory strategies (pulling the penis outward, fastening of clamps and strings to the penis) performed by the patient himself, family members or friends; (3) folk healing suggestions to combat the disorder, including special diets containing *yang* substances (e.g., bamboo, deer horn, red pepper jam, black pepper powder, ginger)

(Edwards, 1984; Tseng *et al.*, 1988) and performance of rituals to chase away the evil spirit (striking gongs, setting off firecrackers); (4) the modern medical conception, which takes into consideration the possibility of koro superimposed on a psychiatric disorder, secondary to an organic illness, elicited by a psychological trigger, or any combination of these. That koro often has a multifactorial etiology emerges from the data summarized in Tables 1 and 2.

The sporadic cases compiled by Berrios and Morley (1984) and those gathered by the present authors show that physical and mental components are involved in koro (Table 1). Of interest is the information in Table 2 which demonstrates that besides psychological triggers, tangible elements (poisoned food, vaccines, cerebral malaria) may have been causative factors in the development of the syndrome.

The multifactorial etiology of koro warrants holistic investigatory and therapeutic measures. Accordingly, physical examination, laboratory tests, radiologic imaging and psychiatric evaluation will afford appropriate treatment planning. The treatment may include psychopharmacological medication (benzodiazepines, neuroleptics, antidepressants), physical modalities, such as electroconvulsive therapy (Shukla and Mishra, 1981; Durst and Rosca-Rebaudengo, 1988), or psychotherapeutic intervention (reassurance, supportive or dynamic oriented). The different psychotherapies aim at relieving the castration fears and sexual conflicts which form part of the picture in most of the patients. Dissolution or amelioration of a co-existing organic disorder may have a beneficial effect on the disorder.

Comment

The koro syndrome does not fit into any particular diagnostic category. In keeping with its multifactorial etiology, its appearance has been attributed to socio-cultural, psychological-psychiatric and organic-neurologic triggers. The socio-cultural aspects that may bring about koro were mentioned earlier in the text. As to the psychological-psychiatric elements, the syndrome has been linked to a host of psychopathologies, such as depression (Kraepelin, 1921; Weller and Ameen, 1982; Westermeyer, 1989); obsessive-compulsive disorder (van Brero, 1896); depersonalization syndrome (Yap, 1965); acute stress response (Rosenthal and Rosenthal, 1982); acute adjustment disorder (Gwee, 1963); panic attack and acute anxiety (Rin, 1965; Levav and Bilu, 1980); shared paranoid disorder (*folie à deux*) (Westermeyer, 1989); epidemic hysteria (Legendre, 1908; Jilek, 1986); acute psychosis (Shukla and Mishra, 1981) and schizophrenia (Bychowsky, 1943; Cremona, 1981; Devan and Hong, 1987; Edwards, 1970; Yap 1965).

Due to its heterogenous linkage, koro has not found an unequivocal place in the current psychiatric classifications of ICD9-CM (1978) and DSM-III-R (1987). Yet, koro when superimposed on a documented physical pathology clearly belongs under the heading of Organic Delusional Syndrome (293.81 in ICD9-CM and DSM-III-R).

TABLE 2. Sporadic cases of koro (1982–1989).

Reference	Age	Origin	Sexual adjustment history	Accompanying psychiatric illness	Accompanying physical illness	Fear of shrinking organ	Fear of death	Manoeuvres	Treatment	Outcome
1. Weller & Ameen (1982)	23	Greek	Not given	Bipolar-disorder Anxiety	Pycnic habitus Abdominal pain	Yes	Not given	Not given	Amitriptyline	Not given
2. Malinick <i>et al.</i> (1984)	51	Black USA	Single	Anxiety; Sociopathy Paranoidal Homicidal	Alcohol abuse	Yes	Yes	Not given	Not given	Favourable
3. Emsley (1985)	25	Black South-African	Single	Anxiety; Fear of impotence following circumcision Psychotic	Unknown	Yes	Not given	Not given	Clomipramine Haloperidol	<-> Deterioration <-> No response
4. Moodley (1985)	60	Scottish	Married + 3	Benzodiazepine-abuse Anxiety Depersonalization	Cardiac dysrhythmia Drug abuse	Yes	No	No	Not given	Not given
5. Oyebode <i>et al.</i> (1986)	56	Great Britain	Married No children	Major depression Obsessions	Change of penis size	Yes	No	Yes, by wife	Propranolol thioridazine dothiepine	Favourable
6. Joseph (1986)	32	Haiti Black	Not given	Atypical psychosis Amnesia Olfactory halluc.	Psychomotor epilepsy	Yes	Yes	Yes	Themazepam	Unfavourable
7. Joseph (1986)	32	Ethiopian Black	Not given	Paranoid psychosis Olfactory halluc.	Cerebral atrophy; Psychomotor epilepsy	Yes	Yes	Not given	Haloperidol	Favourable
8. Modai <i>et al.</i> (1986)	56	Israel Born in Iraq	Married + 3 Hypersexual Masturbation	Anxiety; Immature-personality; Guilt & depression	Healthy	Yes	No	Yes	Clomipramine Chlorprothixene + oxazepam	<-> Unfavourable <-> Improvement

9.	Kendall & Jenkins (1987)	34	Columbia Black	Not given	Schizophrenia Anxiety; Delusions of sexual change	Not given	Yes	Not given	Yes	Haloperidol	Favourable
10.	Mukherjee (1987)	25	English background	Single; Sexual inadequacy	Bipolar disorder Anxiety; Emotionally immature	Not given	Yes	Not given	Not given	Amitriptyline Trifluoperazine	Unfavourable
11.	Devan (1987)	75	Singapore Chinese-origin	Widowed + 1	Depression; Late-paranoid schizophrenia	Inguinal hernia	Yes	Yes	Yes	Neuroleptics Family educ. approach	Favourable
12.	Holden (1987)	38	Zulu	Married + 5	Anxiety	Chronic alcoholism; Hepatitis; UTI; Vitamin def.	Yes	Yes	Not given	Ampicillin Diazepam Multivitamins	Favourable
13.	Scher (1987)	25	USA Caucasian	Single, Excessive masturbation + Guilt	Learning disability Memory impairment	Alcohol abuse Hypertension	Yes	No	Not given	Reassurance Low dose BDZ Perphenazine	Favourable
14.	Kranzler & Shah (1988)	36	Jamaica	Single	Paranoid schizophrenia; Anxiety	Swollen testicles	Yes + Shrinking testes	Yes	Yes	Fluphenazine Lorazepam Desipramine	Moderate improvement
15.	Durst & Rosca (1988)	29	Israel Rumanian-origin	Married + 2 Excessive masturbation + Guilt	Panic attacks Psychotic depression Suicidal intention	Tumour of corpus callosum	Yes	Yes	Yes	E.C.T. Clothiapine	Favourable
16.	Westermeyer (1989)	31	USA Born in Laos	Married + 1	Psychotic depression Shared delusional disorder	Previous suspected malaria	Yes + Delusion of sexual change	No	No	Not given	Not given

Classification of Koro into three categories has been suggested by Devan and Hong (1987); as a discrete entity (classical koro), grafted upon an underlying psychiatric illness, and as a symptom of a mental illness. The present authors thought it justifiable to add a fourth category, namely that of Koro as a symptom of an organic disorder (Durst and Rosca-Rebaudengo, 1988). The sporadic cases compiled by Berrios and Morley (1984), those collected in the current work (Table 2), and the organic factors present in some of the epidemics, all reinforce the appropriateness of searching for a covert organic disorder in a patient with manifestations of koro.

The unshakable conviction of Koro sufferers that penile retraction is a prodrome of death is partly rooted in reality, since this is a phenomenon not seldom seen at death (Koro Study Team, 1969; Raven, 1886) due to decreased vasocongestion, arterial pressure and muscular tension (Edwards, 1984). Hyperbloating and intestinal distension upon death may also give the false impression of diminished penis size (Chowdhury, 1989).

Penile plethysmographic studies performed on a koro patient showed actual physiological changes in penile circumference (Oyebode *et al.*, 1986).

Various extrinsic insults and intrinsic factors have been considered to elicit koro symptomatology. Among the possible extrinsic causes for penile contraction sudden exposure to cold (Devereux, 1954), contact with cold water (Edwards, 1984), and accidental physical trauma (Gould and Pyle, 1896) have been mentioned.

The syndrome was also reported to be associated with heroin withdrawal (Yap, 1965), drug abuse (Dow and Silver, 1973), alcohol hepatitis, avitaminosis, urinary tract infection (Holden, 1987), febrile episodes (Chowdhury, 1989) and cerebral malaria (Chakraborty *et al.*, 1983). Attention to the physical condition may result in resolution of the koro symptomatology. Devereux (1954) stated that patients with gonorrhoeal urethritis and urinary tract infection often complain of a transient shortening of the penis due to reflex spasms.

The symptom choice of koro may revolve around sexual biomedical factors, interpersonal difficulties and intrapsychic conflicts. In the West Bengal epidemic (Chowdhury, 1989; Table 1) anatomo-sexual offenses, such as venereal disease and scrotal filaria, were demonstrated in a considerable number of patients. As these diseases may alter the anatomical dimensions of the sexual organs, the psycho-physiological sexual sensitivity does not remain intact. In the context of sexual functioning, extra-marital intercourse and failed attempts at sexual encounter may trigger penile hyperinvolvement. Masters and Johnson (1966) suggested that penile retraction, like erection, is controlled by cortical centres.

Among the various maladies associated with koro, CNS pathology and dysfunction are increasingly implicated. The reason for this link must be sought in the greater awareness and accumulating knowledge concerning sporadic cases of koro, coupled with the sophisticated modern investigatory techniques (e.g. CT scan, MRI, BEAM). Contemporary publications describe cases of koro secondary to epileptic confusional states (Yap, 1965),

temporoparietal dysfunction (epilepsy) (Joseph, 1986), cerebral syphilis (Yap, 1965), rabies (Suwanlert and Coates, 1979), cerebral malaria (Chakraborty *et al.*, 1983), fronto-temporal tumour (Lapierre, 1972), and a tumour of the corpus callosum (Durst and Rebaudengo, 1988).

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